# APPENDIX D
# Air Quality and Greenhouse Gas Analysis

# *MOFFETT PARK SPECIFIC PLAN UPDATE AIR QUALITY ASSESSMENT*

## *Sunnyvale, California*

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# INTRODUCTION

The purpose of this report is to address air quality and community health risk impacts associated with buildout of the proposed mixed-use Moffett Park Specific Plan (MPSP) Update located in Sunnyvale, California. The air quality impacts from this Plan would be associated with demolition of the existing land uses, construction of the new buildings and infrastructure, and operation of the project. Air pollutants associated with construction are addressed qualitatively since construction information is not known at the detail necessary to predict meaningful impacts. Operational impacts from new building operation and traffic were predicted using appropriate models. In addition, the potential project health risk impacts from operational traffic were predicted. The impact of existing toxic air contaminant (TAC) sources affecting the proposed sensitive receptors that could be included in the MPSP Update were evaluated separately. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

# PROJECT DESCRIPTION

The approximately 1,270-acre MPSP area is located in the northernmost portion of the City of Sunnyvale (City). The plan area is bounded by: State Route 237 to the south; Moffett Federal Airfield and a golf course to the west; San Francisco Bay, the former Sunnyvale landfill, SMaRT® station, water pollution control plant (WPCP), wastewater treatment ponds, an open-water pond, and Caribbean Drive to the north; and Caribbean Drive and Baylands Park to the east. A regional map and vicinity map of the MPSP area are shown in Figure 1.

## Background

The City of Sunnyvale adopted the MPSP in 2004 and amended it in 2006, 2009, 2011, 2013, and 2016. All of the MPSP amendments were focused on including additional sites and allowing higher floor area ratio (FAR) to accommodate Class A office. None of the amendments changed the total buildout envisioned for Moffett Park. The MPSP area had long been home to several large corporate campuses. The adopted MPSP allows for a maximum buildout of 24.33 million square feet (sf) of commercial and office/Research & Development (R&D)/industrial uses. Currently, the MPSP area is developed with approximately 18.5 million-sf of commercial, office/R&D/industrial, and institutional uses. Approximately 4.1 million-sf of additional office/R&D/industrial uses were recently approved by the City.

## MPSP Update Description

The proposed project is a comprehensive, City-initiated update of the MPSP. The proposed Specific Plan includes text and diagrams that specify all of the following in detail:

- The distribution, location, and extent of the mix of land uses, including open space, within the MPSP site;
- The proposed distribution, location, and extent and intensity of major components of public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other

[1] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*, May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

essential facilities proposed to be located within the area covered by the plan and needed to support the land uses described in the plan;
- Standards and criteria by which development will proceed, and standards for conservation, development, and utilization of natural resources, where applicable; and
- A program of implementation measures including regulations, programs, public works projects, and financing measures necessary to carry out points 1-3 above.

The City's vision for the MPSP area is as follows:
- Moffett Park is an integral part of Sunnyvale, and a well-connected ecological innovation district with a diverse mix of uses that serves as a model of resilience, climate protection, equity, and economic opportunity.

The following guiding principles have been identified to achieve the above vision:
- Establish Moffett Park as a model community through its commitment to comprehensively addressing resilience, climate protection, and equity in all activities.
- Evolve Moffett Park into a vibrant and inclusive community where all people can thrive.
- Maintain and strengthen Moffett Park as a diverse economic engine that supports economic prosperity for all.
- Create a connected, accessible district that prioritizes the movement of people over vehicles to reduce climate pollution and to support a healthy community.
- Cultivate dynamic and connected public spaces that accommodate the physical and social needs of all users.
- Create a healthy, resilient, and biodiverse environment.
- Integrate innovative and emerging technologies in the district to support the community wide goals.

The proposed MPSP would allow the addition of residential uses and an increase in the allowable office/R&D and commercial uses within the MPSP area. The proposed MPSP update would allow for a net increase of 20,000 residential units (where there are no residential units existing today), 650,000-sf of commercial uses, 10.0 million-sf of office/industrial/R&D uses, and 200,000-sf of institutional uses beyond what is currently existing and recently approved. As a result, the buildout of the proposed MPSP (which would include existing, recently approved, and proposed uses) would result in a total of 20,000 residential units and approximately 33.5 million-sf of commercial, office/industrial/R&D, and institutional uses.

Buildout of the proposed MPSP is projected to generate approximately 39,940 residents and 95,946 jobs. The estimated resident generation is based on a 95% occupancy rate and ratio of 2.1 residents per household.

*Land Use*

The proposed MPSP includes 11 land use designations: (1)(2) Office/R&D (two designations); (3)(4)(5)(6) Mixed Employment (four designations); (7) Activity Center; (8) Mixed Use; (9) Residential; (10) Public; and (11) Institutional.

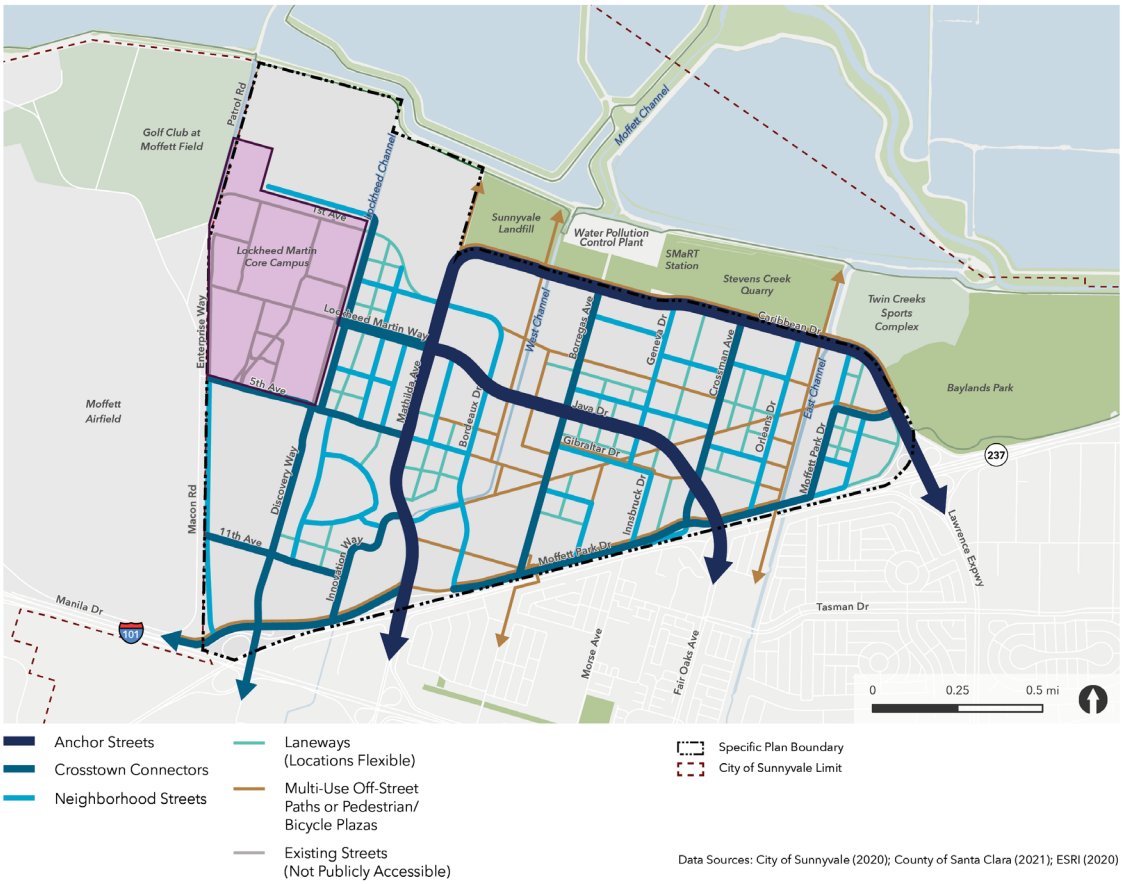
*Neighborhoods*

The proposed MPSP divides the MPSP area into the following six neighborhoods that define future districts: (1) North Java, (2) South Java, (3) Crossman, (4) East Orleans, (5) West Mathilda, and (6) Tech Corners.

*Streets Network*

The proposed street network for Moffett Park would consist of existing streets (public and private) and new streets for vehicles and/or people who walk or bike. The proposed street network is shown on Figure 1.

**Figure 1. Moffett Park Specific Plan Area**




*Transportation Demand Management*

The City of Sunnyvale has existing TDM requirements for both non-residential and multi-family residential projects that would apply to MPSP.

- Non-residential: Projects are required to set a trip reduction target and develop a plan to achieve that target.[2] Trip reduction targets are set on a project-by-project basis and the TDM Plan is incorporated into the conditions of approval.

- Multi-family residential (10+ units): Projects are required to create a TDM program with a points-based system.[3] Many of the points are for infrastructure and design improvements that are already included in the MPSP.

TDM within MPSP will be overseen and managed by a newly formed Transportation Management Association (TMA). To support implementation of the MPSP and operation of the TMA, the MPSP builds off the City requirements. Such requirements will ensure consistent participation and investment in citywide TDM efforts. All new residential projects with 10 or more units and new non-residential projects of 5,000 square feet or more developed within MPSP will be required to submit a TDM Plan for each project site.

- Required TDM measures. All new residential and non-residential projects shall include the following elements in their TDM Plan.
  - Participation in the TMA
  - Transportation Coordinator (TC): The project applicant and/or property owner shall designate a TC to serve as the point of contact for the City and/or TMA and provide the City and/or TMA with materials and data showing compliance with approved TDM Plan and monitoring requirements
  - Unbundled parking
  - Carpool/vanpool parking
  - Bike parking, showers, and lockers
  - Annual travel survey and reporting
  - Parking cash out program, as applicable and required per State requirements[4]
  - New metrics as needed and determined by the TMA

- Supplemental TDM measures. Additional TDM measures that may be included in the TDM Plan include, but are not limited to:
  - Reduction of parking below the parking maximum
  - Pre-tax transportation benefits, including employer contributions to transit and bike benefit programs
  - Shared parking facilities and/or public access to parking facilities
  - On-site bicycle repair / "fix-it" stations
  - Multimodal wayfinding

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[2] City of Sunnyvale, 'Draft Ordinance to Amend Sunnyvale Municipal Code Chapter 10.60,' Legislative Public Meetings, October 25, 2016, https://sunnyvaleca.legistar.com/LegislationDetail.aspx?ID=2863616&GUID=C0FC3D16-6294-4F5F-A08D-E0D8BE5809F0&FullText=1.

[3] City of Sunnyvale, 'City of Sunnyvale Multi-family Transportation Demand Management Program,' https://www.sunnyvale.ca.gov/home/showpublisheddocument/1466/637820846932070000.

[4] Health and Safety Code, Division 26, California Legislative Information, September 23, 2022, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=26.&title=&part=5.&chapter=4.&article=5.

- Transportation welcome packet and/or website
- Guaranteed ride home service and/or subsidy
- Free or subsidized transit passes
- Car share service and/or subsidy
- Bike share service and/or subsidy
- Carpool/Vanpools matching service and/or subsidy
- Free/preferential Carpool/Vanpool parking above minimum requirements
- Flex and other alternative work schedules or work from home programs
- Shuttle service
- Parking cash-out program (if not already subject to California Health and Safety Code 43845)
- Other proposed by applicant

- District Parking Concept. The MPSP under full buildout conditions would implement a district parking strategy, where parking is mostly centralized in a series of shared parking garages located along Mathilda Avenue and Caribbean Drive. Minimal parking for residential and retail uses will be located along the Java Drive corridor. Only a small number of areas will have all parking located on-site. It is assumed that with District Parking, any vehicles accessing MPSP will only need to park once and use other modes of transportation to complete all of their activities within the Plan area. The MPSP area will provide a variety of multimodal transportation options such as bicycle and walking networks, rental bikes and scooters, etc... Therefore, it is assumed that internal travel within MPSP would not be made by vehicular trips.

- TDM Plan implementation. Property owners will implement TDM programs at building occupancy, however each site will not be subject to monitoring until it has reached 75% occupancy. It will be the owner's responsibility to inform the TMA when sites have reached 75% occupancy.

- TDM Plan Goals. Overall, an aggressive goal of reducing single occupant vehicle trips to 50 percent is the objective of the TDM Plan.

## Air Pollutants and Contaminants

Air pollutants are governed by multiple federal and state standards to regulate and mitigate health impacts. At the federal level, there are six criteria pollutants for which National Ambient Air Quality Standards (NAAQS) have been established: carbon monoxide (CO), lead (Pb), nitrogen dioxide ($NO_2$), ozone ($O_3$), suspended particulate matter (PM: $PM_{2.5}$ and $PM_{10}$), and sulfur dioxide ($SO_2$). California sets standards, similar to the NAAQS as California Ambient Air Quality Standards (CAAQS). Health effects of the primary criteria pollutants (i.e., the NAAQS) and their potential sources are described below and summarized in Table 1. Note that California includes pollutants or contaminants that are specific to certain industries and not associated with this project. These include hydrogen sulfide and vinyl chloride.

**Ozone**

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen ($NO_X$). The main sources of ROG and $NO_X$, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

**Carbon Monoxide**

Carbon monoxide is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. While CO transport is limited, it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

**Nitrogen Dioxide**

Nitrogen Dioxide is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of $NO_2$. Aside from its contribution to ozone formation, $NO_2$ also contribute to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. $NO_2$ may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. $NO_2$ decreases lung function and may reduce resistance to infection. On January 22, 2010 the U.S. Environmental Protection Agency (EPA) strengthened the health-based NAAQS for $NO_2$.

**Sulfur Dioxide**

Sulfur dioxide is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous $SO_2$ levels in the region. $SO_2$ irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

**Particulate Matter**

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns ($PM_{10}$). $PM_{2.5}$ refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of $PM_{10}$ and $PM_{2.5}$. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces and can enter the human body through the lungs.

**Lead**

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufactures.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. EPA established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

**Toxic Air Contaminants (TACs)**

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated by the EPA and the California Air Resources Board (CARB). Some examples of TACs include benzene, butadiene, formaldehyde, and hydrogen sulfide. The identification, regulation, and monitoring of TACs is relatively recent compared to that for criteria pollutants.

High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high volume transit centers, or schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

**Table 1. Health Effects of Air Pollutants**

| Pollutants | Sources | Primary Effects |
|---|---|---|
| Carbon Monoxide (CO) | • Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust.<br>• Natural events, such as decomposition of organic matter. | • Reduced tolerance for exercise.<br>• Impairment of mental function.<br>• Impairment of fetal development.<br>• Death at high levels of exposure.<br>• Aggravation of some heart diseases (angina). |
| Nitrogen Dioxide ($NO_2$) | • Motor vehicle exhaust.<br>• High temperature stationary combustion.<br>• Atmospheric reactions. | • Aggravation of respiratory illness.<br>• Reduced visibility.<br>• Reduced plant growth.<br>• Formation of acid rain. |
| Ozone ($O_3$) | • Atmospheric reaction of organic gases with nitrogen oxides in sunlight. | • Aggravation of respiratory and cardiovascular diseases.<br>• Irritation of eyes.<br>• Impairment of cardiopulmonary function.<br>• Plant leaf injury. |
| Lead (Pb) | • Contaminated soil. | • Impairment of blood functions and nerve con-struction.<br>• Behavioral and hearing problems in children. |
| Suspended Particulate Matter ($PM_{2.5}$ and $PM_{10}$) | • Stationary combustion of solid fuels.<br>• Construction activities.<br>• Industrial processes.<br>• Atmospheric chemical reactions. | • Reduced lung function.<br>• Aggravation of the effects of gaseous pollutants.<br>• Aggravation of respiratory and cardiorespiratory diseases.<br>• Increased cough and chest discomfort.<br>• Soiling.<br>• Reduced visibility. |
| Sulfur Dioxide ($SO_2$) | • Combustion of sulfur-containing fossil fuels.<br>• Smelting of sulfur-bearing metal ores.<br>• Industrial processes. | • Aggravation of respiratory diseases (asthma, emphysema).<br>• Reduced lung function.<br>• Irritation of eyes.<br>• Reduced visibility.<br>• Plant injury.<br>• Deterioration of metals, textiles, leather, finishes, coatings, etc. |
| Toxic Air Contaminants | • Cars and trucks, especially diesels.<br>• Industrial sources such as chrome platers.<br>• Neighborhood businesses such as dry cleaners and service stations.<br>• Building materials and product. | • Cancer.<br>• Chronic eye, lung, or skin irritation.<br>• Neurological and reproductive disorders. |

Source: CARB, 2009. ARB Fact Sheet: Air Pollution and Health, see: https://www.arb.ca.gov/research/health/fs/fs1/fs1.htm accessed May 1, 2018

## Setting

The project is located in Santa Clara County, which is part of the San Francisco Bay Area Air Basin. The Air Basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, and Alameda, along with the southeast portion of Sonoma County and the southwest portion of Solano County.

This Project is within the jurisdiction of the BAAQMD. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants, and the number of days during which the region exceeds air quality standards, have fallen dramatically. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

### Local Climate and Air Quality

Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. Climate and topography are major influences on air quality.

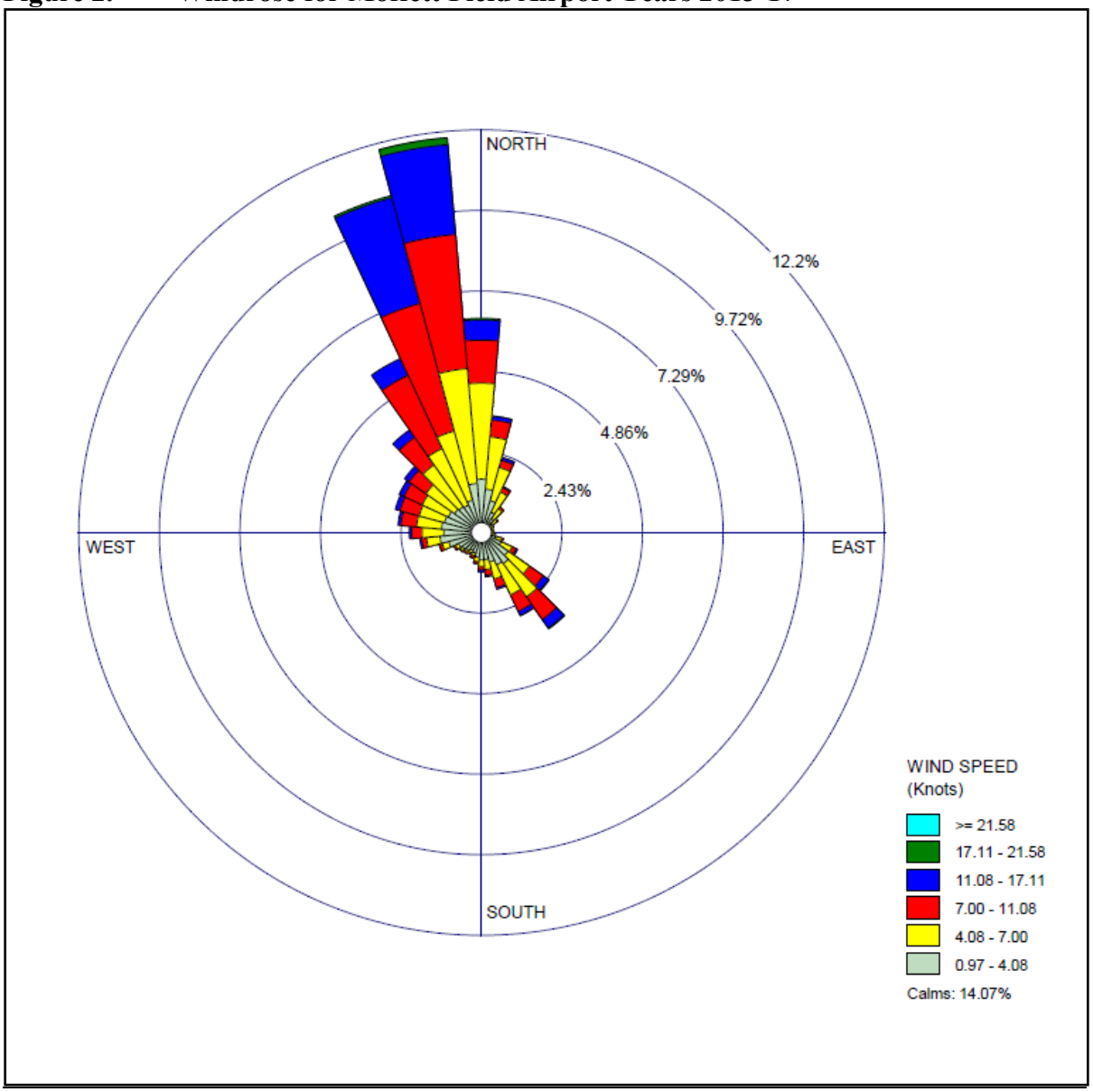
Climate and Meteorology

During the summer, mostly clear skies result in warm daytime temperatures and cool nights in the Santa Clara Valley. Winter temperatures are mild, except for very cool but generally frost-less mornings. Further inland where the moderating effect of the bay is not as strong, temperature extremes are greater. Rainfall amounts are modest, ranging from 13 inches in the lowlands to 20 inches in the hills. Wind patterns are influenced by local terrain, with a northwesterly breeze in response to the sea breeze infiltrating San Francisco Bay typically developing during the daytime. Winds are usually stronger in the spring and summer. The southerly winds experienced are more common in late fall and winter. The wind rose shown in Figure 2 describes the patterns and frequency of winds at the project site. Wind data were collected from 2013 through 2017.

Air Pollution Potential

Ozone and fine particle pollution, or $PM_{2.5}$, are the major regional air pollutants of concern in the San Francisco Bay Area. Ozone is primarily a problem in the summer, and fine particle pollution in the winter. Most of Santa Clara County is well south of the cooler waters of the San Francisco Bay and far from the cooler marine air which usually reaches across San Mateo County in summer. Ozone frequently forms on hot summer days when the prevailing seasonal northerly winds carry ozone precursors southward across the county, causing health standards to be exceeded. Santa Clara County experiences many exceedances of the $PM_{2.5}$ standard each winter. This is due to the high population density, wood smoke, industrial and freeway traffic, and poor wintertime air circulation caused by extensive hills to the east and west that block wind flow into the region.

**Figure 2. Windrose for Moffett Field Airport Years 2013-17**




Notes: Based on data provided by BAAQMD

Attainment Status Designations

The CARB is required to designate areas of the state as attainment, nonattainment, or unclassified for all state standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data does not support either an attainment or nonattainment status. The California Clean Air Act (CCAA) divides districts into moderate,

serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

Table 2 shows the state and federal standards for criteria pollutants and provides a summary of the attainment status for the San Francisco Bay Area with respect to national and state ambient air quality standards.

**Table 2. NAAQS, CAAQS, and San Francisco Bay Area Attainment Status**

| Pollutant | Averaging Time | California Standards | | National Standards | |
|---|---|---|---|---|---|
| | | Concentration | Attainment Status | Concentration | Attainment Status |
| Carbon Monoxide (CO) | 8-Hour | 9 ppm (10 mg/m$^3$) | Attainment | 9 ppm (10 mg/m$^3$) | Attainment |
| | 1-Hour | 20 ppm (23 mg/m$^3$) | Attainment | 35 ppm (40 mg/m$^3$) | Attainment |
| Nitrogen Dioxide ($NO_2$) | Annual Mean | 0.030 ppm (57 mg/m$^3$) | Attainment | 0.053 ppm (100 µg/m$^3$) | Attainment |
| | 1-Hour | 0.18 ppm (338 µg/m$^3$) | Attainment | 0.100 ppm | Unclassified |
| Ozone ($O_3$) | 8-Hour | 0.07 ppm (137 µg/m$^3$) | Nonattainment | 0.070 ppm | Nonattainment |
| | 1-Hour | 0.09 ppm (180 µg/m$^3$) | Nonattainment | Not Applicable | Not Applicable |
| Suspended Particulate Matter ($PM_{10}$) | Annual Mean | 20 µg/m$^3$ | Nonattainment | Not Applicable | Not Applicable |
| | 24-Hour | 50 µg/m$^3$ | Nonattainment | 150 µg/m$^3$ | Unclassified |
| Suspended Particulate Matter ($PM_{2.5}$) | Annual Mean | 12 µg/m$^3$ | Nonattainment | 12 µg/m$^3$ | Attainment |
| | 24-Hour | Not Applicable | Not Applicable | 35 µg/m$^3$ | Nonattainment |
| Sulfur Dioxide ($SO_2$) | Annual Mean | Not Applicable | Not Applicable | 80 µg/m$^3$ (0.03 ppm) | Attainment |
| | 24-Hour | 0.04 ppm (105 µg/m$^3$) | Attainment | 365 µg/m$^3$ (0.14 ppm) | Attainment |
| | 1-Hour | 0.25 ppm (655 µg/m$^3$) | Attainment | 0.075 ppm (196 µg/m$^3$) | Attainment |
| Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s. ppm = parts per million, mg/m$^3$ = milligrams per cubic meter, µg/m$^3$ = micrograms per cubic meter | | | | | |

Source: Bay Area Air Quality Management District, 2017. *Air Quality Standards and Attainment Status.* January 5.

Existing Air Pollutant Levels

BAAQMD monitors air pollution at various sites within the Bay Area. The closest air monitoring station (158 Jackson Street) that monitored $O_3$, CO, NO, $NO_2$, $PM_{10}$, and $PM_{2.5}$ over the past 5 years (2015 through 2019) is in the City of San José, approximately 11 miles southeast of the project site. The data shows that during the past few years, the project area has exceeded the state and/or federal $O_3$, $PM_{10}$, and $PM_{2.5}$ ambient air quality standards. Table 3 lists air quality trends in

data collected for the past 5 years and published by the BAAQMD and CARB, which is the most recent time-period available. Ozone standards (includes 1-hr concentration and 8-hr concentration) were exceeded on 0 to 4 days annually in San José and 3 to 15 days throughout the Bay Area. Measured 24-hour $PM_{10}$ and $PM_{2.5}$ concentrations are exceeded on 0 to 6 monitoring days in San José and up to 18 days at any place in the Bay Area (note these levels were influences by smoke from wildfires).

**Table 3. Ambient Air Quality Concentrations from 2016 through 2020**

| Pollutant | Standard | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Ozone | | | | | | |
| Max 1-hr concentration | | 87 ppb | 121 ppb | 78 ppb | 95 ppb | 106 ppb |
| No. days exceeded: CAAQS | 0 | 0 | 3 | 0 | 1 | 1 |
| Max 8-hr concentration | | 66 ppb | 98 ppb | 61 ppb | 81 ppb | 85 ppb |
| No. days exceeded: CAAQS | 0 | 0 | 4 | 0 | 2 | 2 |
| NAAQS | 0 | 0 | 3 | 0 | 2 | 2 |
| Carbon Monoxide | | | | | | |
| Max 1-hr concentration | | 2.0 ppm | 2.1 ppm | 2.5 ppm | 1.7 ppm | -- |
| No. days exceeded: CAAQS | 0 | 0 | 0 | 0 | 0 | -- |
| NAAQS | 0 | 0 | 0 | 0 | 0 | -- |
| Max 8-hr concentration | | 1.4 ppm | 1.8 ppm | 2.1 ppm | 1.3 ppm | 1.3 ppm |
| No. days exceeded: CAAQS | 0 | 0 | 0 | 0 | 0 | 0 |
| NAAQS | 0 | 0 | 0 | 0 | 0 | 0 |
| $PM_{10}$ | | | | | | |
| Max 24-hr concentration | | 41 µg/m$^3$ | 70 µg/m$^3$ | 122 µg/m$^3$ | 77 µg/m$^3$ | 137 µg/m$^3$ |
| No. days exceeded: CAAQS | 0 | 0 | 6 | 4 | 4 | 10 |
| NAAQS | 0 | 0 | 0 | 0 | 0 | 0 |
| Max annual concentration | | 18.3 µg/m$^3$ | 21.3 µg/m$^3$ | 23.1 µg/m$^3$ | 19.2 µg/m$^3$ | 24.6 µg/m$^3$ |
| No. days exceeded: CAAQS | - | - | - | - | - | - |
| $PM_{2.5}$ | | | | | | |
| Max 24-hr concentration | | 22.6µg/m$^3$ | 49.7 g/m$^3$ | 133.9µg/m$^3$ | 27.6 µg/m$^3$ | 120.5 µg/m$^3$ |
| No. days exceeded: NAAQS | 0 | 0 | 6 | 15 | 0 | 12 |
| Annual Concentration | | 8.4 µg/m$^3$ | 9.5 µg/m$^3$ | 12.7µg/m$^3$ | 9.0µg/m$^3$ | 11.5µg/m$^3$ |
| No. days exceeded: CAAQS | 12 µg/m$^3$ | - | - | - | - | - |
| NAAQS | 12 µg/m$^3$ | - | - | - | - | - |
| Nitrogen Dioxide | | | | | | |
| Max 1-hr concentration | | 51 ppb | 68 ppb | 86 ppb | 60 ppb | 52 ppb |
| No. days exceeded: CAAQS | 0 | 0 | 0 | 0 | 0 | 0 |
| NAAQS | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual Concentration | | 11 ppb | 12 ppb | 12 ppb | 11 ppb | 10 ppb |
| No. days exceeded: CAAQS | 0.030 ppm | - | - | - | - | - |
| NAAQS | 0.053 ppm | - | - | - | - | - |

Source: Bay Area Air Quality Management District, 2020, Web: https://www.baaqmd.gov/about-air-quality/air-quality-summaries. California Air Resource Board, 2020, Web: https://arb.ca.gov/adam/select8/sc8start.php

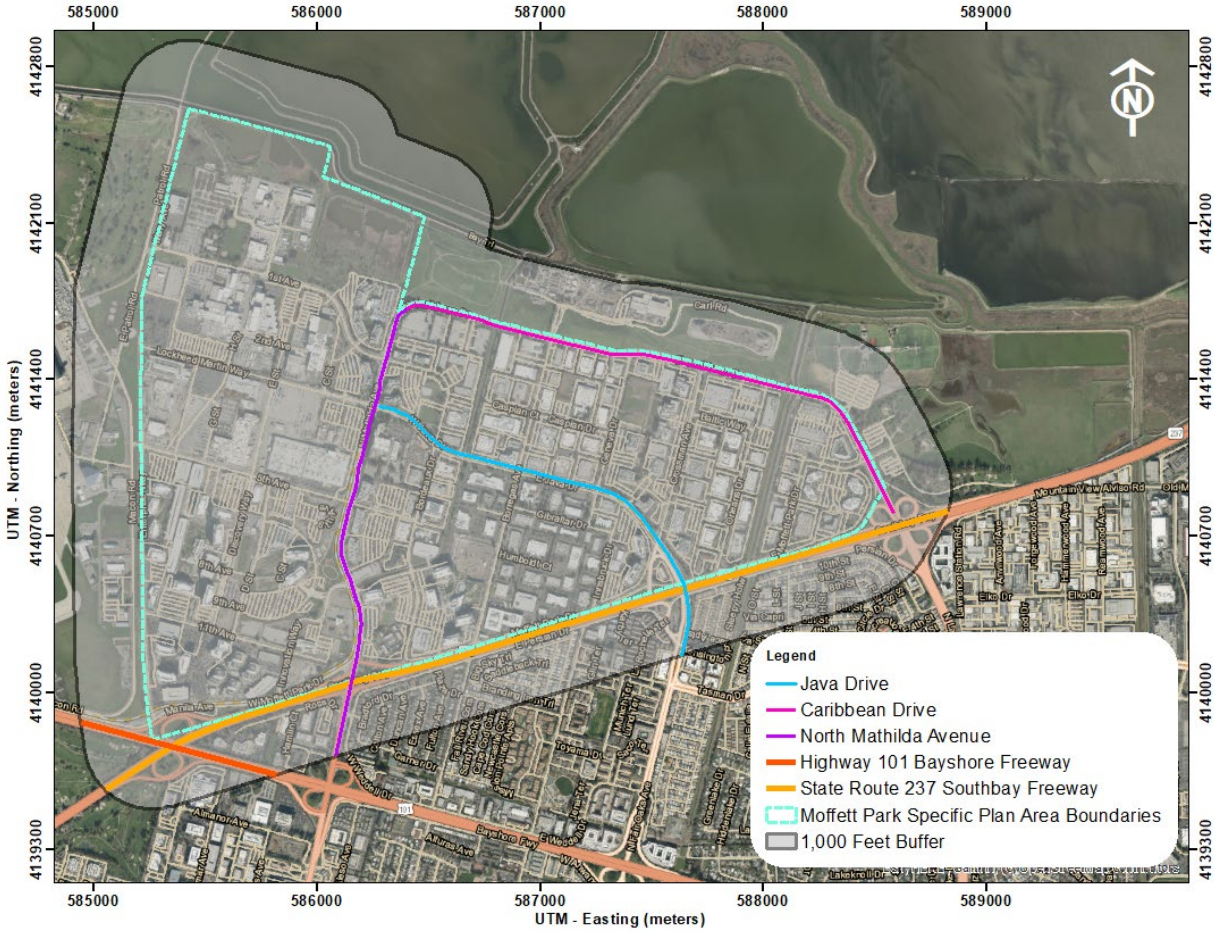
## Sensitive Receptors

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 project site is surrounded by mostly office and light industrial uses that are not considered locations containing sensitive receptors. Receptors for this assessment included locations where sensitive populations would be present for extended periods of time (i.e., chronic exposures). The project would include new residential dwellings that are considered sensitive receptors. Figure 3 shows the plan area and 1,000-foot buffer. Sensitive receptors are the residences south of State Route 237.

**Figure 3. MPSP Project Site and 1,000-foot Area**



## Regulatory Framework

Pursuant to the Federal Clean Air Act (FCAA) of 1970, the EPA established the NAAQS. The NAAQS were established for major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

Both the EPA and the CARB have established ambient air quality standards for common pollutants: CO, $O_3$, $NO_2$, $SO_2$, Pb, and PM. In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect the health and welfare of the public with a reasonable margin of safety. These ambient air quality standards are levels of contaminants which represent safe levels that avoid specific adverse health effects associated with each criteria pollutant.

### Federal Air Quality Regulations

At the federal level, the EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the FCAA, which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required EPA to establish primary and secondary NAAQS and required each state to prepare an air quality control plan referred to as a State Implement Plan (SIP). Federal standards include both primary and secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.[5] The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformity with the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area which imposes additional control measures. Failure to submit an approvable SIP or to implement the Plan within the mandated timeframe may result in the application of sanctions on transportation funding and stationary air pollution sources in the air basin.

The 1970 FCAA authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The FCAA Amendments of 1990 changed deadlines for attaining NAAQS as well as the remedial actions required of areas of the nation that exceed the standards. Under the FCAA, state and local agencies in areas that exceed the NAAQS are required to develop SIPs to show how they will achieve the NAAQS by specific dates. The FCAA requires

[5] See: U.S. Environmental Protection Agency, Web: https://www.epa.gov/criteria-air-pollutants/naaqs-table, Accessed 13 August 2020

that projects receiving federal funds demonstrate conformity to the approved SIP and local air quality attainment Plan for the region. Conformity with the SIP requirements would satisfy the FCAA requirements.

**State Air Quality Regulations**

The CARB is the agency responsible for the coordination and oversight of state and local air pollution control programs in California and for implementing the CCAA, adopted in 1988. The CCAA requires that all air districts in the state achieve and maintain the CAAQS by the earliest practical date. The CCAA specifies that districts should focus on reducing the emissions from transportation and air-wide emission sources and provides districts with the authority to regulate indirect sources.

CARB is also responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. CARB is primarily responsible for statewide pollution sources and produces a major part of the SIP. Local air districts provide additional strategies for sources under their jurisdiction. CARB combines this data and submits the completed SIP to the EPA.

Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

California Clean Air Act

In 1988, the CCAA required that all air districts in the state endeavor to achieve and maintain CAAQS for CO, $O_3$, $SO_2$, and $NO_2$ by the earliest practical date. The CCAA provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. Generally, the state standards for these pollutants are more stringent than the national standards.

California Air Resources Board Handbook

In 1998, CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.[6] CARB subsequently developed an Air Quality and Land

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

Use Handbook[7] (Handbook) in 2005 that is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. The 2005 CARB Handbook recommends that planning agencies consider proximity to air pollution sources when considering new locations for "sensitive" land uses, such as residences, medical facilities, daycare centers, schools, and playgrounds.

Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners, and large gasoline service stations. Key recommendations in the Handbook relative to the Plan Area include taking steps to consider or avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles/day.
- Within 300 feet of gasoline fueling stations (note that new fueling stations utilize enhanced vapor recovery systems that substantially reduce emissions).
- Within 300 feet of dry-cleaning operations (note that dry cleaning with TACs is being phased out and will be prohibited in 2023).

Truck and Bus Regulation

CARB is actively enforcing heavy-duty diesel vehicle regulations that require fleets to replace or retrofit heavy-duty diesel vehicles, with full implementation of the program scheduled for January 1, 2023. Compliance with the program is generally considered vehicles equipped with a 2010 or newer engine model year. As of January 1, 2020, the DMV cannot register any vehicle that does not meet the requirements of the Truck and Bus Regulation.

Other CARB diesel programs affecting heavy-duty diesel vehicles include:

- Idling limits of no more than 5 minutes with special exceptions.
- Emission Control Labels must be affixed to engines of all commercial heavy-duty diesel vehicles, and must be legible as proof the engine, at minimum, meets U.S. federal emissions standards for the engine model year.
- The Periodic Smoke Inspection Program requires owners of California-based fleets of two or more diesel vehicles to perform annual smoke opacity tests and to keep records for at least two years for each vehicle.
- The Heavy-Duty Vehicle Inspection Program uses random roadside inspections to verify that diesel engines do not smoke excessively and are tamper-free.

[7] California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* April.

Off-Road Vehicle and Equipment Regulations

CARB has also adopted and implemented regulations to reduce DPM and nitrogen oxides (NOx) 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 NOx 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, is expected to substantially reduce emissions of DPM and NOx.

Fleet owners must report the vehicle and engine information for all vehicles within their fleets operating in California. Fleet owners must also report owner information. Fleet owners should report using DOORS, which is CARB's online reporting tool. CARB issues a unique Equipment Identification Number (EIN) that is assigned to each vehicle. The fleet owner must label their vehicles with the EIN.

Other CARB diesel programs affecting off-road vehicles and equipment include:

- Idling limits of no more than 5 minutes with special exceptions.
- Portable engines 50 hp or greater may require a permit or registration to legally operate. BAAQMD is responsible for taking enforcement action against individuals who own or operate portable equipment without a registration or permit.

Advanced Clean Trucks (ACT)

California's Advanced Clean Trucks (ACT) increases the percentage of medium and heavy-duty trucks sold as zero emission vehicles (ZEVs) beginning in 2024. By 2035, 40 to 75 percent of new trucks sold, depending on size, would have to meet ZEV requirements. In addition, large employers including retailers, manufacturers, brokers and others are required to report information about shipments and shuttle services with 50 or more trucks, are required to report about their existing fleet operations.

Advanced Clean Cars

CARB regulates emissions from on-road vehicles in a number of ways that including the setting emission standards, testing vehicles through the Smog Check Program (administered by the Bureau of Automotive Repair) and implementation of fleet retrofit or replacement schedules. The Advanced Clean Cars Program, 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.

**Bay Area Air Quality Management District**

The BAAQMD seeks to attain and maintain air quality conditions in the San Francisco Bay Area Air Basin (SFBAAB) through a comprehensive program of planning, regulation, enforcement, technical innovation, and education. The clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAAQMD also inspects stationary sources and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by law.

Clean Air Plan

The BAAQMD is responsible for developing a Clean Air Plan which guides the region's air quality planning efforts to attain the CAAQS. The BAAQMD's 2017 Clean Air Plan is the latest Clean Air Plan which contains district-wide control measures to reduce ozone precursor emissions (i.e., ROG and $NO_X$), particulate matter and greenhouse gas emissions. The Bay Area 2017 Clean Air Plan, which was adopted on April 19, 2017 by the BAAQMD's board of directors:

- Updates the Bay Area 2010 Clean Air Plan in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Provides a control strategy to reduce ozone, particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan;
- Reviews progress in improving air quality in recent years; and
- Continues and updates emission control measures.

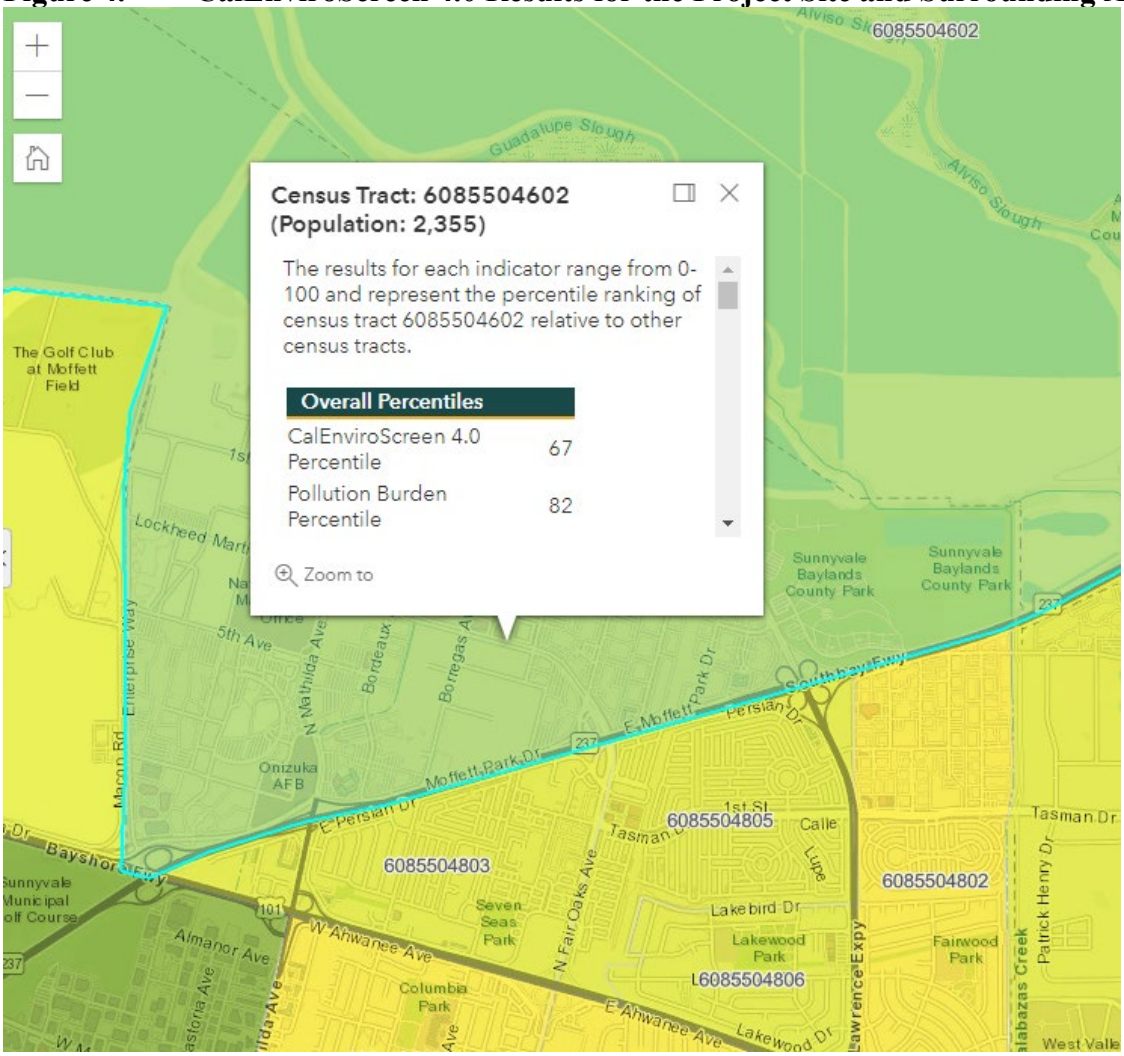
BAAQMD CARE Program

The 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.[8] 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

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

phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD has identified six communities as impacted: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco. Recently, BAAQMD Regulation 2-1-24 identifies an *overburdened* community as an area located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0, as having an overall CalEnviroScreen score at or above the 70$^{th}$ percentile, or (ii) within 1,000 feet of any such census tract. According to CalEnvirscreen, the census tracts containing the project site have an overall score of 67 (see Figure 4). Areas with sensitive receptors to the south have an overall score of 44. The project site is not within an identified overburdened community area .

**Figure 4. CalEnviroScreen 4.0 Results for the Project Site and Surrounding Areas**



Planning Healthy Places

BAAQMD developed a guidebook that provides air quality and public health information intended to assist local governments in addressing potential air quality issues related to exposure of sensitive receptors to exposure of emissions from local sources of air pollutants. The guidance provides tools and recommends best practices that can be implemented to reduce exposures. The information is provided as recommendations to develop policies and implementing measures in city or county General Plans, neighborhood or specific plans, land use development ordinances, or into projects.

BAAQMD California Environmental Quality Act Air Quality Guidelines

The BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines[9] 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. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of their CEQA Guidelines. In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modify procedures for assessing impacts related to risk and hazard impacts. A recent update to the Guidelines was published in May 2017.

Projects that have TAC emissions that could adversely affect sensitive receptors prepare health risk assessments to quantify the potential and, if appropriate, identify mitigation measures to reduce impacts. This report includes a health risk assessment that evaluates impacts form temporary project construction, long-term use of stationary equipment, and long-term traffic activity generated by the project.

BAAQMD Rules and Regulations

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

- Regulation 1 – General Provisions
    - Rule 1-30: Public Nuisance
- Regulation 2 – Permits

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

Rule 2-1: General Requirements
Rule 2-2: New Source Review
Rule 2-5: New Source Review of Toxic Air Contaminants

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

*Permits*

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

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

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

*New Source Review*

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

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

*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 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.

*Offsets*

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

Rule 2-5 applies to new and modified sources of TAC emissions. BAAQMD evaluates the TAC emissions in order to evaluate potential public exposure and health risk, to mitigate potentially significant health risks resulting from these exposures, and to provide net health risk benefits by improving the level of control when existing sources are modified or replaced. Toxics BACT (or TBACT) is applied to any new or modified source of TACs where the source risk is a cancer risk greater than 1.0 in one million and/or a chronic hazard index greater than 0.20. Permits are not issued for any new or modified source that has risks or net project risks that exceed a cancer risk of 10.0 in one million or a chronic or acute hazard index of 1.0.

*Prohibitory Rules*

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

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

Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds when the District receives odor complaints. The regulation prohibits discharge of odorous substance that causes the ambient air at or beyond the property line to be odorous and to remain odorous after dilution with four parts of odor-free air and places limits on certain odorous compounds or family of compounds.

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.

**Air Pollutants of Concern in the Bay Area**

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

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less ($PM_{10}$) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of $PM_{10}$ and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels 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 in the Bay Area**

Toxic air contaminants 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 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.

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. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[10] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the state level, the CARB (a part of the California EPA) oversees regional air district activities and regulates air quality at the state level. The BAAQMD has published CEQA Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[11] Projects that have TAC emissions that could adversely affect sensitive receptors prepare health risk assessments to quantify the potential and, if appropriate, identify mitigation measures to reduce impacts. This report includes a health risk assessment that evaluates impacts form temporary project construction, long-term use of stationary equipment, and long-term traffic activity generated by the project. The detailed health risk modeling methodology used in this assessment is contained in *Attachment 1*.

**City of Sunnyvale**

City of Sunnyvale General Plan

The following air quality goals and policies contained in the City's General Plan[12] are applicable to the proposed project:

> Goal EM-11 Improved Air Quality: Improve Sunnyvale's Air Quality and Reduce the Exposure of its Citizens to Air Pollutants.
>
> - *Policy EM-11.1*: The City should actively participate in regional air quality planning. Future development within Sunnyvale impacts regional air quality. Indirect impacts are related to vehicle trips attracted to or generated by residential, commercial or employment-generating land uses. There are several methods in which land use

[10] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.
[11] Bay Area Air Quality Management District. 2017. *BAAQMD CEQA Air Quality Guidelines*. May.
[12] City of Sunnyvale, 2011. *Sunnyvale General Plan*.

regulations can be used to both reduce emissions and alleviate the impact on residences. By locating employment and retail services areas closer to residential areas, vehicle use can be reduced.

- *Policy EM-11.2*: Utilize land use strategies to reduce air quality impact, including opportunities for citizens to live and work in close proximity.

- *Policy EM-11.3*: Require all new development to utilize site planning to protect citizens from unnecessary exposure to air pollutants.

- *Policy EM-11.4*: Apply the indirect source rule to new development with significant air quality impacts. Indirect source review would cover commercial and residential projects as well as other land uses that produce or attract motor vehicle traffic.

City of Sunnyvale Land Use and Transportation Element

In 2017, Sunnyvale adopted an update to the City's Land Use and Transportation Element (LUTE) of its General Plan. The LUTE combined the long-range planning requirements of both land use and circulation elements into one chapter of the General Plan. An environmental impact report for the LUTE evaluated the environmental impacts associated with development of the City based on the land use and transportation elements established in the LUTE. Air quality and GHG emissions associated with construction and operation of the LUTE were addressed in that EIR.

Much of the air quality impacts associated with this project were addressed under the *LUTE Draft EIR*[13]. Projects constructed in Sunnyvale are subject to the mitigation measures contained in the LUTE DEIR. Impacts and mitigation measures pertaining to the proposed DEIR were identified. This included project-specific impacts. The focus of this air quality study is to address impacts associated with criteria air pollutants and TAC exposure associated with project construction and exposure of project occupants to TAC sources near the project site (i.e., within 1,000 feet). This air quality report incorporates the mitigation measures (MM) described in the LUTE.

The LUTE DEIR identified significant and unavoidable impacts with respect to temporary construction period emissions (Impact 3.5.3). Potentially significant impacts were also identified in regard to exposing existing and new sensitive receptors to unhealthy levels of TACs and $PM_{2.5}$ (Impact 3.5.5 & 3.5.6).

*MM 3.5.3 Violate an Air Quality Standard of Contribute Substantially to an Air Quality Violation During Short-Term Construction Activities*

*NEW POLICY:* Prior to the issuance of grading or building permits, the City of Sunnyvale shall ensure that the BAAQMD basic construction mitigation measures from Table 8-1 of

[13] City of Sunnyvale. 2016. *Land Use and Transportation Element Draft Environmental Impact Report* (SCH No.2012032003). August.

the BAAQMD 2011 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents.[14]

*NEW POLICY:* In the cases where construction projects are projected to exceed the BAAQMD's air pollutant significance thresholds for $NO_X$, $PM_{10}$, and/or $PM_{2.5}$, all off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, tractors) shall be at least CARB Tier 3 Certified or better.

The DEIR identified potentially significant impacts associated with exposure of sensitive receptors to substantial pollutant concentrations because project may expose new sensitive receptors to significant health risks associated with TAC exposure. To address this issue, MM 3.5.6 requires future projects located within 1,000 feet of sensitive receptors to perform a construction health risk assessment:

*MM 3.5.5 Exposure of Sensitive Receptors to Substantial Toxic Air Containments Concentrations During Construction*

*NEW POLICY:* In the case when a subsequent project's construction span is greater than 5 acres and/or is scheduled to last more than two years, the subsequent project applicant shall be required to prepare a site-specific construction pollutant mitigation plan in consultation with Bay Area Air Quality Management District (BAAQMD) staff prior to the issuance of grading permits. A project-specific construction-related dispersion modeling acceptable to the BAAQMD shall be used to identify potential toxic air contaminant impacts, including diesel particulate matter. If BAAQMD risk thresholds (i.e., probability of contracting cancer is greater than 10 in one million) would be exceeded, mitigation measures shall be identified in the construction pollutant mitigation plan to address potential impacts and shall be based on site-specific information such as the distance to the nearest sensitive receptors, project site plan details, and construction schedule. The City shall ensure construction contracts include all identified measures and that the measures reduce the health risk below BAAQMD risk thresholds. Construction pollutant mitigation plan measures shall include but not be limited to:

1. Limiting the amount of acreage to be graded in a single day.
2. Restricting intensive equipment usage and intensive ground disturbance to hours outside of normal school hours.
3. Notifying affected sensitive receptors one week prior to commencing onsite construction so that any necessary precautions (such as rescheduling or relocation of outdoor activities) can be implemented. The written notification shall include the name and telephone number of the individual empowered to manage construction of the project. In the event that complaints are received, the individual empowered to manage construction shall respond to the complaint within 24 hours. The response shall include identification of measures being taken by the project

[14] Note that the BAAQMD Basic Construction Mitigation Measures Recommended for ALL Proposed Projects is listed as Table 8-2 in the BAAQMD 2017 CEQA Air Quality Guidelines.

construction contractor to reduce construction-related air pollutants. Such a measure may include the relocation of equipment.

*MM 3.5.6 Exposure of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Operation*

*NEW POLICY:* The following measures shall be utilized in site planning and building designs to reduce TAC and $PM_{2.5}$ exposure where new receptors are located within 1,000 feet of emissions sources:

- Future development that includes sensitive receptors (such as residences, schools, hospitals, daycare centers, or retirement homes) located within 1,000 feet of Caltrain, Central Expressway, El Camino Real, Lawrence Expressway, Mathilda Avenue, Sunnyvale-Saratoga Road, US 101, State Route 237, State Route 85, and/or stationary sources shall require site-specific analysis to determine the level of health risk. This analysis shall be conducted following procedures outlined by the BAAQMD. If the site-specific analysis reveals significant exposures from all sources (i.e., health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a hazard Index greater than 10, or annual $PM_{2.5}$ exposures greater than 0.8 $\mu g/m^3$) measures shall be employed to reduce the risk to below the threshold (e.g., electrostatic filtering systems or equivalent systems and location of vents away from TAC sources). If this is not possible, the sensitive receptors shall be relocated.

- Future nonresidential developments identified as a permitted stationary TAC source or projected to generate more than 100 heavy-duty truck trips daily will be evaluated through the CEQA process or BAAQMD permit process to ensure they do not cause a significant health risk in terms of excess cancer risk greater than 10 in one million, acute or chronic hazards with a hazard Index greater than 1.0, or annual $PM_{2.5}$ exposures greater than 0.3 $\mu g/m^3$ through source control measures.

- For significant cancer risk exposure, as defined by the BAAQMD, indoor air filtration systems shall be installed to effectively reduce particulate levels to avoid adverse public health impacts. Projects shall submit performance specifications and design details to demonstrate that lifetime residential exposures would not result in adverse public health impacts (less than 10 in one million chances).

Note that the project would not include new sensitive receptors and sensitive receptors are not located within 1,000 feet of the project site; therefore, construction and operation of this project would not affect sensitive receptors.

## Significance Thresholds

### Significance Criteria

Per Appendix G of the CEQA Guidelines and BAAQMD recommendations, air quality and GHG impacts are considered significant if implementation of the General Plan would:

1) Conflict with or obstruct implementation of an applicable air quality plan.
2) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.
3) Expose sensitive receptors to substantial pollutant concentrations.
4) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
5) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
6) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

BAAQMD provided revised CEQA Guidelines in May 2017. The thresholds identified in Table 4 and Table 5 represent the most recent guidance provided by BAAQMD. Though not necessarily a CEQA issue, the effect of existing TAC sources on future sensitive receptors (e.g., residences) is analyzed to comply with BAAQMD's Clean Air Plan key goal of reducing population TAC exposure and protecting public health in the Bay Area.

**Table 4. BAAQMD Recommended Plan-Level Air Quality Significance Thresholds**

| Pollutant/Contaminant | Construction | Operational |
|---|---|---|
| **Criteria Air Pollutants and Precursors** | None | 1. Consistency with Current Air Quality Plan control measures<br>2. Projected VMT or vehicle trip increase is less than or equal to projected population increase |
| **Risks and Hazards** | None | 1. Overlay zones around existing and planned sources of TACs (including adopted Risk Reduction Plan areas)<br>2. Overlay zones of at least 500 feet from all freeways and high-volume roadways<br><br>For this analysis – overlay zones are based on potential for sources to result in the following impacts:<br>1. Excess cancer risk >10.0 chances per million<br>2. Annual PM2.5 Concentration > 0.3 µg/$m^3$<br>3. Hazard Index >1.0 |
| **Odors** | None | Identify the location, and include policies to reduce the impacts, of existing or planned sources of odors |

**Table 5. BAAQMD Recommended Project-Level 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 1,000-foot zone of influence)** | |
| Excess Cancer Risk | 10 per one million | 100 per one million | |
| Hazard Index | 1.0 | 10.0 | |
| Incremental annual $PM_{2.5}$ | 0.3 $\mu g/m^3$ | 0.8 $\mu g/m^3$ | |
| **Odors** | **Complaints** | | |
| Detection | 5 confirmed complaints per year averaged over three years | | |

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

Source: Bay Area Air Quality Management District, 2017

# AIR QUALITY IMPACTS AND PROPOSED MPSP POLICIES

Air pollutant emissions and associated health risks were predicted using emissions and dispersion models along with emission rate and cancer risk computations. For construction and operational land use emissions, the latest version of the California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to compute annual emissions, combined with motor vehicle emission factors produced by CARB's latest version of the EMFAC model, EMFAC2021 Version 1.0.1. The model output from CalEEMod along with construction inputs are included as *Attachment 2* and EMFAC2021 vehicle emissions modeling outputs are included in *Attachment 3*. Dispersion modeling was conducted using the U.S. EPA's AERMOD dispersion model.

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

BAAQMD is the regional agency responsible for overseeing compliance with State and federal laws, regulations, and programs within the SFBAAB. BAAQMD, with assistance from ABAG and Metropolitan Transportation Commission (MTC), has prepared 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*.[15] The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality 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.

Consistency of the General Plan with Clean Air Plan control measures is demonstrated by assessing whether the proposed Plan implements the applicable Clean Air Plan control measures. The 2017 Clean Air Plan includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. The control measures are divided into five categories that include:

- 40 measures to reduce stationary and area sources;
- 8 mobile source measures;
- 23 transportation control measures (including land use strategies);
- 4 building sector measures;
- 2 energy sector measures;
- 4 agriculture sector measures;
- 3 natural and working lands measures;
- 4 waste sector measures;
- 2 water sector measures; and
- 3 super-GHG pollutants measures.

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

In developing the control strategy, BAAQMD identified the full range of tools and resources available, both regulatory and non-regulatory, to develop each measure. Implementation of each control measure will rely on some combination of the following:

- Adoption and enforcement of rules to reduce emissions from stationary sources, area sources, and indirect sources.
- Revisions to the BAAQMD's permitting requirements for stationary sources.
- Enforcement of CARB rules to reduce emissions from heavy-duty diesel engines.
- Allocation of grants and other funding by the Air District and/or partner agencies.
- Promotion of best policies and practices that can be implemented by local agencies through guidance documents, model ordinances, and other measures.
- Partnerships with local governments, other public agencies, the business community, non-profits, and other groups.
- Public outreach and education.
- Enhanced air quality monitoring.
- Development of land use guidance and CEQA guidelines, and Air District review and comment on Bay Area projects pursuant to CEQA.
- Leadership and advocacy.

This approach relies upon lead agencies to assist in implementing some of the control measures. A key tool for local agency implementation is the development of land use policies and implementing measures that address new development or redevelopment in local communities. To address this impact, the General Plan's effect on implementing the Clean Air Plan is evaluated based on consistency with Clean Air Planning projections (i.e., rate of increase in population versus vehicle travel).

Consistency with Clean Air Plan Projections

The BAAQMD, with assistance from ABAG and MTC, has prepared and implemented the Clean Air Plan to meet the applicable laws, regulations, and programs. 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 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 GHG.

Table 6 provides population and traffic conditions for existing and future build out conditions with the MPSP. Compared to existing conditions, the proposed MPSP would increase traffic by 162,312 daily trips that result in an additional 2,194,747 daily vehicle miles traveled (VMT). Land use and zoning changes to accommodate the MPSP would result in an increase of 60,471 new jobs (272 percent increase) and the addition of 42,000 new residents to the area. BAAQMD CEQA Guidelines recommend considering the increase in the rate of population compared to the rate of traffic (e.g., VMT or trips) for evaluating the significance of air quality impacts associated with

the Specific Plan. In this case, the MPSP area currently does not include residents; therefore, that evaluation cannot be made. The change in VMT per service population is evaluated. Compared to existing conditions, VMT per service population is anticipated to decrease with MPSP by 29 percent from 35 miles to 25 miles per capita. When compared to allowed development under the General Plan and currently adopted MPSP, VMT per capita would decrease by about 19 percent with the proposed MPSP. While the proposed MPSP adds traffic, the rate of increase in traffic, measured as the rate of trips or VMT, would result in a less than significant increase in service population.

**Table 6. MPSP Traffic and Population Projections**

| Scenario | Population | Jobs | Daily Trips | Daily VMT | VMT per Service Population |
|---|---|---|---|---|---|
| Existing Development | 0 | 35,212 | 98,217 | 1,237,695 | 35.15 |
| Allowed Development under the Adopted MPSP (No Project) | 0 | 51,584 | 127,792 | 1,592,494 | 30.87 |
| *Change compared to existing* | -- | *+16,372* | *+29,575* | *+354,799* | *-12%* |
| Allowed Development under the Proposed MPSP (Project) | 42,000 | 95,683 | 260,529 | 3,432,442 | 24.93 |
| *Change compared to existing* | *+42,000* | *+60,471* | *+162,312* | *+2,194,747* | -29% |

Source: Project Description and Hexagon Transportation Consultants, 2022.

Consistency with Clean Air Plan Control Measures

The BAAQMD CEQA Air Quality Guidelines set forth criteria for determining consistency with the Clean Air Plan control measures. In general, a plan is considered consistent if a) the plan supports the primary goals of the Clean Air Plan; b) includes control measures; and c) does not interfere with implementation of the Clean Air Plan measures. Growth under the Project is a considered a sustainable development since it is an infill development that would be transit-oriented and located near a mix of uses that include employment and services. The MPSP would add housing to the area that is predominantly commercial and industrial uses. As a result, mixing the uses in the area would reduce the rate of per capita VMT, as reflected in the projections presented in Table 6. Sunnyvale relies on measures in the adopted Climate Action Plan (CAP) to guide new development to meet GHG reduction goals. These goals are also in line with Clean Air Plan control measures. As new development occurs in the MPSP under the proposed update and the General Plan would generally be consistent with Clean Air Plan measures intended to reduce automobile and energy use, which are discussed below. Table 7 lists those Clean Air Plan policies relevant to the Project and indicates consistency with the policies.

**Table 7. BAAQMD Control Strategy Measures from the Clean Air Plan**

| Applicable BAAQMD Control Strategy Measures | Consistency |
|---|---|
| **Transportation Control Measures** | |
| TR1: Clean Air Teleworking Initiative | Consistent<br>Supported by General Plan Environmental Management policy EM-11.8 and CAP CTO-4.1 |

| Applicable BAAQMD Control Strategy Measures | Consistency |
|---|---|
| TR2: Trip Reduction Programs | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-1.7, LT-3.4a, LT-3.5a, and LT-3.6 along with Environmental Management policies EM-11.5 and EM-11.6. Also consistent with CAP Measure CTO-4 and action item CTO-3.5 |
| TR 5: Transit Efficiency and Use | Consistent<br>While this is mostly a regionally implemented control measure, General Plan Land Use and Transportation policies LT-3.1, LT-3.2, LT-3.5a, LT-3.11, and LT-3.28 as well as CAP Measure CTO-3 |
| TR7: Safe Routes to Schools and Safe Routes to Transit | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-3.18, LT-3.23a, and LT-14.15b as well as CAP Measure CTO-5 |
| TR8: Ridesharing, Last-Mile Connection | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-3.23a, LT-3.30b, LT-3.30c as well as CAP Measure OVT-2 |
| TR9: Bicycle and Pedestrian Access and Facilities | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-3.1a, LT-3.3a, LT-3.6, LT-3.15a, LT-3.18, LT-3.22e, LT-3.23b, and LT-8.5 in addition to CAP Measure CTO-1 and action item CTO-1.4 |
| TR10: Land Use Strategies | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-1.6a, LT-1.6b, LT-1.10d, LT-2.2, LT-3.1, and LT-3.2 |
| TR13: Parking Policies | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-3.1b, LT-3.7, LT-3.9, LT-3.10, LT-3.13, LT-3.16 |
| **Building Control Measures** | |
| BL1: Green Buildings | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-2.1a, LT-2.1b, and LT-2.1c as well as CAP action items EC-2.1, EC-2.2, and EC-2.3 |

| Applicable BAAQMD Control Strategy Measures | Consistency |
|---|---|
| BL2: Decarbonize Buildings | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-2.1a, LT-2.1b, LT-2.1c, and LT-2.7c along with CAP action items EC-2.1, EC-2.2, EC-2.3, EC-3.1, EC-4.3, and EC-6.2 |
| BL4: Urban Heat Island Mitigation | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-2.3a, LT-2.3c, and LT-2.3d along with CAP Measure EC-6 |
| **Natural and Working Lands Control Measures** | |
| NW2: Urban Tree Planting | Consistent<br>Supported by General Plan Land Use and Transportation policies LT-2.3a, LT-2.3b, LT-2.3c, and LT-2.3d as well as CAP Measure OS-3 |
| **Waste Management Control Measures** | |
| WA4: Recycling and Waste Reduction | Consistent<br>Supported by General Plan Land Use and Transportation policy LT-11.5 and Environmental Management policies EM-14.1, EM-14.2, EM-14.3, and EM-14.4. Also consistent with CAP action items LW-1 and LW-2 |
| **Water Control Measures** | |
| WR2: Support Water Conservation | Consistent<br>Supported by General Plan Land Use and Transportation policy LT-1.9a and Environmental Management policies EM-1.1, EM-1.2, EM-1.2b as well as CAP Measures WC-1 and WC-2 |

As indicated in Table 7, the City's General Plan and Climate Action Plan include implementing policies and measures that are generally consistent with the applicable Clean Air Plan control measures. As a result, this impact is less-than-significant.

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

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for $PM_{10}$ under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and $PM_{10}$, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and $NO_X$), $PM_{10}$, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

**Construction Emissions**

Build-out of the proposed MPSP would result in temporary emissions from construction activities associated with subsequent development, including demolition, site grading, asphalt paving, building construction, and architectural coating. Emissions commonly associated with construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. During construction, fugitive dust, the dominant source of $PM_{10}$ and $PM_{2.5}$ emissions, is generated when wheels or blades disturb surface materials. Uncontrolled dust from construction activities can become a nuisance and potential health hazard to those living and working nearby. The potential health risk impact from construction is addressed under Impact 3.

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. These practices are applied through the following General Plan policies:

- *Policy EM-11.3*: Require all new development to utilize site planning to protect citizens from unnecessary exposure to air pollutants.

- *Policy EM-11.4*: Apply the indirect source rule to new development with significant air quality impacts. Indirect source review would cover commercial and residential projects as well as other land uses that produce or attract motor vehicle traffic.

The LUTE EIR identified mitigation measures to reduce air pollutant emissions from both ground disturbances and construction related exhaust emissions.

- *MM 3.5.3:* Prior to the issuance of grading or building permits, the City of Sunnyvale shall ensure that the BAAQMD basic construction mitigation measures from Table 8-1 of the BAAQMD 2011 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents.[16]

- *MM 3.5.3:* In the cases where construction projects are projected to exceed the BAAQMD's air pollutant significance thresholds for $NO_X$, $PM_{10}$, and/or $PM_{2.5}$ , all off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, tractors) shall be at least CARB Tier 3 Certified or better.

Build-out of the MPSP would consist of numerous construction projects that would occur at various times over the next 10 to 20 years. Details of this construction are not available to make

[16] Note that the BAAQMD Basic Construction Mitigation Measures Recommended for ALL Proposed Projects is listed as Table 8-2 in the BAAQMD 2017 CEQA Air Quality Guidelines.

valid estimates of construction impacts. For this reason, the thresholds for construction emissions contained in the BAAQMD CEQA Air Quality Guidelines only apply to proposed projects and not specific plans.

Construction exhaust emissions include those from equipment (i.e., off-road) and traffic (on-road vehicles and trucks). Off-road construction equipment is often diesel-powered and can be a substantial source of $NO_X$ emissions, in addition to $PM_{10}$ and $PM_{2.5}$ emissions. Architectural coatings and application of asphalt pavement are dominant sources of ROG emissions. The BAAQMD CEQA Air Quality Guidelines do not identify quantified plan level thresholds for construction emissions. There are project-level thresholds of 54 pounds per average day for NOx, ROG and $PM_{2.5}$ exhaust and 82 pounds per average day for $PM_{10}$ exhaust. Unless controlled, the combination of temporary dust from activities and diesel exhaust from construction equipment and related traffic may pose a nuisance impact to nearby receptors or exceed acceptable levels for projects. In addition, $NO_X$ emissions during grading and soil import/export for large projects may exceed the BAAQMD $NO_X$ emission thresholds for projects. Construction emissions associated with projects constructed under the MPSP are considered significant.

Future Construction Projects would be required to estimate Construction Period Emissions. Projects shall estimate construction period emissions using modeling methodologies recommended by BAAQMD and approved by the City.

Average daily emissions predicted for construction projects shall be estimated and compared against Project level thresholds identified in Table 5 (above). Projects that have emissions exceeding the thresholds shall implement appropriate MPSP project requirements listed below to achieve emissions that are below the thresholds.

**Requirement 10.3.3-1:** **Implement appropriate measures recommended by BAAQMD to reduce construction period emissions.** Measures to reduce DPM and $PM_{10}$ from construction are recommended to ensure that short-term health impacts to nearby sensitive receptors are avoided. BAAQMD recommends basic construction mitigation measures for all projects and additional enhanced measures for projects with construction emissions above significance thresholds.

<u>Basic Construction Mitigation Measures</u>

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

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

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

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

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

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

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

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

Enhanced Construction Mitigation Measures

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

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

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

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

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

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

7. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action

within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

8. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph and visible dust extends beyond site boundaries.

9. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction adjacent to sensitive receptors. Wind breaks should have at maximum 50 percent air porosity.

10. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

11. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.

12. Avoid tracking of visible soil material on to public roadways by employing the following measures if necessary: (1) Site accesses to a distance of 100 feet from public paved roads shall be treated with a 6 to 12-inch compacted layer of wood chips, mulch, or gravel and (2) washing truck tires and construction equipment of prior to leaving the site.

13. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.

*Effectiveness of MPSP Requirement 10.3.3-1:*

These measures are consistent with recommendations in the BAAMQD CEQA Guidance for providing "best management practices" and enhanced measures to control construction emissions from project with Significant emissions.

**Requirement 10.3.3-2 Part 1: Use Construction equipment that has zero or low diesel particulate matter exhaust and NOx emissions.** Exhaust Emission (NOx and PM) Control Measures include:

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 NOx and 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 2 or 3 engines and include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control

devices that altogether achieve a 85-percent reduction in particulate matter exhaust in comparison to uncontrolled equipment; alternatively (or in combination).

b. Use of alternatively fueled equipment with lower NOx emissions that meet the NOx and PM reduction requirements above.

c. Special equipment that cannot meet the above requirements must be approved as exempt by the City after considering reasons for requesting an exemption.

2. Use electric equipment such as aerial lifts, air compressors, cement mortar mixers, concrete/industrial saws, cranes, and welders.

3. Diesel engines, whether for off-road equipment or on-road vehicles, shall not be left idling for more than 2 minutes, except as provided in exceptions to the applicable state regulations (e.g., traffic conditions, safe operating conditions). The construction sites shall have posted legible and visible signs in designated queuing areas and at the construction site to clearly notify operators of idling limit.

4. Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment.

5. The City shall encourage the use of zero emission construction equipment.

*Effectiveness of MPSP Requirement 10.3.3-2 Part 1:*

The effectiveness of Part 1 of the MPSP 10.3.3-2 requirement is estimated based on CalEEMod modeling. Because construction activity will occur over many years in the future, the effectiveness of the mitigation measure will be reduced but so will the overall emissions as newer model construction equipment with lower emission rates becomes more available. MPSP 10.3.3-2 Part 1 using Tier 4 final construction equipment would reduce ROG emissions by about 5 percent, NOx emissions by over 50 percent and $PM_{10}$ exhaust emissions by over 80 percent.

**Requirement 10.3.3-2 Part 2: Require use of low VOC coatings to reduce ROG emissions.**

The project shall use low volatile organic compound or VOC (i.e., ROG) coatings, that are below current BAAQMD requirements (i.e., Regulation 8, Rule 3: Architectural Coatings), for at least 80 percent of all residential and nonresidential interior paints and 80 percent of exterior paints. This includes all architectural coatings applied during both construction and reapplications throughout the project's operational lifetime. At least 80 percent of coatings applied must meet a "super-compliant" VOC standard of less than 10 grams of VOC per liter of paint. For reapplication of coatings during the project's operational lifetime, the Declaration of Covenants, Conditions, and Restrictions shall contain a stipulation for low VOC coatings to be used. Examples of "super-

compliant" coatings are contained in the South Coast Air Quality Management District's website.[17]

*Effectiveness of MPSP Requirement 10.3.3-2 Part 2*

The effectiveness of MPSP Requirement 10.3.3-2 Part 2 could reduce ROG coating emissions by 70 percent with MPSP Policy AQ-4 using 80 percent interior and exterior super-compliant VOC coatings.

*Significance After Implementation of MPS Requirements 10.3.3-1 and 10.3.2.2*

The impact would be considered less than significant with the implementation of the above mitigation. Given that specific construction details are not available at this time to properly model emissions, future projects in MPSP would be required to complete supplemental environmental review with a construction criteria pollutant emissions analysis to identify impacts and include measures to reduce emissions below the applicable BAAQMD construction thresholds.

**Operational Period Emissions**

Operational air emissions from the project would be generated primarily from autos driven by future residents, employees, customers, and vendors. 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 Land Uses

A complete operational model scenario for year 2040 was developed for CalEEMod. Inputs are summarized in Table 8.

[17] SCAQMD: http://www.aqmd.gov/home/regulations/compliance/architectural-coatings/super-compliant-coatings

**Table 8. Operational Land Uses Entered into CalEEMod**

| Project Land Uses | Size | Units |
|---|---|---|
| **Proposed Project Land Uses (year 2040)** | | |
| Strip Mall (Commercial) | 1,165.303 | 1,000 sf |
| Government Office Building (Institutional) | 326 | 1,000 sf |
| General Office (Office/Industrial/R&D) | 32,000 | 1,000 sf |
| Apartments High Ride | 10,000 | Dwellings |
| Apartments Mid Rise | 10,000 | Dwellings |
| **Existing Uses (Year 2020)** | | |
| Strip Mall (Commercial) | 305.304 | 1,000 sf |
| Government Office Building (Institutional) | 126.122 | 1,000 sf |
| General Office (Office/Industrial/R&D) | 18,102.203 | 1,000 sf |

Operational Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates. The project-specific daily trip generation rate provided by the traffic consultant was entered into the model.[18] The traffic report provided total trips per day for each scenario. These were assumed to be weekday trips. CalEEMod was modeled using the default ITE trip rates. The ratio of the predicted trips by the Traffic Study to the trip rates predicted by CalEEMod were used to adjust the CalEEMod trips rates. The total weekday trips in CalEEMod were then equal to those forecasted in the Traffic Study. Average trip lengths were derived by dividing the number of daily trips by the VMT forecasted in the Traffic Study. The trip generation rates and VMT reflect TDM requirements.

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 data for California's car and truck fleets and travel activity, based on available understanding of the vehicle fleet and rate of emissions understood at the time, and the effect of applicable regulations. The CalEEMod vehicle emission factors were updated with the emission rates from EMFAC2021. On road emission rates from Santa Clara County were used (See *Attachment 3*). More details about the updates in emissions calculation methodologies and data are available in the EMFAC2021 Technical Support Document.[19] Since Emfac2021 was developed, CARB has adopted new rules that amended the *Advanced Clean Cars* regulation that are not reflected in Emfac2021 modeling. This regulation will establish 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. 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.

[18] Hexagon Transportation Consultants, Inc., 2022.
[19] See CARB 2021: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

TDM Measures

The project will be required to implement a TDM Plan. Traffic inputs to CalEEMod include preliminary TDM requirements that involved a the overall MPSP parking concept, certain level of private shuttle services and a cap on peak-hour trips. The traffic modeling represented a 63 percent driving rate. Therefore, the complete implementation of the TDM was not fully accounted in the traffic projections.

Energy

Residential and office buildings were assumed to be powered by electricity using Silicon Valley Clean Energy as the default provider. Silicon Valley Clean Energy (SVCE) is the official electricity provider for Sunnyvale. SVCE purchases carbon-free electricity and partners with PG&E to deliver this electricity over existing power lines that they maintain. SVCE provides 100-percent carbon-free energy. However, customers have the option to opt out of the program and purchase electricity from PG&E, which is not carbon free, as described above. As of 2017, 98-percent residential and commercial customers in Sunnyvale receive their electricity from SVCE.[20] This analysis assumed the default rate assigned by CalEEMod for SVCE.

Wood-Burning Devices

CalEEMod default inputs assume new residential construction would include woodburning fireplaces and stoves. The project would not include wood-burning devices, as these devices are prohibited by BAAQMD Regulation 6, Rule 3.[21] Therefore, the number of woodstoves and woodburning fireplaces in CalEEMod were set to zero and assigned as natural gas.

Water Usage and Wastewater

CalEEMod assigns water usage rates for the various land uses based on statewide rates developed prior to the model in 2008. According to Sunnyvale's Climate Action Plan Biennial Report 2018, water usage per person has decreased by 35 percent from 2008 to 2016. The reduced water usage rates were used in the CalEEMod modeling. Water/wastewater use was changed to 100 percent aerobic conditions to represent wastewater treatment plant conditions. The project site would not send wastewater to septic tanks or facultative lagoons.

Solid Waste

From 2008 (CalEEMod baseline year) to 2016, the amount of waste diverted to landfills has increased from 60 to 64 percent. At the same time, the per person rate oof waste disposed has decreased from 4.1 pounds per person to 3.6 pounds. Altogether, this represents a 15 percent

[20] City of Sunnyvale, 2018. *Climate Action Plan 2018 Biennial Progress Report*. July. https://www.sunnyvale.ca.gov/home/showpublisheddocument/1316/637820055380570000

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

decrease in the rate of solid waste generation. Waste diversion is anticipated to increase by at least another 5 percent by diverting food scraps from the landfills.

Existing Uses

Emissions associated with existing uses were also modeled using CalEEMod. The existing year used in the modeling was 2020. Removal of existing uses would likely remove stationary sources that have emissions of criteria air pollutants and TACs; however, the emissions of these sources are not known and were not included in the modeling. Likewise, new stationary sources that could be included with the MPSP are not known either.

Summary of Computed Operational Emissions

Annual emissions for both existing and future MPSP plan area emissions were computed using CalEEMod. The net change in emissions were computed by subtracting emissions for existing conditions from future 2040 MPSP build out conditions. Average daily emissions were calculated assuming 365 days of operation.

As shown in Table 9, operational emissions would exceed the BAAQMD significance thresholds for ROG, $PM_{10}$ and $PM_{2.5}$ during operation of the project.

Emissions of NOx would decrease when compared to existing conditions. This is because the emission rates of NOx from traffic will decrease by 75 percent between 2020 and 2040, which is a greater rate than the rate that traffic would increase with MPSP.

Emissions of ROG would increase. The addition of residences to the MPSP area would greatly increase consumer product ROG emissions. Additional building square footage increases the use of architectural coatings used (e.g., painting) that also would increase ROG emissions. As a result, ROG emissions from the MPSP area increase by about 140 percent over existing emissions.

Emissions of $PM_{10}$ and $PM_{2.5}$ are mostly attributable to traffic. These emissions are from exhaust, dust generated from brake and tire wear and re entrainment of roadway dust. Tailpipe exhaust emission rates are anticipated to decrease substantially; however, dust emissions will not. Dust emissions are mostly proportional to VMT. These emissions are expected to increase by about 70 percent over existing emissions.

When comparing these emissions to BAAQMD thresholds for project-level analysis, this would be considered a significant impact. Implementation of Mitigation Measure AQ-4 would reduce this impact but not to less-than-significant levels. With mitigation measures, ROG, $PM_{10}$ and $PM_{2.5}$ emissions would remain significant.

**Table 9. Unmitigated Annual and Daily Operational Period Emissions**

| Scenario | ROG | NOx | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| ***Operational Emissions Per Year (Tons)*** | | | | |
| 2020 Existing Emissions (tons/year) | 153.06 | 99.80 | 57.27 | 16.17 |
| Existing Uses in 2040 (tons/year) | 117.99 | 37.87 | 56.34 | 15.35 |
| Unmitigated 2040 Annual Operational Emissions (*tons/year*) | 342.97 | 69.94 | 174.97 | 45.60 |
| Net Increase Unmitigated (2040 Project – existing) | **+189.9** | -29.86 | **+117.7** | **+29.43** |
| *Net increase (2040 Project – Existing uses in 2040)* | **+225.0** | **+32.1** | **+118.6** | **+30.3** |
| *BAAQMD Project-Level Thresholds (tons /year)* | *10 tons* | *10 tons* | *15 tons* | *10 tons* |
| ***Exceed Project-Level Threshold?*** Unmitigated | ***Yes*** | *No* | ***Yes*** | ***Yes*** |
| ***Annualized Daily Operational Emissions (pounds/day)[1]*** | | | | |
| 2020 Existing Emissions (lbs./day) | 838.7 | 546.8 | 313.8 | 88.6 |
| Existing Uses in 2040 (lbs./day) | 645.5 | 207.5 | 308.7 | 84.1 |
| Unmitigated 2040 Annual Operational Emissions (*lbs./day*) | 1,879.3 | 383.2 | 958.7 | 249.9 |
| Net Increase Unmitigated (2040 Project – existing) | **+1,040.1** | **-163.6** | **+644.9** | **+161.3** |
| *Net increase (2040 Project – Existing uses in 2040)* | **+1,232.8** | **+175.7** | **+650.0** | **+165.8** |
| *BAAQMD Project-Level Thresholds (lbs/day)* | *54* lbs. | *54* lbs. | *82* lbs. | *54* lbs. |
| ***Exceed Project-Level Threshold?*** Unmitigated | ***Yes*** | *No* | ***Yes*** | ***Yes*** |
| Notes: [1] Assumes 365-day operation. | | | | |

**Requirement 10.3.3-2 Part 2: Require use of low VOC coatings to reduce ROG emissions.**

See Requirement 10.3.3-2 Part 2 above.

*Effectiveness of MPSP Requirement 10.3.3-2 Part 2 on Operational Emissions.*

It is assumed that only exterior paint applications could not be fully controlled through this mitigation measure since residential and office occupants may independently choose their own architectural coatings. Interior coatings were assumed to have a 50-percent reduction. During operation, the implementation of MPSP Policy AQ-4 would reduce total ROG emissions by about 5 percent. Consumer product and mobile sources would continue to make up a majority of the ROG emissions.

To reduce the impact from area ROG emissions from architectural coatings, the project would be required to use super compliant VOC coatings pursuant to MPSP PolicyAQ-4 above. While it is feasible and enforceable for the City to require super compliant VOC coatings be applied initially, the City cannot ensure that future occupants or tenants will use super compliant VOC coatings during reapplication for the lifetime of the project. In addition, there is no feasible mitigation

measure to ensure consumer products (such as inks, coatings, and adhesives) used by future residents and tenants would be low in VOCs. Additionally, the project's mobile ROG emissions from office, commercial, and residential uses would be reduced to the maximum extent feasible through the TDM measures proposed by the project and required per the MPSP as described in the TDM Plan.[22] Some of the reduction in mobile ROG, $PM_{10}$, and $PM_{2.5}$ emissions from TDM is already reflected in the project emissions reported in Table 9. The precise reduction in trips associated with the TDM plan is not identified at this time. For these reasons, operational ROG, $PM_{10}$ and $PM_{2.5}$ emissions from the MPSP are conservatively assumed to be ***significant and unavoidable***.

**MPSP Requirement 10.3.3-3: All diesel standby emergency generators powered by diesel fuel shall meet U.S. EPA Tier 4 engine standards.**

Future development projects in Moffett Park that include installation of permanent stationary emergency generators shall ensure generators have engines that meet or exceed US EPA Tier 4 standards for particulate matter emissions.

*Effectiveness of MPSP Requirement 10.3.3-3 on Operational Emissions.*

There are no specific plans available that identify the use of diesel generators, therefore, the emissions cause by this equipment cannot be quantified. The primary pollutant emitted by generators is NOx. Implementation of this mitigation measure would ensure that NOx and particulate matter emissions are reduced by 85 percent compared to Tier 2 engines that could be allowed.

**Significant Emissions during Project Operation**

When evaluated using the thresholds contained in the 2017 version of the BAAQMD CEQA Air Quality Guidelines the project would have significant emissions of ozone precursor pollutants (i.e., ROG), $PM_{10}$ and $PM_{2.5}$ during operation. These emissions cannot be feasibly reduced further, as the proposed MPSP includes features and mitigation measures to minimize these emissions. Such features include a mix-use project near transit, implementation of an enhanced TDM plan, and mitigation measures to reduce evaporative ROG emissions from architectural coatings. Emissions of ROG associated with consumer product use would be the overwhelming contributor to project ROG emissions. Vehicle travel would be the overwhelming cause of $PM_{10}$ and $PM_{2.5}$ emissions. These emissions cannot be controlled to a level of less-than-significant by the proposed MPSP.

Significant emissions of these pollutants result in a cumulatively considerable net increase of criteria pollutants for which the project region is in nonattainment under an applicable ambient air quality standard. Because the project would have emissions of ROG that would exceed emission-based significance thresholds, the project would result in a cumulatively considerable net increase in pollutant emissions that contribute to elevated ozone concentrations that exceed ambient air quality standards.

[22] Transportation Demand Management and Parking plan.

Ozone is a powerful oxidant that is harmful to public health at high concentrations. Ozone, at high levels, can damage the tissues of the lungs and respiratory tract. High concentrations of ozone irritate the nose, throat, and respiratory system and constrict the airways.[23] Ozone also can aggravate other respiratory conditions such as asthma, bronchitis, and emphysema, causing increased hospital admissions. Repeated exposure to high ozone levels can make people more susceptible to respiratory infection and lung inflammation and permanently damage lung tissue. Ozone can also have negative cardiovascular impacts, including chronic hardening of the arteries and acute triggering of heart attacks. Children are most at risk, as they tend to be active and outdoors in the summer, when ozone levels are highest. Seniors and people with respiratory illnesses are also especially sensitive to ozone's effects. Even healthy adults, working or exercising outdoors during high ozone levels, can be affected. Ozone is not emitted directly from pollution sources. Instead, ozone is formed in the atmosphere through complex chemical reactions in the presence of sunlight between two types of precursor chemicals: hydrocarbons, often referred to as ROG and NOx. As air temperatures rise, the formation of ground level ozone increases at an accelerated pace. Ozone levels are usually highest on clear, hot, windless summer afternoons, especially in inland valleys that are downwind of pollution sources.

Ozone is a regional pollutant. Emissions of ROG and NOx throughout the Bay Area contribute to ozone formation. Because emissions in one part of the region can impact air quality miles downwind, efforts to reduce ozone levels focus on reducing emissions of ROG and NOx throughout the region. The relationship between ROG and NOx in ozone formation is complex; the ratio between the precursor pollutants influences how ozone forms. BAAQMD's ozone modeling indicates that the Bay Area is "ROG-limited" for ozone formation. This means that reducing ROG emissions in the Bay Area will be more productive in reducing ozone, at least in the near term. However, modeling also suggests that large reductions in NOx emissions will be needed to achieve the ozone reductions required to attain the current health-based ozone standards. A certain amount of ozone formation occurs naturally, even in the absence of anthropogenic emissions of ROG and NOx.[24]

As stated in the BAAQMD CEQA Air Quality Guidelines, air pollution by its nature 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. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality is considered significant. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

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[23] See: California Air Resource Board, Web: https://ww2.arb.ca.gov/resources/ozone-and-health

[24] Bay Area Air Quality Management District, 2017. *Spare the Air Cool the Climate Final 2017 Clean Air Plan*. April. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

The project emissions from operation are compared against regional emissions that lead to elevated concentrations of ozone, $PM_{10}$ and $PM_{2.5}$ in Table 10. By comparing project emissions to regional emissions, one gets the sense of the magnitude of the project effects on regional air quality. In terms of ROG, MPSP operational emissions in comparison to regional emissions are a small portion of the regional inventory (i.e., 0.25 percent unmitigated) that the effect of the project would not cause regional pollutant levels to measurably change. As a result, the project would not measurably increase ozone levels. Therefore, the health effects associated with the project ROG emissions would not be measurable. However, the Project would increase emissions above the threshold of 54 pounds per average day, such that the emissions would be cumulatively considerable. This results in significant adverse air quality impacts to the region's existing air quality conditions.

**Table 10. Comparison of Project Emissions to Air Basin Emissions[25]**

| Scenario | ROG | PM10 | PM2.5 |
|---|---|---|---|
| Bay Area Air Basin in 2020 | 205 tons/day | 88.6 | 37.7 |
| Bay Area Air Basin in 2035[1] | 203 tons/day | 96.1 | 39.9 |
| Unmitigated Project Operation (Increase over existing) | 0.52 tons/day (190 tons/year) | 0.32 tons/day (118 tons/year) | 0.08 tons/day (30 tons/year) |
| % of Basin in 2035-40 | *0.25%* | *0.24%* | *0.15%* |

[1]CARB emission inventories are only reported out to year 2035, which is the closest year of analysis to proposed Project operational year

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

To address exposure of sensitive receptors to substantial pollutant levels, the BAAQMD CEQA Guidelines developed thresholds that address community health risk. These include increased cancer risk, non-cancer hazards, and increased annual concentrations of $PM_{2.5}$. Sources of TACs and $PM_{2.5}$ led to increased community risk levels. Diesel particulate matter (DPM) is the predominant TAC in the area.

As previously described, the Sunnyvale General Plan includes the following policies related to Air Quality that would serve to minimize health risk impacts:

- *Policy EM-11.2*: Utilize land use strategies to reduce air quality impact, including opportunities for citizens to live and work in close proximity.

- *Policy EM-11.3*: Require all new development to utilize site planning to protect citizens from unnecessary exposure to air pollutants.

The LUTE EIR also addressed health risk impacts through new land use policies:

[25] CARB. 2021. 2016 SIP Emission Projection Data. See https://www.arb.ca.gov/app/emsinv/2017/emssumcat.php?_ga=2.50848289.940452654.1638212311-106250637.1504031780 accessed November 29, 2021 to estimate year 2020 and 2030 emissions.

*MM 3.5.3 Violate an Air Quality Standard of Contribute Substantially to an Air Quality Violation During Short-Term Construction Activities*

*NEW POLICY:* Prior to the issuance of grading or building permits, the City of Sunnyvale shall ensure that the BAAQMD basic construction mitigation measures from Table 8-1 of the BAAQMD 2011 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents.[26]

*NEW POLICY:* In the cases where construction projects are projected to exceed the BAAQMD's air pollutant significance thresholds for $NO_X$, $PM_{10}$, and/or $PM_{2.5}$, all off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, tractors) shall be at least CARB Tier 3 Certified or better.

*MM 3.5.5 Exposure of Sensitive Receptors to Substantial Toxic Air Containments Concentrations During Construction*

*NEW POLICY:* In the case when a subsequent project's construction span is greater than 5 acres and/or is scheduled to last more than two years, the subsequent project applicant shall be required to prepare a site-specific construction pollutant mitigation plan in consultation with Bay Area Air Quality Management District (BAAQMD) staff prior to the issuance of grading permits. A project-specific construction-related dispersion modeling acceptable to the BAAQMD shall be used to identify potential toxic air contaminant impacts, including diesel particulate matter. If BAAQMD risk thresholds (i.e., probability of contracting cancer is greater than 10 in one million) would be exceeded, mitigation measures shall be identified in the construction pollutant mitigation plan to address potential impacts and shall be based on site-specific information such as the distance to the nearest sensitive receptors, project site plan details, and construction schedule. The City shall ensure construction contracts include all identified measures and that the measures reduce the health risk below BAAQMD risk thresholds. Construction pollutant mitigation plan measures shall include but not be limited to:

4. Limiting the amount of acreage to be graded in a single day.
5. Restricting intensive equipment usage and intensive ground disturbance to hours outside of normal school hours.
6. Notifying affected sensitive receptors one week prior to commencing onsite construction so that any necessary precautions (such as rescheduling or relocation of outdoor activities) can be implemented. The written notification shall include the name and telephone number of the individual empowered to manage construction of the project. In the event that complaints are received, the individual empowered to manage construction shall respond to the complaint within 24 hours. The response shall include identification of measures being taken by the project

[26] Note that the BAAQMD Basic Construction Mitigation Measures Recommended for ALL Proposed Projects is listed as Table 8-2 in the BAAQMD 2017 CEQA Air Quality Guidelines.

construction contractor to reduce construction-related air pollutants. Such a measure may include the relocation of equipment.

*MM 3.5.6 Exposure of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Operation*

*NEW POLICY:* The following measures shall be utilized in site planning and building designs to reduce TAC and $PM_{2.5}$ exposure where new receptors are located within 1,000 feet of emissions sources:

- Future development that includes sensitive receptors (such as residences, schools, hospitals, daycare centers, or retirement homes) located within 1,000 feet of Caltrain, Central Expressway, El Camino Real, Lawrence Expressway, Mathilda Avenue, Sunnyvale-Saratoga Road, US 101, State Route 237, State Route 85, and/or stationary sources shall require site-specific analysis to determine the level of health risk. This analysis shall be conducted following procedures outlined by the BAAQMD. If the site-specific analysis reveals significant exposures from all sources (i.e., health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a hazard Index greater than 10, or annual $PM_{2.5}$ exposures greater than 0.8 $\mu g/m^3$) measures shall be employed to reduce the risk to below the threshold (e.g., electrostatic filtering systems or equivalent systems and location of vents away from TAC sources). If this is not possible, the sensitive receptors shall be relocated.

- Future nonresidential developments identified as a permitted stationary TAC source or projected to generate more than 100 heavy-duty truck trips daily will be evaluated through the CEQA process or BAAQMD permit process to ensure they do not cause a significant health risk in terms of excess cancer risk greater than 10 in one million, acute or chronic hazards with a hazard Index greater than 1.0, or annual $PM_{2.5}$ exposures greater than 0.3 $\mu g/m^3$ through source control measures.

- For significant cancer risk exposure, as defined by the BAAQMD, indoor air filtration systems shall be installed to effectively reduce particulate levels to avoid adverse public health impacts. Projects shall submit performance specifications and design details to demonstrate that lifetime residential exposures would not result in adverse public health impacts (less than 10 in one million chances).

Project impacts related to increased community risk would occur 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 build out of the MPSP would introduce new sources of TACs during construction (i.e., on-site construction activity and truck hauling emissions) and operation (i.e., mobile sources and stationary sources). Construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. Operation of the new MPSP developments would increase traffic in the area that would increase the air

pollutant and TAC emissions in the area. In addition, the new buildings may include the installation of emergency generators powered by diesel engines and cooling towers that would also have TACs and air pollutants emissions.

Project impacts to existing sensitive receptors were addressed qualitatively for temporary construction activities since specific construction plans and schedules for projects in the MPSP are not available. Health risk from long-term operation was based on traffic increases by modeling the impact from the primary roadways that are near sensitive receptors. The project may include generators and cooling towers that may have emissions; however, these sources would not be near existing sensitive receptors that would cause health risk impacts. Furthermore, these types of sources would be required to obtain permits from BAAQMD under undergo screening health risk analyses.

There are also several sources of existing TACs and localized air pollutants within and near MPSP. The risk from these existing sources of TACs were also assessed in terms of the health risk.

**Health Risks from Project Construction**

Subsequent land use activities associated with implementation of the MPSP would include short-term individual and cumulative construction projects that would be sources of TACs. Existing sensitive receptors are located south of MPSP across the State Route 237 freeway. Build out of MPSP would introduce sensitive receptors that would be exposed to construction activity and their TAC and air pollutant emissions.

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. The construction exhaust emissions may pose community risks for sensitive receptors such as nearby 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 community risk assessment of the project construction activities would have to be conducted at a project level to address these impacts. Since specific construction plans and schedules for construction are not known, it is not possible to quantify the impacts and determine the significance. There are various measures that can be incorporated into construction plans (e.g., site watering, equipment selection, phasing, etc…) that would minimize these potential impacts. These are mostly identified as mitigation measures later in this discussion. Health risks to nearby off-site and future on-site sensitive receptors associated with temporary construction near MPSP is considered *potentially significant*.

**Health Risks from Project Operation**

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

Project Operational Traffic

MPSP cumulative and cumulative plus project traffic volumes on the roadways within 1,000 feet of the surrounding the MPSP were used to assess operational traffic health risks.[27] For this analysis, the difference between the cumulative plus project and cumulative traffic volumes were assumed to be the MPSP trip volume on a given roadway. MPSP trips were modeled to occur on Highways 101 and 237, North Mathilda Avenue, Caribbean Drive, and Java Drive. Project trips would occur on other roadways too, but these roadways were found to take the majority of the operational project traffic. The following project MPSP-generated ADTs were used for modeling each roadway:

- Highway 101: 9,795 vehicles
- Highway 237: 29,763 vehicles
- N Mathilda Avenue: 20,701 vehicles
- Caribbean Drive: 14,085 vehicles
- Java Drive: 5,445 vehicles

Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[28] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for the roadway. Project operational traffic was modeled to occur between the hours of 7:00 AM and 6:00 PM. For those hours of the day an average speed of 45 mph on North Mathilda Avenue, Caribbean Drive, and Java Drive was assumed for all vehicles based on posted speed limit signs on the roadways. An average speed of 70 mph was assumed for traffic traveling on Highway 101 and 65 mph was assumed for traffic traveling on Highway 237 based on data provided by the Caltrans Performance Measurement System (PeMS). PeMS data is collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of California.[29]

*Traffic Emissions*

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on each roadway using the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear from re-entrained roadway dust were included in these emissions. DPM emissions are projected to decrease in the future and are reflected in the CT-EMFAC2017 emissions data. Inputs

[27] Hexagon Transportation Consultants, Inc., 2022. File: *MPSP_Model_Volume_Plots_4-11-22.pdf*
[28] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2021 does not include Burden type output with hour by hour traffic volume information.
[29] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source

to the model include region (Santa Clara County), type of road (freeway and major/collector), traffic mix assigned by CT-EMFAC2017 for the county, adjusted for the local truck mix in Santa Clara County (3.51 percent)[30], year of analysis (2030 and 2040), 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 offsite receptors, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 2030 and 2040. 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 2030 and 2040 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.

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for future traffic on each roadway and using these emissions with an air quality dispersion model to calculate TAC and $PM_{2.5}$ concentrations at the 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.

*Dispersion Modeling*

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis.[31] TAC and $PM_{2.5}$ emissions from the nearby roadways within about 1,000 feet of the project site were evaluated with the model. Emissions from vehicle traffic travel 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 each roadway. The modeling used a five-year data set (2013 - 2017) of hourly meteorological data from the Moffett Field Airport was used with the AERMOD model. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations and heights. Annual TAC and $PM_{2.5}$ concentrations for 2030 and 2040 from traffic on each roadway were calculated using the model. Concentrations were calculated at receptor heights of 5 feet (1.5 meters), 15 feet (4.5 meters), and 25 feet (7.6 meters) to represent the breathing heights on the first, second, and third floors of the nearby residences opposite State Route 237. Resulting concentrations were highest on the first floor with year 2030 concentrations higher than year 2040 concentrations. For conservatism, the highest impacts from each roadway are shown in as if they all occurred at the same location, even though impacts from traffic on each roadway decrease as distance from the roadway increases.

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

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

*Computed Risks and Hazards from Project Traffic*

As shown in Table 11, the unmitigated maximum cancer risks and annual $PM_{2.5}$ concentration from operational traffic would not exceed the single-source significance thresholds. Figure 5 shows the modeled roadway segments and sensitive receptors. *Attachment 4* to this report includes the emission calculations used for the traffic modeling and the cancer risk calculations. However, when considering potential construction and/or stationary impacts from MPSP projects, risks could exceed the thresholds. Without specific analyses and proper emission controls applied, this impact is considered significant.

**Table 11. Impacts from Traffic Sources to Off-Site Receptors – 2030 Emission Rates[32]**

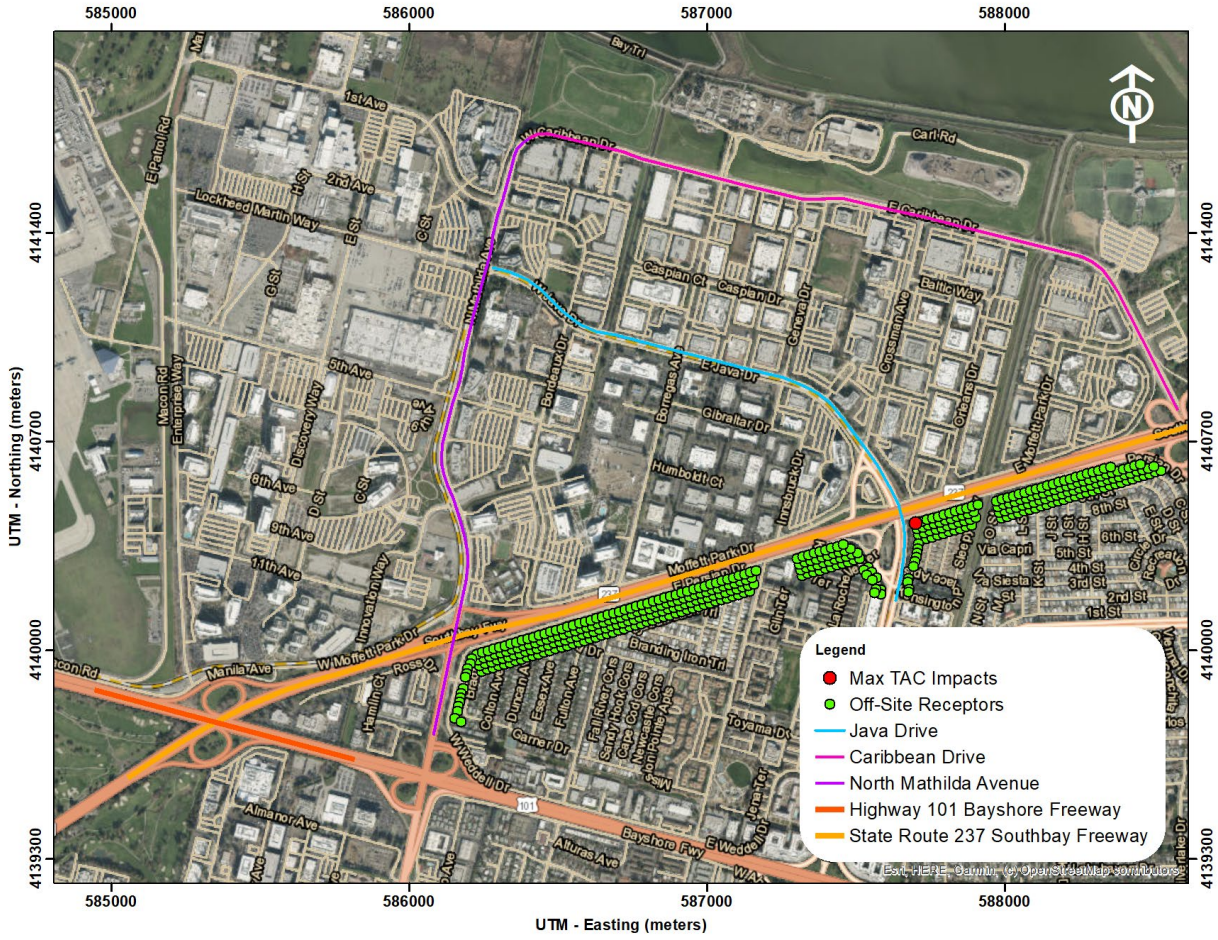
| Source | Cancer Risk (per million) | Annual $PM_{2.5}$ ($\mu g/m^3$) | Hazard Index |
|---|---|---|---|
| Highway 101, ADT 9,795 | <0.01 | <0.01 | <0.01 |
| Highway 237, ADT 29,763 | 2.07 | 0.11 | <0.01 |
| N Mathilda Avenue, ADT 20,701 | 0.02 | <0.01 | <0.01 |
| Caribbean Drive, ADT 14,085 | 0.03 | <0.01 | <0.01 |
| Java Drive, ADT 5,445 | 0.13 | 0.01 | <0.01 |
| *Combined Sources* | <2.26 | <0.15 | <0.05 |
| ***BAAQMD Cumulative Source Threshold*** | ***100*** | ***0.8*** | ***10.0*** |
| *Exceed Cumulative Threshold?* | *No* | *No* | *No* |

Operational Emergency Generators

Development of MPSP would inevitably include stationary equipment such as backup power generators powered by diesel engines. Operation of diesel generators would be a source of TAC emissions in the form of DPM. There are no specific plans to include this equipment nor plans that would reasonably allow identification of potential equipment. These diesel engines would be subject to CARB's Stationary Diesel Airborne Toxics Control Measure (ATCM) and require permits from the BAAQMD, since they will be equipped with engines larger than 50-HP. BACT requirements would apply to these generators that would limit DPM emissions. As part of the BAAQMD permit requirements for toxics screening analysis, the engine emissions will have to meet Best Available Control Technology for Toxics (BACT) and pass the toxic risk screening level of less than ten in a million. The risk assessment would be prepared by BAAQMD. Depending on results, BAAQMD would set limits for DPM emissions (e.g., more restricted engine operation periods). Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality community risk impact.

[32] The MPSP is anticipated to be built out from shortly after plan adoption through 2040. Year 2030 emissions rates were applied to fully operational traffic to provide a reasonable worst-case analysis of traffic impacts.

**Figure 5. Locations of Modeled Project Roadway Sources and Off-Site Sensitive Receptors**




Construction and Operation

Build out of MPSP would occur over many years. Construction emissions are expected to occur intermittently through the build out period while operational activities slowly increase. While construction and operational emissions are expected to increase due to the increase in activity, these will somewhat be offset as the rate of emissions decrease. The decrease will occur as construction equipment and on-road vehicles become more modern and are subject to new regulations that will decrease the rate of emissions and introduce a greater fraction of zero emission engines. Future project developments would have to consider the combination of construction and operational health risks from traffic and stationary sources as well as cumulative health risks that include simultaneous construction projects.

*Implement MPSP Requirements: 10.3.3-1, 10.3.3-2, and 10.3.3-3*

**MPSP Requirement 10.3.3-4: Require Future Projects Located within 1,000 Feet of Sensitive Receptors to Perform a Health Risk Assessment.**

Applicants proposing development of projects within 1,000 feet of existing sensitive receptors as defined by the BAAQMD (e.g., residential, schools) shall prepare a site-specific construction and operational health risk assessment (HRA). If the HRA demonstrates, to the satisfaction of the City, that the health risk exposures for adjacent receptors will be less than BAAQMD project-level thresholds, then additional mitigation would be unnecessary. However, if the HRA demonstrates that health risks would exceed BAAQMD project level thresholds, additional feasible on- and off-site mitigation shall be analyzed to further reduce risks to the greatest extent practicable.

Measures to avoid significant construction health risks impacts that could be included in projects, depending on the results of an HRA could include the following[33]:

1. Use Tier 4 engines for all off-road equipment greater than 50 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities.

2. Use diesel trucks with 2010 or later compliant model year engines during construction.

3. Use renewable diesel during construction.

4. Use low-VOC coatings during construction.

5. Implement fugitive dust best management practices and if necessary, enhanced measures recommended by BAAQMD.

6. Use portable electrical equipment where commercially available and practicable to complete construction. Construction contractors shall utilize electrical grid power instead of diesel generators when (1) grid power is available at the construction site; (2) when construction of temporary power lines are not necessary in order to provide power to portions of the site distant from existing utility lines; (3) when use of portable extension lines is practicable given construction safety and operational limitations; and (4) when use of electrical grid power does not compromise construction schedules.

7. Phase construction appropriate to lower the intensity of emissions at any one location with sensitive receptors.

8. Provide enhanced air filtration for sensitive receptors adversely affected by project emissions.

[33] Note that many of these measures are required through implementation of mitigation measures AQ-1, AQ-2, AQ-3, and AQ-5.

It is recommended that the City reviews on a biannual or project-by-project basis MPSP Requirements 10.3.3-1, 10.3.3-2, 10.3.3-3, and 10.3.3-4 to ensure that these incorporate feasible measures recommended by BAAQMD. Project construction and introduction of new land uses will occur over 10 to 20 years into the future where newer measures and measures that are not considered feasible now will be available to further reduce emissions. These could include greater use of zero-emission construction and stationary equipment and more incentives to support zero emission vehicles.

*Effectiveness of Requirements 10.3.3-1, 10.3.3-2, 10.3.3-3, and 10.3.3-4*

The implementation of these measures represents the best available methods to minimize project emissions of air pollutants and TACs. These measures are anticipated to reduce construction emissions of TACs and $PM_{2.5}$ by at least 85 percent below existing emission rates, assuming the MPSP requirements are reviewed on a biannual or project-by-project basis. Operational emissions would also be reduced, but the amount would be dependent on the project type of use and emissions sources. Proper implementation of these measures would reduce project health risk impacts to a level of *less than significant*.

**Non-CEQA Health Risk Impacts**

A screening risk assessment was completed to analyze the impact existing and proposed Project TAC sources would have on the new proposed sensitive receptors (i.e., residents) that that project would introduce. Details of the modeling and community risk calculations are included in *Attachment 5.* Furthermore, the City's General Plan requires appropriate site planning when developing new sensitive land uses near sources of air pollutants:

- *Policy EM-11.3*: Require all new development to utilize site planning to protect citizens from unnecessary exposure to air pollutants.

Analysis of impacts from existing sources upon the MPSP area was conducted in 2020[34]. Results of that analysis are incorporated into this assessment.

Local Sources of Toxic Air Containments

According to the BAAQMD CEQA Air Quality Guidelines, for a plan to have a less-than-significant impact with respect to TACs, overlay zones must be established around existing and proposed land uses that would emit these air pollutants. Overlay zones to avoid TAC impacts must be reflected in local plan policies, land use maps, or implementing ordinances.

The MPSP would permit and facilitate the development of land use that may locate new sensitive receptors, such as new residences or daycare facilities, in proximity to arterial and collector roadways, highways, and stationary sources of TAC emissions. A 1,000-foot buffer was drawn around the specific plan area to identify which TAC sources would affect sensitive receptors. Screening levels indicate that sensitive receptors within the Planning Area could be exposed to levels of TACs and or $PM_{2.5}$ that could cause an unacceptable cancer risk or hazard near highways and stationary sources. Figure 6 shows the specific plan boundaries and all the TAC sources identified within the 1,000-foot buffer.

*Highways – U.S. Highway 101 and State Route 237*

BAAQMD provides a Google Earth *Highway Screening Analysis Tool* that can be used to identify screening level impacts from State highways. The U.S. Highway 101 and State Route 237 cancer risk, annual $PM_{2.5}$ exposure and non-cancer hazard index were screened using this tool. Link 274 (6 feet elevation) was used to screen U.S. Highway 101 and Link 343 (6 feet elevation) was used to screen State Route 237.

Both U.S. Highway 101 and State Route 237 identified as east-west directional roadways within the specific plan area with risk and hazards occurring north and south of the roadways. However, it should be noted that the risks and hazards north of the highways are applicable to this constraints analysis. The southern risks and hazards would not be within the MPSP planning area. Therefore,

[34] Illingworth & Rodkin, Inc. 2020. Moffett Park Specific Plan – Sunnyvale, C,A Air Quality Constraints Assessment for the Moffett Park Specific Plan Job#20-039. March.

only the risks and hazards in the northly direction are reported. For both U.S. Highway 101 and State Route 237, risks and hazards would not exceed the single-source thresholds at and beyond 400 feet in the northly direction.

*Local Roadways – North Mathilda Avenue, Caribbean Avenue, and Java Drive*

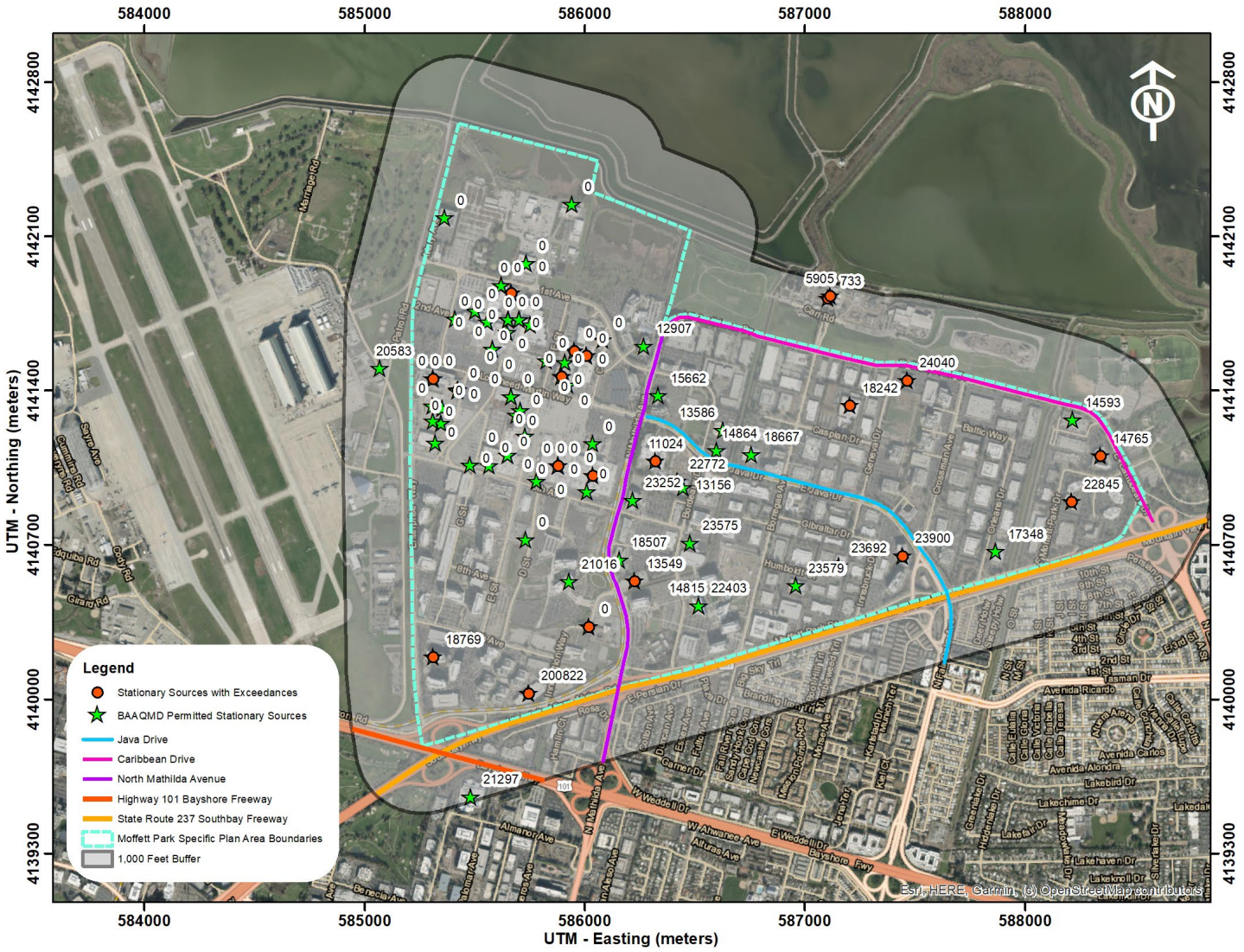
For local roadways, BAAQMD has provided the *Roadway Screening Analysis Calculator* to assess whether roadways with traffic volumes of over 10,000 vehicles per day may have a potentially significant effect on a proposed project. Two adjustments were made to the cancer risk predictions made by this calculator: (1) adjustment for latest vehicle emissions rates predicted using EMFAC2014 and (2) adjustment of cancer risk to reflect new OEHHA guidance (see *Attachment 1*).

The calculator used EMFAC2011 emission rates for the year 2014. However, a new version of the emissions factor model, EMFAC2014 is available. This version predicts lower emission rates. An adjustment factor of 0.5 was developed by comparing emission rates of total organic gases (TOG) for running exhaust and running losses developed using EMFAC2011 for year 2014 and those from EMFAC2014 for 2018. The predicted cancer risk was then adjusted using a factor of 1.3744 to account for new OEHHA guidance. This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk.

The following roadways were identified as having existing traffic volumes over 10,000 vehicles per day: North Mathilda Avenue, Caribbean Avenue, and Java Drive. The average daily traffic (ADT) volumes were based on peak-hour existing traffic volumes provided by the traffic consultant. The AM and PM peak-hour volumes were averaged and then multiplied by 10 to estimate the ADT. Due to the length and variability of traffic volumes along different intersections, North Mathilda and Caribbean Drive were split into three different sections with separate buffers for each segment.

This screening tool was used to identify the distance at which the increased cancer risk and $PM_{2.5}$. concentration from the roadways would not exceed the BAAQMD single-source thresholds for TAC sources. Distances were adjusted in increments of ten feet and distances were measured from the roadway edges. Risks were identified for each side of the road (i.e. if the road is an east-west directional roadway, then the north and south side of the road were screened). Note that in some cases both the increased cancer risk and the annual $PM_{2.5}$ concentration were below their BAAQMD single-source threshold at less than 10 feet. Therefore, no risk was identified from the roadway at any distance. A figure was not provided to show the buffers for each roadway since most buffers are short, and the distances are all less than 200 feet with a majority of the buffers being less than 50 feet in length. Table 12 lists information about the roadways and the buffer distances where exceedances may occur. Note that existing traffic volumes were used in this screening analysis. Future traffic volumes would most likely increase and each roadway would need to be re-evaluated on a project-level.

**Figure 6. Moffett Park Specific Plan Boundaries, 1000-foot Buffer, and Nearby TAC Sources[35]**




[35] The unique numbers associated with all the BAAQMD Permitted Stationary Sources are their assigned identification codes. The zeroes are all associated with Lockheed Martin.

**Table 12. Roadway Segments and Buffer Distances for Exceedance (Measured from Edge of the Roadway)**

| Road | Intersection | Existing ADT | Road Direction | Side of Road | Buffer Distance for Exceedance (feet) |
|---|---|---|---|---|---|
| U.S. Highway 101 | North of SR 237 | -- | -- | North | 400 |
| State Route 237 | East of U.S. 101 | -- | -- | North | 400 |
| North Mathilda Avenue | Intersection 15 N. Mathilda Avenue and Innovation Way | 20,070 | North-South Roadway | East | 60 |
| | | | | West | 10 |
| | Intersection 14 N. Mathilda Avenue & 5th Avenue | 13,350 | | East | 10 |
| | | | | West | No Exceedance |
| | Intersection 13 N. Mathilda Avenue & Lockheed Martin Way/W. Java Drive | 12,750 | | East | 20 |
| | | | | West | No Exceedance |
| Caribbean Drive | Intersection 24 Borregas Avenue/Carl Road & Caribbean Drive | 13,880 | East-West Roadway | North | No Exceedance |
| | | | | South | No Exceedance |
| | Intersection 28 Crossman Avenue and East Caribbean Drive | 22,660 | | North | No Exceedance |
| | | | | South | 30 |
| | Intersection 38 East Caribbean Drive and Moffett Park Drive/Baylands Park | 30,075 | North-South Roadway | East | 150 |
| | | | | West | 50 |
| Java Drive | Intersection 29 Crossman Avenue and East Java Drive | 16,740 | East-West Roadway | North | No Exceedance |
| | | | | South | 20 |

*Stationary Sources*

The Planning Area has numerous permitted stationary sources. These sources are located throughout the Plan Area, in manufacturing and commercial areas. The impact of these sources can only be addressed on a project-by-project basis, since impacts are generally localized. To assist lead agencies, BAAQMD has provided a database of permitted sources within the air district. The database is found at BAAQMD's *Permitted Stationary Sources 2020* GIS website.[36] This online tool provides the screening levels of cancer risk, hazards and $PM_{2.5}$ concentrations. These screening risk values can be adjusted for distance using factors provided by BAAQMD. This allows many of the sources to be screened out of any additional analysis.

If the stationary source shows the potential for significant community risk impacts or requires further information, then the stationary source is further analyzed by contacting BAAQMD for additional information. A refined modeling analysis would be required if there are sources that

[36] BAAQMD, Web: https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3

still have potentially significant impacts after this level of review. A refined analysis would include dispersion modeling of the source using emissions and source information provided by BAAQMD. If the source still has significant community risk impacts following this level of effort, then risk reduction strategies would have to be implemented by the project on a case-by-case basis, including but not limited to, mechanical air filtration systems.

When siting new sensitive receptors, the BAAQMD Guidelines advise that lead agencies examine existing or future proposed sources of TAC and/or $PM_{2.5}$ emissions that would adversely affect individuals within the planned project. New residences and sensitive receptors could be located near stationary sources of TACs located throughout the Planning Area, such as gasoline dispensing stations or emergency back-up diesel generators. Without proper setbacks or mitigation measures, these sources could result in TAC levels that are considered significant for new sensitive receptors.

*Limitations of the BAAQMD Permitted Stationary Source Database*

The MPSP encompasses an area where there are many stationary sources (due to the large number of industrial and tech company office uses) whose risk values exceed the community risk thresholds as seen in Figure 6. The stationary sources listed by BAAQMD as being in the plan areas or within 1,000 feet were identified and the sources that had screening levels that exceed the cancer risk or annual $PM_{2.5}$ exceeding thresholds were marked as red. However, BAAQMD does not guarantee the accuracy of their tool, as some sources shown outside of the area may actually be located within the area. Sources around the area were checked by cross referencing their address. However, it cannot be certain that all misplaced sources that belong in the area were identified. In addition, new sources are added or taken out of service and this tool used is based on BAAQMD's 2020 inventory. BAAQMD updates this database and numerous updates are likely as MPSP is built out. Given these uncertainties, new sensitive land uses within the plan area should perform site specific studies prior to any finalizing any development plans. This process would involve submittal of a stationary source inquiry form (SSIF) to BAAQMD new sensitive receptor developments within the MPSP. This ensures that the most recent stationary sources are included and analyzed.

*Hazardous Materials*

This review only addresses sources that routinely emit TACs and air pollutants. There may be facilities that handle and store hazardous materials on site and potentially near sensitive receptors. However, the accidental release of these materials, liquids or gases could create hazardous conditions. Therefore, it is recommended that facilities handling hazardous materials should be identified and their potential hazards should be considered prior to developing any sensitive land uses in their proximity.

<u>Sources Requiring Special Focus</u>

There are several sources that should warrant special attention when considering development of new sensitive receptors. These are complex sources of TAC and air pollutant emissions and sources of odors that could cause future complaints if residences are developed near them.

Along the north side of Caribbean Drive at Borregas Avenue lies several sources that include the City of Sunnyvale Water Pollution Control Plant (Wastewater Treatment Plan) and the Sunnyvale Materials Recovery and Transfer Station (SMaRT Station) that includes a concrete recycling plant.

Both the Wastewater Treatment Plant and the SMaRT Station are potential sources of odors. BAAQMD publishes screening buffer distances for odor sources and sensitive receptors in their CEQA Air Quality Guidelines. The screening distances for wastewater treatment plants and materials recovery resource facilities are 2 miles. There are no residences near these facilities; therefore, a compliant history is not likely applicable to the evaluation of new sensitive uses. In addition, these sources have elevated emissions of TACs and air pollutants. Their effect on new sensitive receptors within 1,000 feet should be evaluated. The wind flow in the area is depicted in the wind rose provided as Figure 2. As shown in Figure 2, the dominant wind flow is from the north-northwest, so typically, the plan area is downwind of these sources. Wind flow from a direction that could advect odors toward the plan area.

Industrial sources of TACs and air pollutants at the northwest portion of the site are complex and numerous. One example is the Lockheed Martin Corporation at 1111 Lockheed Martin Way that is a large facility with numerous emission sources that are permitted by BAAQMD. Special care should be taken to provide updated analysis for any development west or immediately east of N. Mathilda Avenue.

Additionally, the City of Sunnyvale has a mapping tool online that pinpoints where new development projects are within the entire city.[37] The map lists projects that are approved, under construction, under review, on hold, appeal pending, or withdrawn. Within the MPSP area there are three projects under construction, four projects approved by the planning commission, and three projects under review. The under-construction projects include renovation to an existing hotel at 1100 N. Mathilda Avenue, construction of a hotel at 1120 Innovation Way, and construction of office buildings at 1152 Bordeaux Drive. The projects that have been approved include expansion of the Netapp Campus, expansion of the Yahoo! Campus, and a new office development at 1389 Moffett Park Drive. All these under construction and approved developments would change the current environment. Therefore, it is advised that future project developments are considered when placing sensitive receptors within the MPSP planning area. Note that the developments under review should not be considered until at least approved since it is speculative to assume a project would be operating if not approved yet.

**Recommended Condition of Approval:** Conduct project-specific health risk and odor assessments for new developments that propose sensitive receptors within the MPSP to identify appropriate measures to reduce TAC and air pollutant exposures. Such measures could include Project-specific site design and use of enhanced filtration in ventilation systems.

[37] City of Sunnyvale, Web: https://gis.sunnyvale.ca.gov/portal/apps/webappviewer/index.html?id=2f1aa0291ad04119b9a7f886067976d8

**Impact 4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Future construction activities in the MPSP area could result in odorous emissions from diesel exhaust associated with construction equipment. Because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, exposure of sensitive receptors to these emissions would be limited. Therefore, odors from construction that could cause complaints from the general public and affect a substantial number of people are not expected.

Various uses within MPSP could be developed that produce localized odors. An example would include restaurants. It is possible that small water treatment facilities or other industrial uses could be developed that have localized odors.

BAAQMD has identified a variety of land uses and types of operations that produce emissions that may lead to odors in their CEQA Air Quality Guidelines. The identified land uses include wastewater treatment plants. According to the BAAQMD CEQA Guidelines, an odor source with five or more confirmed complaints per year averaged over three years is considered to cause frequent odor complaints, and therefore, have a significant impact.

Residences who are subjected to objectionable odors are most likely to complain. The BAAQMD CEQA Air Quality Guidelines include screening distances for various odor sources. These screening distances identify 2 miles for wastewater treatment and solid waste handling facilities. However, these are applied to traditional open municipal facilities that have exposed headworks, open-air ponds, and treat large volumes of wastewater and solid waste. The screening distances would not apply to this wastewater treatment plant that is small, modern, and has enclosed systems where exhaust air is treated. Nonetheless, odor issues could occur if there are upset conditions or improper handling of odor-producing solids or wastewater, improper operations, or poor maintenance. Adequately controlling odors requires all components of the facility to work properly.

Both the Wastewater Treatment Plant and the SMaRT Station are potential sources of odors. BAAQMD publishes screening buffer distances for odor sources and sensitive receptors in their CEQA Air Quality Guidelines. The screening distances for wastewater treatment plants and materials recovery resource facilities are 2 miles. There are no residences near these facilities; therefore, an odor compliant history is not likely applicable to the evaluation of new sensitive uses. In addition, these sources have elevated emission of TACs and air pollutants. Their effect on new sensitive receptors within 1,000 feet should be evaluated. The wind flow in the area is depicted in the wind rose provided as Figure 2. As shown in Figure 2, the dominant wind flow is from the north-northwest, so typically, the plan area is downwind of these sources. Wind flow from a direction that could advect odors toward the plan area.

Given the proximity of future residences, the project has the potential to cause odors and result in odor complaints. This would be considered a significant impact.

**MPSP Requirement 10.3.3-5 Develop and Implement Odor Control Plan**

Projects that that would generate odors shall develop an odor control plan that addresses plant design issues to control odors, operating and maintenance procedures to prevent odors, and an action plan to respond to upset conditions that could cause odors and measures to respond to odor complaints. The odor control plan shall describe the design elements and best management practices built into the facility that include:

- Ventilation of the system using carbon absorption, biofiltration, ammonia scrubbers, or other effective means to treat exhausted air from the enclosed facility;

- Odor proofing of refuse containers used to store and transport any odorous materials (e.g., biosolids); and

- Injection of chemicals to control odorous compounds (e.g., hydrogen sulfide).

The plan shall describe procedures to address upset conditions caused by equipment failures, power outages, flow control, or treatment issues.

A publicly visible sign with the telephone number and person to contact regarding odor complaints shall be posted. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations. A log of odor complaints and procedures implemented to respond to complaints shall be maintained and provided to the City upon request.

*Effectiveness of MPSP Requirement 10.3.3-5*

The purpose for MPSP Requirement 10.3.3-5 is to ensure proper design and operation of facilities that may generate odors. In addition, the facilities would be subject to BAAQMD rules and regulations, specifically, Rule 1-301 (Public Nuisance), Rule 7 (Odorous Substances), Rule 8-8 (Wastewater Collection and Separation Systems), and Rule 9-2 (Inorganic Gaseous Pollutants: Hydrogen Sulfide). BAAQMD Regulation 7 prohibits the discharge of odorous substances to ambient air that result in frequent odor complaints. Implementation of Mitigation Measure AQ-7 and adherence with BAAQMD rules and regulations would reduce the impact to less-than-significant.

# GREENHOUSE GAS EMISSIONS

Setting

Greenhouse gases (GHGs) are chemical compounds that trap heat in the earth's atmosphere, raising its temperature. 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 ($CO_2e$).[38] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission

[38] 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.[39] 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, due to 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.

[39] 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*.[40] 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.[41]

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:

- VMT per capita reduced 12% below 2019 levels by 2030 and 22% below 2019 levels by

[40] 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

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

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.[42] 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.[43]

CEC studies have identified the most aggressive electrification scenario as putting the building sector on track to reach the carbon neutrality goal by 2045.[44] 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 electric vehicle (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 known as Tier 1 and Tier 2. The CALGreen standards have recently

[42] 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.
[43] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf
[44] California Energy Commission. 2021. F*inal Commission Report: California Building Decarbonization Assessment. Publication Number CEC-400-2021-006-CMF*.August

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[45]. 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.

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

City of Sunnyvale

*Climate Action Playbook*

The City of Sunnyvale Climate Action Playbook[46] is a plan to reduce GHG emissions and address climate change. The Climate Action Playbook was born out of the Climate Action Plan 2.0 (CAP 2.0) Initiative (2017), a framework to update Sunnyvale's updated Climate Action Plan (CAP 1.0) from 2014 and accelerate local action to further prevent climate change. The Climate Action Playbook was adopted in August 2019 and replaces the CAP 1.0. It contains goals and strategies to reduce greenhouse gas emissions by 56 percent by 2030 and 80 percent by 2050. However, the CAP does not have a specific metric ton GHG threshold for project-level construction or operation. Therefore, the BAAQMD's CEQA Air Quality Guideline's thresholds are used.

*Land Use and Transportation Element Draft Environmental Impact Report*

Much of the air quality impacts associated with the proposed project were addressed under the City of Sunnyvale LUTE DEIR. Projects constructed within the City of Sunnyvale are subject to the mitigation measures contained in the LUTE DEIR. Impacts and mitigation measures pertaining to the proposed DEIR were identified. This included project-specific impacts. The focus of this GHG study is to address impacts associated with GHG exposure associated with project construction and operation. The LUTE DEIR identified cumulatively considerable impacts with respect to GHG emissions (Impact 3.13.1) and established the following mitigation measure:

> *MM 3.13.1* *Upon adoption of the Draft LUTE, the City will update the Climate Action Plan to include the new growth projects of the Draft LUTE and make any necessary adjustments to the CAP to ensure year 2020 and 2035 greenhouse gas emission reduction targets are attained.*

*Green Building Program*

On May 7, 2019, the City Council revised the green building standards for new construction. It requires new construction projects identify minimum standards, submit building plans, and verify the Green Building measures. The level of verification depends on the type of project; residential or non-residential. Any project built within the MPSP will be required to meet CALGreen Mandatory Measures and LEED Gold Level Certification through the U.S. Green Building Council.

BAAQMD GHG Significance Thresholds

The Notice of Preparation for the Moffett Park Specific Plan Project was posted on August 18, 2021. At that time, the BAAQMD CEQA Air Quality Guidelines included quantified thresholds for GHG emissions for both plans and projects. These

[46] City of Sunnyvale, *City of Sunnyvale's Climate Action Playbook*, September 2022. Web: https://sunnyvaleclimateaction.org/dashboard

*BAAQMD CEQA Guidelines*

Under the 2017 CEQA Air Quality Guidelines, a local government may prepare a qualified greenhouse gas Reduction Strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified greenhouse gas Reduction Strategy, it can be presumed that the project will not have significant GHG emissions under CEQA.[47] Alternatively, BAAQMD recommends a GHG threshold of 4.6 metric tons per capita for projects and 6.6 metric tons per capita for plans that consider all land uses (both ones that will be unchanged and new or modified land uses). These numeric thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of MPSP occurs beyond 2020, so a threshold that addresses a future target is appropriate. The basis of the BAAQMD thresholds were used to develop plan level thresholds for 2040. Although BAAQMD did not publish a quantified threshold for 2030 or 2040, a threshold could be computed. Assuming the published thresholds are met (since the State did meet AB 32 goals before 2020), those thresholds could be reduced by 40 percent for 2030 and 80 percent by 2040. Table 13 provides those computed thresholds. Unfortunately, the tools used to compute GHG emission are constrained to those emissions rates that are now occurring or regulated to occur in the future. The currently available models do not reflect the latest scoping plan strategies. For land use projects, these strategies include a phase out of combustion on-road vehicles, increased use of renewable fuels and electricity, and reduced demand for energy from fossil fuels. For example, the current roadway emissions are computed using Emfac2021 that reflects emissions from types of vehicles and their emission rates projected to be on the road in 2040 using current regulations. Additional regulations are being adopted that will substantially lower future vehicle emissions, including the *ACC II,* described above, that requires 68 percent of new cars sold in California in 2030 to be zero emissions and 100 percent of vehicles sold by 2040.

*2022 Adopted GHG 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.[48] Table 13 reports the threshold for plan-level analyses based on estimated GHG emissions, as well as per capita metrics, developed by BAAQMD.

The analysis presented below addresses both the Plan-Level and Project-Level thresholds recommended by BAAQMD in 2022. Project GHG emissions were computed an provided for informational purposes. Since buildout of the MPSP would occur through 2040, achieving carbon neutrality would be the plan-level threshold applied.

[47] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May. See https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

[48] 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

**Table 13. BAAQMD Recommended Plan-Level and Project-Level GHG Significance Thresholds**

| Pollutant/Contaminant | Construction | Operational |
|---|---|---|
| **GHGs contained in 2017 CEQA Air Quality Guidelines** | None | Compliance with Qualified GHG Reduction Strategy OR 6.6 MT CO2e/SP/year (residents + employees) for Plans and 4.6 MT CO2e/SP/year for Projects. Note that 2040 emissions would be expected to be 80 percent lower than those in 2020 that are considered equivalent to 1990 levels. |
| **GHGs adopted April 2022** | None | A. Meet the State's goals to reduce emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045 OR<br><br>B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).<br><br>C. For Projects:<br>1. Buildings<br>a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).<br>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.<br><br>2. Transportation<br>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.<br>b. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2. |

**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 projects built within the MPSP 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. Operational emissions for the MPSP buildout 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 projects within the MPSP. The project land use types and size and other project-specific information were input to the model, as described above within the operational period emissions. CalEEMod output is included in *Attachment 2*.

Operational 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 14, the net annual emissions resulting from operation of the proposed MPSP buildout are predicted to be 130,730 MT of $CO_2e$ when buildout is complete in 2040. In terms of per capita emissions, MPSP would result in 2.07 MT $CO_{2e}$/year/capita, which would decrease from 4.4 MT $CO_{2e}$/year/capita under the existing conditions. Build out of the MPSP results in per capita emissions that are 53 percent lower than existing uses and 43 percent lower than those uses operating in the future.

There are no quantified thresholds for GHG emissions adopted by the City or BAAQMD for evaluation of project level GHG emissions. BAAQMD in their latest adopted GHG thresholds recommend that the significance of plan level GHG emissions be evaluated based on consistency with an adopted GHG reduction plan or meet design elements that are critical in reducing GHG emissions. The City's CAP does not have a specific metric ton GHG threshold for plan level construction or operation. Therefore, the BAAQMD's CEQA Air Quality Guideline's thresholds are used.

**Table 14. Annual Plan GHG Emissions ($CO_2e$) in Metric Tons and Per Capita**

| Source Category | Existing Land Use 2020 | Existing Land Use 2040 | MPSP 2040 |
|---|---|---|---|
| Area | 0.35 | 0.35 | 249 |
| Energy Consumption | 16,177 | 16,177 | 874 |
| Mobile[1] | 125,503 | 89,260 | 254,309 |
| Solid Waste Generation | 8,687 | 8,687 | 20,361 |
| Water Usage | 4,467 | 4,467 | 9,770 |
| Total (MT $CO_{2e}$/year) | 154,833 | 115,591 | 285,563 |
| Per Capita Emissions[2] | 4.40 MT $CO_{2e}$/year/capita | 3.28MT $CO_{2e}$/year/capita | 2.07 MT $CO_{2e}$/year/capita |
| Net Emissions | | | 130,730 MT $CO_{2e}$/year |

[1] Does not include effects of *Advanced Clean Cars II* that will phase out the sale of emission vehicles by 2035.
[2] Assuming 35,212 existing workers, 42,000 new residents, and 95,683 new workers.

Proposed projects built within the MPSP 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. To avoid interference

with statewide GHG reduction measures identified in CARB's Scoping Plan and SB 100 goals, any project built within the MPSP will have to conform to the following measures:

1. Avoid construction of new natural gas connections,
    - MPSP Partially Conforms – The City's Reach Code for electrification and natural gas ban applies to future developments plan area with some exceptions for uses such emergency operation centers, commercial dryers in large hotels, and laboratory facilities. .

2. Avoid wasteful or inefficient use of electricity,
    - Conforms – Any project built within the MPSP will be required to meet CALGreen Mandatory Measures and LEED Gold Level Certification through the U.S. Green Building Council. MPSP uses meeting these Standards and the City's code requirements would be considered to be energy efficient.

3. Include electric vehicle charging infrastructure that meets current Building Code CALGreen Tier 2 compliance, and
    - Conforms – projects developed within the plan area would be required to meet this threshold.

4. Reduce VMT per capita by 15 percent over baseline conditions.
    - Conforms – Residential and non-residential VMT per capita is predicted to be less than 15 percent below Year 2020 existing countywide VMT[49]. projects developed within the plan area would be required to implement the TDM requirements.

      Based on the latest citywide travel demand model, the existing countywide average residential VMT per capita is 12.98 miles. Therefore, City's residential VMT impact threshold, at 15% below the existing countywide average, would be 11.03 VMT per capita. Based on the Sunnyvale model, the project is projected to generate 9.47 VMT per capita under year 2040 cumulative with project conditions and thus would not have a VMT impact.

      General employment (including hotel employees) land uses are evaluated based on an employment VMT per employee metric. Using the model, this metric is calculated only for home-based work trips. Based on the latest citywide travel demand model, the existing countywide average employment VMT is 18.49 per employee. Therefore, the City's jobs VMT impact threshold, at 15% below the existing countywide average, would be 15.72 VMT per employee. Based on the Sunnyvale model, the project is projected to generate 14.14 VMT per employee under year 2040 cumulative with project conditions and thus would not have a VMT impact.

Future development projects would be consistent with the City's Reach Code that would prohibit the construction of new natural gas infrastructure with some rare exceptions. Consistent with the

[49] Hexagon Transportation Consultants. 2022. *Moffett Park Specific Plan CEQA Transportation Analysis.* June 29.

Reach Code, all future multi-family and non-residential buildings would be required to install solar panels with the exception for some non-residential and high-rise residential buildings that could use solar thermal systems as an alternative. Future projects would also include EV charging stations or have EV outlets or conduits (i.e., infrastructure), in conformance with the Reach Code and CALGreen Tier 2 EV charging system requirements. All future projects would be required to comply with the CALGreen Code which encourages sustainable construction standards that incorporate planning/design, energy efficiency, and water efficiency. Consistent with the Specific Plan's green building standards, all new non-residential developments would meet the City's green building program requirements and achieve a LEED Platinum certification. The Specific Plan includes a policy that requires future development to implement a TDM plan to reduce vehicle trips. Implementation of the above standards and MPSP Requirements would reduce future projects' GHG emissions.

Plan Consistency

BAAQMD recommends that for long-term communitywide planning documents (e.g., general plans, long-range development plans, climate action plans) to have a less-than-significant climate impact, they must demonstrate that GHG emissions from the jurisdiction will decline consistent with California's GHG reduction targets of 40 percent below 1990 levels by 2030 and carbon neutrality by 2045. The MPSP is considered to fall under the category of long-range development plans. As shown in Table 14, MPSP is predicted to increase emissions in the Plan area by 124,680 MT CO2e/year through the addition of new residences and non-residential land uses. Therefore, the plan is in conflict with State goals and BAAQMD thresholds to achieve carbon neutrality by 2045.

The emissions forecast presented in Table 14 is based on current accepted modeling methods that include use of Emfac2021 mobile emission factors, assumption of natural gas usage in non-residential uses, current solid waste generation rates and processing, and current emissions associated with water usage.

Mobile emissions are currently modeled to make up about 85 percent of MPSP-generated emissions in 2040. The modeling of these emissions are based on use of Emfac2021 that does not include California's latest Advanced Clean Cars and Advanced Clean Trucks regulations. These regulations along with future reformulated fuel standards will reduce mobile emissions substantially. Additionally, new rules and regulations are likely to be adopted in the future, prior to 2040, that would reduce mobile emissions.

Water usage is the second highest source of GHG emissions, at about 7 percent of future emissions. These emissions are likely to be reduced through greater water conservation efforts, use of recycled water available in the area for outdoor water usage, and the use of electricity generated from carbon-free sources.

Energy usage is modeled to cause about 4 percent of the GHG emissions from MPSP. These are most attributable to natural gas usage by non-residential uses. The City's Reach code now applies to most non-residential uses.

Emissions associated with solid waste make up about 2 percent of total MPSP emissions. These emissions were predicted based on current rates assigned by CalEEMod. GHG emissions associated with solid waste generation are predicted based on the transportation and processing of the waste stream. New measures to reduce solid waste, reducing emissions from hauling of solid waste and reuse of methane generated can greatly reduce these emissions.

Impact Finding

Based on current modeling, GHG emissions from MPSP would be considered *significant*. This is based on the following findings:

1. Per capita GHG emissions are above any quantified threshold when considering future, year 2040, as a target year.

2. MPSP does not specifically meet BAAQMD project thresholds that would prohibit new natural gas use for all land use types. Increased EV charging infrastructure would encourage greater use of zero emission vehicles.

3. MPSP cannot be demonstrated to have emissions that would meet the goal of carbon neutrality by 2045.

**Proposed Specific Plan GHG Requirement: Develop and Update MPSP Requirements to Reduce GHG Emissions.**

The MPSP includes requirements for future developments that support local and State efforts to reduce GHG emissions. Such requirements would address the following:

- **Requirement 8.3.3-4: Electric vehicle parking.** The number, design, and infrastructure for electric vehicle parking shall be provided per Table 15 of the Specific Plan or CalGreen Tier 2, whichever is more stringent.

- **Requirement 10.4-20:** Develop solid waste minimization programs that include increased rates of recycling, composting of food, reuse of construction materials.

- **Requirement 10.6:** Update MPSP policies and implementing measures on a regular basis to measure progress and incorporate new measures to progress toward achieving carbon neutrality. Future updates to the MPSP would respond to new local and State plans (e.g., State's upcoming scoping plan) to achieve GHG as well as new methods to more accurately model GHG emissions and implement innovative measures or project designs.

## Supporting Documentation

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

*Attachment 2* includes the CalEEMod output for project operational criteria air pollutant and GHG 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 health risk assessment. This includes the summary of the dispersion modeling and the cancer risk calculations for construction and operation. The AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

# Attachment 1: Health Risk Calculation Methodology

## Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[1] 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.[2] 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.[3] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

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

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

[1] 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.
[2] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[3] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment ( HRA) Guidelines*. December 2016.

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

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

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

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

Where:

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

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

Where:

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

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

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

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

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

Non-Cancer Hazards

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

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

Annual $PM_{2.5}$ Concentrations

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

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# MPSP Existing Uses

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## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 18,102.20 | 1000sqft | 415.57 | 18,102,203.00 | 0 |
| Government Office Building | 126.12 | 1000sqft | 2.90 | 126,122.00 | 0 |
| User Defined Commercial | 1.00 | User Defined Unit | 0.00 | 0.00 | 0 |
| Strip Mall | 305.30 | 1000sqft | 7.01 | 305,304.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2020 |
| **Utility Company** | Silicon Valley Clean Energy | | | | |
| **CO2 Intensity (lb/MWhr)** | 2 | **CH4 Intensity (lb/MWhr)** | 0 | **N2O Intensity (lb/MWhr)** | 0 |

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

Project Characteristics -

Land Use - User defined for traffic entry

Construction Phase - operational

Off-road Equipment - operational

Vehicle Trips - Rates and trip length adjusted for daily trips and VMT

Vehicle Emission Factors - Emfac2021

Road Dust - Santa Clara Roadway silt loading

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 300.00 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 450.00 |
| tblLandUse | LandUseSquareFeet | 18,102,200.00 | 18,102,203.00 |
| tblLandUse | LandUseSquareFeet | 126,120.00 | 126,122.00 |
| tblLandUse | LandUseSquareFeet | 305,300.00 | 305,304.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblRoadDust | RoadSiltLoading | 0.1 | 0.04 |
| tblVehicleEF | HHD | 0.03 | 0.18 |
| tblVehicleEF | HHD | 0.06 | 0.13 |
| tblVehicleEF | HHD | 5.38 | 4.55 |
| tblVehicleEF | HHD | 0.76 | 0.95 |
| tblVehicleEF | HHD | 6.2050e-003 | 1.3100e-004 |
| tblVehicleEF | HHD | 1,078.53 | 875.08 |
| tblVehicleEF | HHD | 1,581.53 | 1,699.47 |
| tblVehicleEF | HHD | 0.06 | 0.05 |
| tblVehicleEF | HHD | 0.17 | 0.14 |
| tblVehicleEF | HHD | 0.25 | 0.27 |
| tblVehicleEF | HHD | 1.9000e-005 | 3.5000e-005 |
| tblVehicleEF | HHD | 6.03 | 4.66 |
| tblVehicleEF | HHD | 4.62 | 3.39 |
| tblVehicleEF | HHD | 1.73 | 2.03 |
| tblVehicleEF | HHD | 0.01 | 6.9320e-003 |
| tblVehicleEF | HHD | 0.06 | 0.08 |
| tblVehicleEF | HHD | 0.04 | 0.04 |
| tblVehicleEF | HHD | 0.07 | 0.05 |
| tblVehicleEF | HHD | 1.0000e-006 | 2.0000e-006 |
| tblVehicleEF | HHD | 0.01 | 6.6290e-003 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | HHD | 0.03 | 0.03 |
| tblVehicleEF | HHD | 8.8630e-003 | 8.7770e-003 |
| tblVehicleEF | HHD | 0.07 | 0.05 |
| tblVehicleEF | HHD | 1.0000e-006 | 2.0000e-006 |
| tblVehicleEF | HHD | 5.0000e-006 | 5.2300e-004 |
| tblVehicleEF | HHD | 2.2500e-004 | 1.5600e-004 |
| tblVehicleEF | HHD | 0.44 | 0.34 |
| tblVehicleEF | HHD | 3.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 0.17 | 0.08 |
| tblVehicleEF | HHD | 1.2200e-004 | 1.4020e-003 |
| tblVehicleEF | HHD | 3.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 0.01 | 7.8430e-003 |
| tblVehicleEF | HHD | 0.01 | 0.02 |
| tblVehicleEF | HHD | 1.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 5.0000e-006 | 5.2300e-004 |
| tblVehicleEF | HHD | 2.2500e-004 | 1.5600e-004 |
| tblVehicleEF | HHD | 0.50 | 0.55 |
| tblVehicleEF | HHD | 3.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 0.24 | 0.22 |
| tblVehicleEF | HHD | 1.2200e-004 | 1.4020e-003 |
| tblVehicleEF | HHD | 3.0000e-006 | 0.00 |
| tblVehicleEF | LDA | 3.0610e-003 | 3.3760e-003 |
| tblVehicleEF | LDA | 0.06 | 0.08 |
| tblVehicleEF | LDA | 0.74 | 0.91 |
| tblVehicleEF | LDA | 2.36 | 3.86 |
| tblVehicleEF | LDA | 264.68 | 271.38 |
| tblVehicleEF | LDA | 56.07 | 70.69 |
| tblVehicleEF | LDA | 5.4700e-003 | 5.8660e-003 |
| tblVehicleEF | LDA | 0.03 | 0.03 |
| tblVehicleEF | LDA | 0.05 | 0.07 |
| tblVehicleEF | LDA | 0.22 | 0.30 |
| tblVehicleEF | LDA | 0.04 | 7.4280e-003 |
| tblVehicleEF | LDA | 1.5660e-003 | 1.4170e-003 |
| tblVehicleEF | LDA | 1.9810e-003 | 2.2410e-003 |
| tblVehicleEF | LDA | 0.02 | 2.6000e-003 |
| tblVehicleEF | LDA | 1.4430e-003 | 1.3060e-003 |
| tblVehicleEF | LDA | 1.8220e-003 | 2.0610e-003 |
| tblVehicleEF | LDA | 0.05 | 0.32 |
| tblVehicleEF | LDA | 0.11 | 0.10 |
| tblVehicleEF | LDA | 0.04 | 0.00 |
| tblVehicleEF | LDA | 0.01 | 0.01 |
| tblVehicleEF | LDA | 0.03 | 0.24 |
| tblVehicleEF | LDA | 0.29 | 0.41 |
| tblVehicleEF | LDA | 2.6180e-003 | 2.6830e-003 |
| tblVehicleEF | LDA | 5.5500e-004 | 6.9900e-004 |
| tblVehicleEF | LDA | 0.05 | 0.32 |
| tblVehicleEF | LDA | 0.11 | 0.10 |
| tblVehicleEF | LDA | 0.04 | 0.00 |
| tblVehicleEF | LDA | 0.02 | 0.02 |
| tblVehicleEF | LDA | 0.03 | 0.24 |
| tblVehicleEF | LDA | 0.31 | 0.45 |
| tblVehicleEF | LDT1 | 6.5560e-003 | 9.3960e-003 |
| tblVehicleEF | LDT1 | 0.08 | 0.13 |
| tblVehicleEF | LDT1 | 1.35 | 2.00 |
| tblVehicleEF | LDT1 | 2.61 | 7.09 |
| tblVehicleEF | LDT1 | 314.05 | 343.52 |
| tblVehicleEF | LDT1 | 67.50 | 93.57 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | LDT1 | 9.0520e-003 | 0.01 |
| tblVehicleEF | LDT1 | 0.03 | 0.04 |
| tblVehicleEF | LDT1 | 0.12 | 0.20 |
| tblVehicleEF | LDT1 | 0.29 | 0.48 |
| tblVehicleEF | LDT1 | 0.04 | 9.2660e-003 |
| tblVehicleEF | LDT1 | 2.2460e-003 | 2.4890e-003 |
| tblVehicleEF | LDT1 | 2.7710e-003 | 3.6490e-003 |
| tblVehicleEF | LDT1 | 0.02 | 3.2430e-003 |
| tblVehicleEF | LDT1 | 2.0680e-003 | 2.2920e-003 |
| tblVehicleEF | LDT1 | 2.5480e-003 | 3.3560e-003 |
| tblVehicleEF | LDT1 | 0.11 | 0.70 |
| tblVehicleEF | LDT1 | 0.21 | 0.20 |
| tblVehicleEF | LDT1 | 0.08 | 0.00 |
| tblVehicleEF | LDT1 | 0.03 | 0.04 |
| tblVehicleEF | LDT1 | 0.10 | 0.59 |
| tblVehicleEF | LDT1 | 0.43 | 0.73 |
| tblVehicleEF | LDT1 | 3.1080e-003 | 3.3960e-003 |
| tblVehicleEF | LDT1 | 6.6800e-004 | 9.2500e-004 |
| tblVehicleEF | LDT1 | 0.11 | 0.70 |
| tblVehicleEF | LDT1 | 0.21 | 0.20 |
| tblVehicleEF | LDT1 | 0.08 | 0.00 |
| tblVehicleEF | LDT1 | 0.04 | 0.06 |
| tblVehicleEF | LDT1 | 0.10 | 0.59 |
| tblVehicleEF | LDT1 | 0.47 | 0.80 |
| tblVehicleEF | LDT2 | 4.4900e-003 | 4.0540e-003 |
| tblVehicleEF | LDT2 | 0.08 | 0.10 |
| tblVehicleEF | LDT2 | 1.00 | 1.11 |
| tblVehicleEF | LDT2 | 3.07 | 4.65 |
| tblVehicleEF | LDT2 | 346.93 | 368.92 |
| tblVehicleEF | LDT2 | 75.00 | 95.88 |
| tblVehicleEF | LDT2 | 8.0700e-003 | 8.2940e-003 |
| tblVehicleEF | LDT2 | 0.04 | 0.04 |
| tblVehicleEF | LDT2 | 0.10 | 0.11 |
| tblVehicleEF | LDT2 | 0.35 | 0.46 |
| tblVehicleEF | LDT2 | 0.04 | 8.9620e-003 |
| tblVehicleEF | LDT2 | 1.5510e-003 | 1.5380e-003 |
| tblVehicleEF | LDT2 | 1.9310e-003 | 2.3650e-003 |
| tblVehicleEF | LDT2 | 0.02 | 3.1370e-003 |
| tblVehicleEF | LDT2 | 1.4280e-003 | 1.4150e-003 |
| tblVehicleEF | LDT2 | 1.7760e-003 | 2.1740e-003 |
| tblVehicleEF | LDT2 | 0.07 | 0.31 |
| tblVehicleEF | LDT2 | 0.14 | 0.09 |
| tblVehicleEF | LDT2 | 0.06 | 0.00 |
| tblVehicleEF | LDT2 | 0.02 | 0.02 |
| tblVehicleEF | LDT2 | 0.06 | 0.23 |
| tblVehicleEF | LDT2 | 0.39 | 0.50 |
| tblVehicleEF | LDT2 | 3.4320e-003 | 3.6470e-003 |
| tblVehicleEF | LDT2 | 7.4200e-004 | 9.4800e-004 |
| tblVehicleEF | LDT2 | 0.07 | 0.31 |
| tblVehicleEF | LDT2 | 0.14 | 0.09 |
| tblVehicleEF | LDT2 | 0.06 | 0.00 |
| tblVehicleEF | LDT2 | 0.03 | 0.02 |
| tblVehicleEF | LDT2 | 0.06 | 0.23 |
| tblVehicleEF | LDT2 | 0.43 | 0.55 |
| tblVehicleEF | LHD1 | 5.6860e-003 | 5.9110e-003 |
| tblVehicleEF | LHD1 | 0.01 | 0.01 |
| tblVehicleEF | LHD1 | 0.02 | 0.03 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | LHD1 | 0.19 | 0.20 |
| tblVehicleEF | LHD1 | 1.02 | 1.26 |
| tblVehicleEF | LHD1 | 1.23 | 2.12 |
| tblVehicleEF | LHD1 | 9.13 | 9.04 |
| tblVehicleEF | LHD1 | 837.42 | 848.23 |
| tblVehicleEF | LHD1 | 12.75 | 18.40 |
| tblVehicleEF | LHD1 | 7.2000e-004 | 6.3300e-004 |
| tblVehicleEF | LHD1 | 0.05 | 0.04 |
| tblVehicleEF | LHD1 | 0.03 | 0.04 |
| tblVehicleEF | LHD1 | 0.06 | 0.06 |
| tblVehicleEF | LHD1 | 1.05 | 1.08 |
| tblVehicleEF | LHD1 | 0.37 | 0.51 |
| tblVehicleEF | LHD1 | 7.7000e-004 | 6.5100e-004 |
| tblVehicleEF | LHD1 | 0.08 | 0.08 |
| tblVehicleEF | LHD1 | 9.6220e-003 | 9.3220e-003 |
| tblVehicleEF | LHD1 | 0.01 | 0.02 |
| tblVehicleEF | LHD1 | 3.0500e-004 | 3.3200e-004 |
| tblVehicleEF | LHD1 | 7.3700e-004 | 6.2300e-004 |
| tblVehicleEF | LHD1 | 0.03 | 0.03 |
| tblVehicleEF | LHD1 | 2.4060e-003 | 2.3300e-003 |
| tblVehicleEF | LHD1 | 0.01 | 0.02 |
| tblVehicleEF | LHD1 | 2.8100e-004 | 3.0600e-004 |
| tblVehicleEF | LHD1 | 2.4030e-003 | 0.15 |
| tblVehicleEF | LHD1 | 0.09 | 0.04 |
| tblVehicleEF | LHD1 | 0.02 | 0.02 |
| tblVehicleEF | LHD1 | 1.1790e-003 | 0.00 |
| tblVehicleEF | LHD1 | 0.11 | 0.12 |
| tblVehicleEF | LHD1 | 0.24 | 0.21 |
| tblVehicleEF | LHD1 | 0.10 | 0.15 |
| tblVehicleEF | LHD1 | 8.9000e-005 | 8.8000e-005 |
| tblVehicleEF | LHD1 | 8.1860e-003 | 8.2980e-003 |
| tblVehicleEF | LHD1 | 1.2600e-004 | 1.8200e-004 |
| tblVehicleEF | LHD1 | 2.4030e-003 | 0.15 |
| tblVehicleEF | LHD1 | 0.09 | 0.04 |
| tblVehicleEF | LHD1 | 0.03 | 0.04 |
| tblVehicleEF | LHD1 | 1.1790e-003 | 0.00 |
| tblVehicleEF | LHD1 | 0.14 | 0.16 |
| tblVehicleEF | LHD1 | 0.24 | 0.21 |
| tblVehicleEF | LHD1 | 0.11 | 0.16 |
| tblVehicleEF | LHD2 | 3.5440e-003 | 3.7010e-003 |
| tblVehicleEF | LHD2 | 8.7930e-003 | 9.9390e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.02 |
| tblVehicleEF | LHD2 | 0.14 | 0.15 |
| tblVehicleEF | LHD2 | 0.77 | 0.82 |
| tblVehicleEF | LHD2 | 0.75 | 1.33 |
| tblVehicleEF | LHD2 | 14.26 | 14.07 |
| tblVehicleEF | LHD2 | 809.32 | 884.43 |
| tblVehicleEF | LHD2 | 8.63 | 11.25 |
| tblVehicleEF | LHD2 | 1.7360e-003 | 1.6600e-003 |
| tblVehicleEF | LHD2 | 0.07 | 0.08 |
| tblVehicleEF | LHD2 | 0.02 | 0.02 |
| tblVehicleEF | LHD2 | 0.11 | 0.11 |
| tblVehicleEF | LHD2 | 1.29 | 1.39 |
| tblVehicleEF | LHD2 | 0.22 | 0.30 |
| tblVehicleEF | LHD2 | 1.3780e-003 | 1.2960e-003 |
| tblVehicleEF | LHD2 | 0.09 | 0.09 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | LHD2 | 0.02 | 0.03 |
| tblVehicleEF | LHD2 | 1.6100e-004 | 1.6000e-004 |
| tblVehicleEF | LHD2 | 1.3190e-003 | 1.2400e-003 |
| tblVehicleEF | LHD2 | 0.04 | 0.03 |
| tblVehicleEF | LHD2 | 2.6690e-003 | 2.6320e-003 |
| tblVehicleEF | LHD2 | 0.02 | 0.03 |
| tblVehicleEF | LHD2 | 1.4800e-004 | 1.4700e-004 |
| tblVehicleEF | LHD2 | 1.3640e-003 | 0.08 |
| tblVehicleEF | LHD2 | 0.05 | 0.02 |
| tblVehicleEF | LHD2 | 0.02 | 0.02 |
| tblVehicleEF | LHD2 | 6.5500e-004 | 0.00 |
| tblVehicleEF | LHD2 | 0.12 | 0.15 |
| tblVehicleEF | LHD2 | 0.13 | 0.12 |
| tblVehicleEF | LHD2 | 0.06 | 0.08 |
| tblVehicleEF | LHD2 | 1.3600e-004 | 1.3500e-004 |
| tblVehicleEF | LHD2 | 7.8220e-003 | 8.5390e-003 |
| tblVehicleEF | LHD2 | 8.5000e-005 | 1.1100e-004 |
| tblVehicleEF | LHD2 | 1.3640e-003 | 0.08 |
| tblVehicleEF | LHD2 | 0.05 | 0.02 |
| tblVehicleEF | LHD2 | 0.02 | 0.02 |
| tblVehicleEF | LHD2 | 6.5500e-004 | 0.00 |
| tblVehicleEF | LHD2 | 0.15 | 0.17 |
| tblVehicleEF | LHD2 | 0.13 | 0.12 |
| tblVehicleEF | LHD2 | 0.06 | 0.09 |
| tblVehicleEF | MCY | 0.33 | 0.18 |
| tblVehicleEF | MCY | 0.26 | 0.20 |
| tblVehicleEF | MCY | 20.00 | 14.70 |
| tblVehicleEF | MCY | 8.95 | 8.21 |
| tblVehicleEF | MCY | 210.53 | 189.82 |
| tblVehicleEF | MCY | 62.15 | 53.42 |
| tblVehicleEF | MCY | 0.07 | 0.04 |
| tblVehicleEF | MCY | 0.02 | 9.4620e-003 |
| tblVehicleEF | MCY | 1.16 | 0.64 |
| tblVehicleEF | MCY | 0.27 | 0.16 |
| tblVehicleEF | MCY | 0.01 | 0.01 |
| tblVehicleEF | MCY | 1.8410e-003 | 1.8490e-003 |
| tblVehicleEF | MCY | 3.2620e-003 | 3.8960e-003 |
| tblVehicleEF | MCY | 5.0400e-003 | 4.2000e-003 |
| tblVehicleEF | MCY | 1.7250e-003 | 1.7360e-003 |
| tblVehicleEF | MCY | 3.0800e-003 | 3.6790e-003 |
| tblVehicleEF | MCY | 0.91 | 3.98 |
| tblVehicleEF | MCY | 0.73 | 3.56 |
| tblVehicleEF | MCY | 0.50 | 0.00 |
| tblVehicleEF | MCY | 2.28 | 1.26 |
| tblVehicleEF | MCY | 0.58 | 3.70 |
| tblVehicleEF | MCY | 1.98 | 1.54 |
| tblVehicleEF | MCY | 2.0830e-003 | 1.8770e-003 |
| tblVehicleEF | MCY | 6.1500e-004 | 5.2800e-004 |
| tblVehicleEF | MCY | 0.91 | 0.09 |
| tblVehicleEF | MCY | 0.73 | 3.56 |
| tblVehicleEF | MCY | 0.50 | 0.00 |
| tblVehicleEF | MCY | 2.80 | 1.49 |
| tblVehicleEF | MCY | 0.58 | 3.70 |
| tblVehicleEF | MCY | 2.16 | 1.67 |
| tblVehicleEF | MDV | 6.1720e-003 | 6.4620e-003 |
| tblVehicleEF | MDV | 0.10 | 0.13 |
| tblVehicleEF | MDV | 1.23 | 1.44 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | MDV | 3.68 | 5.31 |
| tblVehicleEF | MDV | 420.60 | 446.29 |
| tblVehicleEF | MDV | 90.34 | 115.23 |
| tblVehicleEF | MDV | 0.01 | 0.01 |
| tblVehicleEF | MDV | 0.04 | 0.05 |
| tblVehicleEF | MDV | 0.14 | 0.18 |
| tblVehicleEF | MDV | 0.44 | 0.61 |
| tblVehicleEF | MDV | 0.04 | 9.1940e-003 |
| tblVehicleEF | MDV | 1.7670e-003 | 1.7020e-003 |
| tblVehicleEF | MDV | 2.2440e-003 | 2.6670e-003 |
| tblVehicleEF | MDV | 0.02 | 3.2180e-003 |
| tblVehicleEF | MDV | 1.6310e-003 | 1.5700e-003 |
| tblVehicleEF | MDV | 2.0650e-003 | 2.4540e-003 |
| tblVehicleEF | MDV | 0.08 | 0.38 |
| tblVehicleEF | MDV | 0.16 | 0.11 |
| tblVehicleEF | MDV | 0.07 | 0.00 |
| tblVehicleEF | MDV | 0.03 | 0.03 |
| tblVehicleEF | MDV | 0.07 | 0.30 |
| tblVehicleEF | MDV | 0.52 | 0.73 |
| tblVehicleEF | MDV | 4.1580e-003 | 4.4090e-003 |
| tblVehicleEF | MDV | 8.9400e-004 | 1.1390e-003 |
| tblVehicleEF | MDV | 0.08 | 0.38 |
| tblVehicleEF | MDV | 0.16 | 0.11 |
| tblVehicleEF | MDV | 0.07 | 0.00 |
| tblVehicleEF | MDV | 0.04 | 0.04 |
| tblVehicleEF | MDV | 0.07 | 0.30 |
| tblVehicleEF | MDV | 0.57 | 0.79 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 0.03 | 0.03 |
| tblVehicleEF | MH | 2.05 | 3.18 |
| tblVehicleEF | MH | 2.50 | 3.11 |
| tblVehicleEF | MH | 1,611.87 | 1,720.62 |
| tblVehicleEF | MH | 20.50 | 25.24 |
| tblVehicleEF | MH | 0.07 | 0.07 |
| tblVehicleEF | MH | 0.02 | 0.03 |
| tblVehicleEF | MH | 1.60 | 1.78 |
| tblVehicleEF | MH | 0.25 | 0.30 |
| tblVehicleEF | MH | 0.13 | 0.04 |
| tblVehicleEF | MH | 0.01 | 0.01 |
| tblVehicleEF | MH | 0.03 | 0.03 |
| tblVehicleEF | MH | 3.5200e-004 | 4.7900e-004 |
| tblVehicleEF | MH | 0.06 | 0.02 |
| tblVehicleEF | MH | 3.2600e-003 | 3.2650e-003 |
| tblVehicleEF | MH | 0.03 | 0.03 |
| tblVehicleEF | MH | 3.2500e-004 | 4.4200e-004 |
| tblVehicleEF | MH | 0.96 | 41.27 |
| tblVehicleEF | MH | 0.08 | 12.63 |
| tblVehicleEF | MH | 0.32 | 0.00 |
| tblVehicleEF | MH | 0.10 | 0.14 |
| tblVehicleEF | MH | 0.02 | 0.28 |
| tblVehicleEF | MH | 0.12 | 0.15 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 2.0300e-004 | 2.5000e-004 |
| tblVehicleEF | MH | 0.96 | 41.27 |
| tblVehicleEF | MH | 0.08 | 12.63 |
| tblVehicleEF | MH | 0.32 | 0.00 |
| tblVehicleEF | MH | 0.14 | 0.19 |

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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 | 0.02 | 0.28 |
| tblVehicleEF | MH | 0.13 | 0.16 |
| tblVehicleEF | MHD | 3.3020e-003 | 0.01 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 9.8030e-003 | 0.01 |
| tblVehicleEF | MHD | 0.36 | 0.66 |
| tblVehicleEF | MHD | 0.93 | 0.81 |
| tblVehicleEF | MHD | 1.27 | 1.41 |
| tblVehicleEF | MHD | 78.16 | 169.93 |
| tblVehicleEF | MHD | 1,180.29 | 1,247.41 |
| tblVehicleEF | MHD | 9.18 | 9.72 |
| tblVehicleEF | MHD | 0.01 | 0.03 |
| tblVehicleEF | MHD | 0.16 | 0.17 |
| tblVehicleEF | MHD | 6.3540e-003 | 5.9100e-003 |
| tblVehicleEF | MHD | 0.73 | 1.46 |
| tblVehicleEF | MHD | 3.39 | 2.58 |
| tblVehicleEF | MHD | 1.06 | 1.04 |
| tblVehicleEF | MHD | 2.6060e-003 | 6.6140e-003 |
| tblVehicleEF | MHD | 0.13 | 0.05 |
| tblVehicleEF | MHD | 0.09 | 0.05 |
| tblVehicleEF | MHD | 1.3000e-004 | 1.4500e-004 |
| tblVehicleEF | MHD | 2.4930e-003 | 6.3280e-003 |
| tblVehicleEF | MHD | 0.06 | 0.02 |
| tblVehicleEF | MHD | 0.09 | 0.05 |
| tblVehicleEF | MHD | 1.1900e-004 | 1.3400e-004 |
| tblVehicleEF | MHD | 5.4800e-004 | 0.04 |
| tblVehicleEF | MHD | 0.02 | 9.9400e-003 |
| tblVehicleEF | MHD | 0.02 | 0.04 |
| tblVehicleEF | MHD | 2.6100e-004 | 0.00 |
| tblVehicleEF | MHD | 0.24 | 0.14 |
| tblVehicleEF | MHD | 0.03 | 0.08 |
| tblVehicleEF | MHD | 0.06 | 0.06 |
| tblVehicleEF | MHD | 7.4100e-004 | 1.5890e-003 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 9.1000e-005 | 9.6000e-005 |
| tblVehicleEF | MHD | 5.4800e-004 | 0.04 |
| tblVehicleEF | MHD | 0.02 | 9.9400e-003 |
| tblVehicleEF | MHD | 0.03 | 0.05 |
| tblVehicleEF | MHD | 2.6100e-004 | 0.00 |
| tblVehicleEF | MHD | 0.28 | 0.17 |
| tblVehicleEF | MHD | 0.03 | 0.08 |
| tblVehicleEF | MHD | 0.06 | 0.07 |
| tblVehicleEF | OBUS | 7.6010e-003 | 7.6870e-003 |
| tblVehicleEF | OBUS | 9.9430e-003 | 0.01 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.57 | 0.49 |
| tblVehicleEF | OBUS | 0.90 | 0.81 |
| tblVehicleEF | OBUS | 2.02 | 2.27 |
| tblVehicleEF | OBUS | 99.74 | 85.67 |
| tblVehicleEF | OBUS | 1,402.55 | 1,429.38 |
| tblVehicleEF | OBUS | 15.98 | 17.59 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 0.14 | 0.16 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.69 | 0.49 |
| tblVehicleEF | OBUS | 2.31 | 1.57 |
| tblVehicleEF | OBUS | 0.92 | 0.84 |

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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 | 2.9700e-003 | 1.4560e-003 |
| tblVehicleEF | OBUS | 0.13 | 0.05 |
| tblVehicleEF | OBUS | 0.04 | 0.03 |
| tblVehicleEF | OBUS | 1.4400e-004 | 1.6400e-004 |
| tblVehicleEF | OBUS | 2.8410e-003 | 1.3930e-003 |
| tblVehicleEF | OBUS | 0.06 | 0.02 |
| tblVehicleEF | OBUS | 0.04 | 0.03 |
| tblVehicleEF | OBUS | 1.3300e-004 | 1.5200e-004 |
| tblVehicleEF | OBUS | 1.0920e-003 | 0.06 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.06 | 0.05 |
| tblVehicleEF | OBUS | 4.7000e-004 | 0.00 |
| tblVehicleEF | OBUS | 0.13 | 0.10 |
| tblVehicleEF | OBUS | 0.04 | 0.07 |
| tblVehicleEF | OBUS | 0.10 | 0.11 |
| tblVehicleEF | OBUS | 9.4700e-004 | 8.1200e-004 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 1.5800e-004 | 1.7400e-004 |
| tblVehicleEF | OBUS | 1.0920e-003 | 0.06 |
| tblVehicleEF | OBUS | 0.02 | 0.02 |
| tblVehicleEF | OBUS | 0.07 | 0.06 |
| tblVehicleEF | OBUS | 4.7000e-004 | 0.00 |
| tblVehicleEF | OBUS | 0.15 | 0.12 |
| tblVehicleEF | OBUS | 0.04 | 0.07 |
| tblVehicleEF | OBUS | 0.11 | 0.12 |
| tblVehicleEF | SBUS | 0.04 | 0.07 |
| tblVehicleEF | SBUS | 7.1250e-003 | 0.10 |
| tblVehicleEF | SBUS | 4.2090e-003 | 4.3300e-003 |
| tblVehicleEF | SBUS | 1.89 | 1.53 |
| tblVehicleEF | SBUS | 0.58 | 0.95 |
| tblVehicleEF | SBUS | 0.64 | 0.65 |
| tblVehicleEF | SBUS | 347.29 | 194.22 |
| tblVehicleEF | SBUS | 1,091.13 | 1,098.30 |
| tblVehicleEF | SBUS | 3.52 | 3.55 |
| tblVehicleEF | SBUS | 0.05 | 0.03 |
| tblVehicleEF | SBUS | 0.14 | 0.15 |
| tblVehicleEF | SBUS | 3.6990e-003 | 3.5400e-003 |
| tblVehicleEF | SBUS | 3.76 | 1.57 |
| tblVehicleEF | SBUS | 5.50 | 3.47 |
| tblVehicleEF | SBUS | 0.69 | 0.43 |
| tblVehicleEF | SBUS | 4.8070e-003 | 1.8370e-003 |
| tblVehicleEF | SBUS | 0.74 | 0.05 |
| tblVehicleEF | SBUS | 0.01 | 0.01 |
| tblVehicleEF | SBUS | 0.04 | 0.02 |
| tblVehicleEF | SBUS | 3.8000e-005 | 3.4000e-005 |
| tblVehicleEF | SBUS | 4.5990e-003 | 1.7570e-003 |
| tblVehicleEF | SBUS | 0.32 | 0.02 |
| tblVehicleEF | SBUS | 2.7520e-003 | 2.7860e-003 |
| tblVehicleEF | SBUS | 0.03 | 0.02 |
| tblVehicleEF | SBUS | 3.5000e-005 | 3.1000e-005 |
| tblVehicleEF | SBUS | 4.4100e-004 | 0.02 |
| tblVehicleEF | SBUS | 4.2270e-003 | 5.7580e-003 |
| tblVehicleEF | SBUS | 0.21 | 0.17 |
| tblVehicleEF | SBUS | 1.7000e-004 | 0.00 |
| tblVehicleEF | SBUS | 0.10 | 0.07 |
| tblVehicleEF | SBUS | 9.3840e-003 | 0.01 |
| tblVehicleEF | SBUS | 0.02 | 0.03 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | SBUS | 3.3020e-003 | 1.7760e-003 |
| tblVehicleEF | SBUS | 0.01 | 0.01 |
| tblVehicleEF | SBUS | 4.4100e-004 | 0.02 |
| tblVehicleEF | SBUS | 4.2270e-003 | 5.7580e-003 |
| tblVehicleEF | SBUS | 0.30 | 0.28 |
| tblVehicleEF | SBUS | 1.7000e-004 | 0.00 |
| tblVehicleEF | SBUS | 0.11 | 0.17 |
| tblVehicleEF | SBUS | 9.3840e-003 | 0.01 |
| tblVehicleEF | SBUS | 0.03 | 0.03 |
| tblVehicleEF | UBUS | 1.38 | 0.35 |
| tblVehicleEF | UBUS | 2.5800e-003 | 4.7500e-003 |
| tblVehicleEF | UBUS | 10.36 | 4.07 |
| tblVehicleEF | UBUS | 0.14 | 0.51 |
| tblVehicleEF | UBUS | 1,606.71 | 1,102.32 |
| tblVehicleEF | UBUS | 1.64 | 3.36 |
| tblVehicleEF | UBUS | 0.27 | 0.17 |
| tblVehicleEF | UBUS | 1.3730e-003 | 7.4390e-003 |
| tblVehicleEF | UBUS | 0.73 | 0.33 |
| tblVehicleEF | UBUS | 0.02 | 0.05 |
| tblVehicleEF | UBUS | 0.07 | 0.11 |
| tblVehicleEF | UBUS | 0.03 | 0.03 |
| tblVehicleEF | UBUS | 5.2780e-003 | 6.2260e-003 |
| tblVehicleEF | UBUS | 2.0000e-006 | 8.0000e-006 |
| tblVehicleEF | UBUS | 0.03 | 0.04 |
| tblVehicleEF | UBUS | 8.3320e-003 | 8.1280e-003 |
| tblVehicleEF | UBUS | 5.0490e-003 | 5.9530e-003 |
| tblVehicleEF | UBUS | 2.0000e-006 | 8.0000e-006 |
| tblVehicleEF | UBUS | 1.5400e-004 | 0.01 |
| tblVehicleEF | UBUS | 2.3510e-003 | 4.3710e-003 |
| tblVehicleEF | UBUS | 9.7000e-005 | 0.00 |
| tblVehicleEF | UBUS | 0.02 | 0.06 |
| tblVehicleEF | UBUS | 5.7400e-004 | 8.1300e-003 |
| tblVehicleEF | UBUS | 0.01 | 0.02 |
| tblVehicleEF | UBUS | 0.01 | 9.4850e-003 |
| tblVehicleEF | UBUS | 1.6000e-005 | 3.3000e-005 |
| tblVehicleEF | UBUS | 1.5400e-004 | 0.01 |
| tblVehicleEF | UBUS | 2.3510e-003 | 4.3710e-003 |
| tblVehicleEF | UBUS | 9.7000e-005 | 0.00 |
| tblVehicleEF | UBUS | 1.41 | 0.42 |
| tblVehicleEF | UBUS | 5.7400e-004 | 8.1300e-003 |
| tblVehicleEF | UBUS | 0.01 | 0.02 |
| tblVehicleTrips | CC_TL | 7.30 | 12.60 |
| tblVehicleTrips | CC_TL | 7.30 | 12.60 |
| tblVehicleTrips | CC_TL | 7.30 | 12.60 |
| tblVehicleTrips | CNW_TL | 7.30 | 12.60 |
| tblVehicleTrips | CNW_TL | 7.30 | 12.60 |
| tblVehicleTrips | CNW_TL | 7.30 | 12.60 |
| tblVehicleTrips | CW_TL | 9.50 | 12.60 |
| tblVehicleTrips | CW_TL | 9.50 | 12.60 |
| tblVehicleTrips | CW_TL | 9.50 | 12.60 |
| tblVehicleTrips | DV_TP | 19.00 | 0.00 |
| tblVehicleTrips | DV_TP | 34.00 | 0.00 |
| tblVehicleTrips | DV_TP | 40.00 | 0.00 |
| tblVehicleTrips | PB_TP | 4.00 | 0.00 |
| tblVehicleTrips | PB_TP | 16.00 | 0.00 |
| tblVehicleTrips | PB_TP | 15.00 | 0.00 |
| tblVehicleTrips | PR_TP | 77.00 | 100.00 |

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

| | | | |
|---|---|---|---|
| tblVehicleTrips | PR_TP | 50.00 | 100.00 |
| tblVehicleTrips | PR_TP | 45.00 | 100.00 |
| tblVehicleTrips | ST_TR | 2.21 | 1.13 |
| tblVehicleTrips | ST_TR | 42.04 | 21.43 |
| tblVehicleTrips | SU_TR | 0.70 | 0.36 |
| tblVehicleTrips | SU_TR | 20.43 | 10.41 |
| tblVehicleTrips | WD_TR | 9.74 | 4.96 |
| tblVehicleTrips | WD_TR | 22.59 | 11.51 |
| tblVehicleTrips | WD_TR | 44.32 | 22.59 |

## 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 | | | | | |
| 2024 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **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**

| | ROG | NOx | CO | SO2 | 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 | | | | | |
| 2024 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | ROG | NOx | 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** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| | | **Highest** | | |

### 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 | 82.0633 | 1.5800e-003 | 0.1714 | 1.0000e-005 | | 6.1000e-004 | 6.1000e-004 | | 6.1000e-004 | 6.1000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.9000e-004 | 0.0000 | 0.3534 |
| Energy | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 16,083.2044 | 16,083.2044 | 0.3028 | 0.2896 | 16,177.0745 |
| Mobile | 69.4013 | 85.2899 | 672.5778 | 1.3411 | 54.9681 | 1.1975 | 56.1656 | 13.9468 | 1.1230 | 15.0698 | 0.0000 | 123,687.3986 | 123,687.3986 | 6.1283 | 5.5778 | 125,502.7972 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3,506.2426 | 0.0000 | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,035.8469 | 22.3813 | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **153.0607** | **99.8019** | **684.9380** | **1.4281** | **54.9681** | **2.3009** | **57.2690** | **13.9468** | **2.2264** | **16.1732** | **4,542.0895** | **139,793.3155** | **144,335.4051** | **320.0364** | **8.3796** | **154,833.4215** |

**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 | 82.0633 | 1.5800e-003 | 0.1714 | 1.0000e-005 | | 6.1000e-004 | 6.1000e-004 | | 6.1000e-004 | 6.1000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.9000e-004 | 0.0000 | 0.3534 |
| Energy | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 16,083.2044 | 16,083.2044 | 0.3028 | 0.2896 | 16,177.0745 |
| Mobile | 69.4013 | 85.2899 | 672.5778 | 1.3411 | 54.9681 | 1.1975 | 56.1656 | 13.9468 | 1.1230 | 15.0698 | 0.0000 | 123,687.3986 | 123,687.3986 | 6.1283 | 5.5778 | 125,502.7972 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3,506.2426 | 0.0000 | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,035.8469 | 22.3813 | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |
| **Total** | **153.0607** | **99.8019** | **684.9380** | **1.4281** | **54.9681** | **2.3009** | **57.2690** | **13.9468** | **2.2264** | **16.1732** | **4,542.0895** | **139,793.3155** | **144,335.4051** | **320.0364** | **8.3796** | **154,833.4215** |

| | ROG | NOx | 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 | Site Preparation | Site Preparation | 10/19/2024 | 10/18/2024 | 5 | 0 | |

**Acres of Grading (Site Preparation Phase): 450**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

### 3.1 Mitigation Measures Construction

### 3.2 Site Preparation - 2024

**Unmitigated Construction On-Site**

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 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** |

**Unmitigated Construction Off-Site**

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

**Mitigated Construction On-Site**

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

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

MPSP Existing Uses - Santa Clara 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 | | | | | |
| Mitigated | 69.4013 | 85.2899 | 672.5778 | 1.3411 | 54.9681 | 1.1975 | 56.1656 | 13.9468 | 1.1230 | 15.0698 | 0.0000 | 123,687.3986 | 123,687.3986 | 6.1283 | 5.5778 | 125,502.7972 |
| Unmitigated | 69.4013 | 85.2899 | 672.5778 | 1.3411 | 54.9681 | 1.1975 | 56.1656 | 13.9468 | 1.1230 | 15.0698 | 0.0000 | 123,687.3986 | 123,687.3986 | 6.1283 | 5.5778 | 125,502.7972 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Office Building | 89,786.91 | 20,455.49 | 6516.79 | 311,814,160 | 311,814,160 |
| Government Office Building | 1,451.64 | 0.00 | 0.00 | 4,755,577 | 4,755,577 |
| Strip Mall | 6,896.73 | 6,542.58 | 3178.17 | 28,962,714 | 28,962,714 |
| User Defined Commercial | 0.00 | 0.00 | 0.00 | | |
| Total | 98,135.28 | 26,998.07 | 9,694.97 | 345,532,451 | 345,532,451 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Office Building | 12.60 | 12.60 | 12.60 | 33.00 | 48.00 | 19.00 | 100 | 0 | 0 |
| Government Office Building | 12.60 | 12.60 | 12.60 | 33.00 | 62.00 | 5.00 | 100 | 0 | 0 |
| Strip Mall | 12.60 | 12.60 | 12.60 | 16.60 | 64.40 | 19.00 | 100 | 0 | 0 |
| User Defined Commercial | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Office Building | 0.566081 | 0.054633 | 0.191878 | 0.117238 | 0.020772 | 0.004815 | 0.008393 | 0.006391 | 0.000990 | 0.000417 | 0.024374 | 0.000959 | 0.003058 |
| Government Office Building | 0.566081 | 0.054633 | 0.191878 | 0.117238 | 0.020772 | 0.004815 | 0.008393 | 0.006391 | 0.000990 | 0.000417 | 0.024374 | 0.000959 | 0.003058 |
| Strip Mall | 0.566081 | 0.054633 | 0.191878 | 0.117238 | 0.020772 | 0.004815 | 0.008393 | 0.006391 | 0.000990 | 0.000417 | 0.024374 | 0.000959 | 0.003058 |
| User Defined Commercial | 0.566081 | 0.054633 | 0.191878 | 0.117238 | 0.020772 | 0.004815 | 0.008393 | 0.006391 | 0.000990 | 0.000417 | 0.024374 | 0.000959 | 0.003058 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 286.8087 | 286.8087 | 0.0000 | 0.0000 | 286.8087 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 286.8087 | 286.8087 | 0.0000 | 0.0000 | 286.8087 |
| NaturalGas Mitigated | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 15,796.3957 | 15,796.3957 | 0.3028 | 0.2896 | 15,890.2658 |
| NaturalGas Unmitigated | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 15,796.3957 | 15,796.3957 | 0.3028 | 0.2896 | 15,890.2658 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Office Building | 2.93256e+008 | 1.5813 | 14.3753 | 12.0752 | 0.0863 | | 1.0925 | 1.0925 | | 1.0925 | 1.0925 | 0.0000 | 15,649.2403 | 15,649.2403 | 0.2999 | 0.2869 | 15,742.2359 |

MPSP Existing Uses - Santa Clara County, Annual

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

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Government Office Building | 2.04318e+006 | 0.0110 | 0.1002 | 0.0841 | 6.0000e-004 | | 7.6100e-003 | 7.6100e-003 | | 7.6100e-003 | 7.6100e-003 | 0.0000 | 109.0317 | 109.0317 | 2.0900e-003 | 2.0000e-003 | 109.6796 |
| Strip Mall | 714411 | 3.8500e-003 | 0.0350 | 0.0294 | 2.1000e-004 | | 2.6600e-003 | 2.6600e-003 | | 2.6600e-003 | 2.6600e-003 | 0.0000 | 38.1237 | 38.1237 | 7.3000e-004 | 7.0000e-004 | 38.3503 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1.5962** | **14.5105** | **12.1888** | **0.0871** | | **1.1028** | **1.1028** | | **1.1028** | **1.1028** | **0.0000** | **15,796.3957** | **15,796.3957** | **0.3028** | **0.2896** | **15,890.2658** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Office Building | 2.93256e+008 | 1.5813 | 14.3753 | 12.0752 | 0.0863 | | 1.0925 | 1.0925 | | 1.0925 | 1.0925 | 0.0000 | 15,649.2403 | 15,649.2403 | 0.2999 | 0.2869 | 15,742.2359 |
| Government Office Building | 2.04318e+006 | 0.0110 | 0.1002 | 0.0841 | 6.0000e-004 | | 7.6100e-003 | 7.6100e-003 | | 7.6100e-003 | 7.6100e-003 | 0.0000 | 109.0317 | 109.0317 | 2.0900e-003 | 2.0000e-003 | 109.6796 |
| Strip Mall | 714411 | 3.8500e-003 | 0.0350 | 0.0294 | 2.1000e-004 | | 2.6600e-003 | 2.6600e-003 | | 2.6600e-003 | 2.6600e-003 | 0.0000 | 38.1237 | 38.1237 | 7.3000e-004 | 7.0000e-004 | 38.3503 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1.5962** | **14.5105** | **12.1888** | **0.0871** | | **1.1028** | **1.1028** | | **1.1028** | **1.1028** | **0.0000** | **15,796.3957** | **15,796.3957** | **0.3028** | **0.2896** | **15,890.2658** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Office Building | 3.10815e+008 | 281.9665 | 0.0000 | 0.0000 | 281.9665 |
| Government Office Building | 2.16551e+006 | 1.9645 | 0.0000 | 0.0000 | 1.9645 |
| Strip Mall | 3.17211e+006 | 2.8777 | 0.0000 | 0.0000 | 2.8777 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **286.8087** | **0.0000** | **0.0000** | **286.8087** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Office Building | 3.10815e+008 | 281.9665 | 0.0000 | 0.0000 | 281.9665 |
| Government Office Building | 2.16551e+006 | 1.9645 | 0.0000 | 0.0000 | 1.9645 |
| Strip Mall | 3.17211e+006 | 2.8777 | 0.0000 | 0.0000 | 2.8777 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **286.8087** | **0.0000** | **0.0000** | **286.8087** |

## 6.0 Area Detail

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

### 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 | 82.0633 | 1.5800e-003 | 0.1714 | 1.0000e-005 | | 6.1000e-004 | 6.1000e-004 | | 6.1000e-004 | 6.1000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.9000e-004 | 0.0000 | 0.3534 |
| Unmitigated | 82.0633 | 1.5800e-003 | 0.1714 | 1.0000e-005 | | 6.1000e-004 | 6.1000e-004 | | 6.1000e-004 | 6.1000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.9000e-004 | 0.0000 | 0.3534 |

### 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 | 9.6641 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 72.3831 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0161 | 1.5800e-003 | 0.1714 | 1.0000e-005 | | 6.1000e-004 | 6.1000e-004 | | 6.1000e-004 | 6.1000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.9000e-004 | 0.0000 | 0.3534 |
| **Total** | **82.0634** | **1.5800e-003** | **0.1714** | **1.0000e-005** | | **6.1000e-004** | **6.1000e-004** | | **6.1000e-004** | **6.1000e-004** | **0.0000** | **0.3312** | **0.3312** | **8.9000e-004** | **0.0000** | **0.3534** |

**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 | 9.6641 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 72.3831 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0161 | 1.5800e-003 | 0.1714 | 1.0000e-005 | | 6.1000e-004 | 6.1000e-004 | | 6.1000e-004 | 6.1000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.9000e-004 | 0.0000 | 0.3534 |
| **Total** | **82.0634** | **1.5800e-003** | **0.1714** | **1.0000e-005** | | **6.1000e-004** | **6.1000e-004** | | **6.1000e-004** | **6.1000e-004** | **0.0000** | **0.3312** | **0.3312** | **8.9000e-004** | **0.0000** | **0.3534** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |
| Unmitigated | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Office Building | 3217.37 / 1971.94 | 1,042.7782 | 104.8381 | 2.4755 | 4,401.4165 |
| Government Office Building | 25.055 / 15.3563 | 8.1205 | 0.8164 | 0.0193 | 34.2756 |
| Strip Mall | 22.6143 / 13.8604 | 7.3295 | 0.7369 | 0.0174 | 30.9368 |
| User Defined Commercial | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1,058.2282** | **106.3914** | **2.5121** | **4,466.6288** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Office Building | 3217.37 / 1971.94 | 1,042.7782 | 104.8381 | 2.4755 | 4,401.4165 |
| Government Office Building | 25.055 / 15.3563 | 8.1205 | 0.8164 | 0.0193 | 34.2756 |
| Strip Mall | 22.6143 / 13.8604 | 7.3295 | 0.7369 | 0.0174 | 30.9368 |
| User Defined Commercial | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1,058.2282** | **106.3914** | **2.5121** | **4,466.6288** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |
| Unmitigated | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |

### 8.2 Waste by Land Use

**Unmitigated**

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

MPSP Existing Uses - Santa Clara County, Annual

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

| | | | | | |
|---|---|---|---|---|---|
| General Office Building | 16835 | 3,417.3630 | 201.9604 | 0.0000 | 8,466.3722 |
| Government Office Building | 117.29 | 23.8088 | 1.4071 | 0.0000 | 58.9853 |
| Strip Mall | 320.56 | 65.0708 | 3.8456 | 0.0000 | 161.2101 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **3,506.2426** | **207.2130** | **0.0000** | **8,686.5676** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Office Building | 16835 | 3,417.3630 | 201.9604 | 0.0000 | 8,466.3722 |
| Government Office Building | 117.29 | 23.8088 | 1.4071 | 0.0000 | 58.9853 |
| Strip Mall | 320.56 | 65.0708 | 3.8456 | 0.0000 | 161.2101 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **3,506.2426** | **207.2130** | **0.0000** | **8,686.5676** |

## 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

MPSP Existing Uses in 2040 - Santa Clara County, Annual

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

# MPSP Existing Uses in 2040

**Santa Clara County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 18,102.20 | 1000sqft | 415.57 | 18,102,203.00 | 0 |
| Government Office Building | 126.12 | 1000sqft | 2.90 | 126,122.00 | 0 |
| User Defined Commercial | 1.00 | User Defined Unit | 0.00 | 0.00 | 0 |
| Strip Mall | 305.30 | 1000sqft | 7.01 | 305,304.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2040 |
| **Utility Company** | Silicon Valley Clean Energy | | | | |
| **CO2 Intensity (lb/MWhr)** | 2 | **CH4 Intensity (lb/MWhr)** | 0 | **N2O Intensity (lb/MWhr)** | 0 |

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

Project Characteristics -

Land Use - User defined for traffic entry

Construction Phase - operational

Off-road Equipment - operational

Vehicle Trips - Rates and trip length adjusted for daily trips and VMT

Vehicle Emission Factors - Emfac2021

Road Dust - Santa Clara Roadway silt loading

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 300.00 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 450.00 |
| tblLandUse | LandUseSquareFeet | 18,102,200.00 | 18,102,203.00 |
| tblLandUse | LandUseSquareFeet | 126,120.00 | 126,122.00 |
| tblLandUse | LandUseSquareFeet | 305,300.00 | 305,304.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblRoadDust | RoadSiltLoading | 0.1 | 0.04 |
| tblVehicleEF | HHD | 0.02 | 0.13 |
| tblVehicleEF | HHD | 0.04 | 0.04 |
| tblVehicleEF | HHD | 0.00 | 2.4281e-008 |
| tblVehicleEF | HHD | 6.54 | 4.57 |
| tblVehicleEF | HHD | 0.40 | 0.36 |
| tblVehicleEF | HHD | 8.5380e-003 | 7.8504e-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 | HHD | 851.66 | 595.88 |
| tblVehicleEF | HHD | 1,063.61 | 1,112.25 |
| tblVehicleEF | HHD | 0.06 | 6.6749e-003 |
| tblVehicleEF | HHD | 0.13 | 0.10 |
| tblVehicleEF | HHD | 0.17 | 0.18 |
| tblVehicleEF | HHD | 1.9000e-005 | 6.8538e-007 |
| tblVehicleEF | HHD | 5.29 | 2.88 |
| tblVehicleEF | HHD | 2.44 | 1.10 |
| tblVehicleEF | HHD | 2.29 | 2.18 |
| tblVehicleEF | HHD | 1.9740e-003 | 1.4160e-003 |
| tblVehicleEF | HHD | 0.06 | 0.08 |
| tblVehicleEF | HHD | 0.04 | 0.04 |
| tblVehicleEF | HHD | 0.02 | 0.02 |
| tblVehicleEF | HHD | 1.0000e-006 | 8.0144e-008 |
| tblVehicleEF | HHD | 1.8880e-003 | 1.3482e-003 |
| tblVehicleEF | HHD | 0.03 | 0.03 |
| tblVehicleEF | HHD | 8.9240e-003 | 8.8017e-003 |
| tblVehicleEF | HHD | 0.02 | 0.02 |
| tblVehicleEF | HHD | 1.0000e-006 | 7.3689e-008 |
| tblVehicleEF | HHD | 2.0000e-006 | 7.8757e-006 |
| tblVehicleEF | HHD | 8.2000e-005 | 1.2758e-006 |
| tblVehicleEF | HHD | 0.44 | 0.28 |
| tblVehicleEF | HHD | 1.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 0.02 | 0.01 |
| tblVehicleEF | HHD | 3.4000e-005 | 1.6304e-005 |
| tblVehicleEF | HHD | 2.0000e-006 | 1.3039e-007 |
| tblVehicleEF | HHD | 7.9330e-003 | 5.1764e-003 |
| tblVehicleEF | HHD | 9.7550e-003 | 0.01 |
| tblVehicleEF | HHD | 1.0000e-006 | 6.5989e-008 |
| tblVehicleEF | HHD | 2.0000e-006 | 7.8757e-006 |
| tblVehicleEF | HHD | 8.2000e-005 | 1.2758e-006 |
| tblVehicleEF | HHD | 0.50 | 0.44 |
| tblVehicleEF | HHD | 1.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 0.06 | 0.05 |
| tblVehicleEF | HHD | 3.4000e-005 | 1.6304e-005 |
| tblVehicleEF | HHD | 3.0000e-006 | 1.4276e-007 |
| tblVehicleEF | LDA | 5.8600e-004 | 8.7621e-004 |
| tblVehicleEF | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.35 | 0.41 |
| tblVehicleEF | LDA | 1.40 | 1.53 |
| tblVehicleEF | LDA | 178.98 | 193.08 |
| tblVehicleEF | LDA | 36.83 | 48.27 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | LDA | 2.9540e-003 | 2.7460e-003 |
| tblVehicleEF | LDA | 0.02 | 0.02 |
| tblVehicleEF | LDA | 0.02 | 0.02 |
| tblVehicleEF | LDA | 0.11 | 0.15 |
| tblVehicleEF | LDA | 0.04 | 7.1884e-003 |
| tblVehicleEF | LDA | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | LDA | 5.2600e-004 | 4.7798e-004 |
| tblVehicleEF | LDA | 7.3900e-004 | 8.5236e-004 |
| tblVehicleEF | LDA | 0.02 | 2.5159e-003 |
| tblVehicleEF | LDA | 2.0000e-003 | 2.0000e-003 |
| tblVehicleEF | LDA | 4.8400e-004 | 4.3952e-004 |
| tblVehicleEF | LDA | 6.8000e-004 | 7.8371e-004 |
| tblVehicleEF | LDA | 0.01 | 0.18 |
| tblVehicleEF | LDA | 0.04 | 0.04 |
| tblVehicleEF | LDA | 0.01 | 0.00 |
| tblVehicleEF | LDA | 1.7150e-003 | 2.6599e-003 |
| tblVehicleEF | LDA | 0.02 | 0.13 |
| tblVehicleEF | LDA | 0.07 | 0.12 |
| tblVehicleEF | LDA | 1.7700e-003 | 1.9088e-003 |
| tblVehicleEF | LDA | 3.6400e-004 | 4.7720e-004 |
| tblVehicleEF | LDA | 0.01 | 0.18 |
| tblVehicleEF | LDA | 0.04 | 0.04 |
| tblVehicleEF | LDA | 0.01 | 0.00 |
| tblVehicleEF | LDA | 2.4880e-003 | 3.8804e-003 |
| tblVehicleEF | LDA | 0.02 | 0.13 |
| tblVehicleEF | LDA | 0.08 | 0.14 |
| tblVehicleEF | LDT1 | 6.9500e-004 | 1.2639e-003 |
| tblVehicleEF | LDT1 | 0.02 | 0.04 |
| tblVehicleEF | LDT1 | 0.37 | 0.53 |
| tblVehicleEF | LDT1 | 1.50 | 1.92 |
| tblVehicleEF | LDT1 | 214.07 | 253.79 |
| tblVehicleEF | LDT1 | 44.71 | 63.43 |
| tblVehicleEF | LDT1 | 2.9130e-003 | 3.4762e-003 |
| tblVehicleEF | LDT1 | 0.02 | 0.03 |
| tblVehicleEF | LDT1 | 0.02 | 0.03 |
| tblVehicleEF | LDT1 | 0.12 | 0.19 |
| tblVehicleEF | LDT1 | 0.04 | 9.0941e-003 |
| tblVehicleEF | LDT1 | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | LDT1 | 5.8900e-004 | 6.2952e-004 |
| tblVehicleEF | LDT1 | 8.4200e-004 | 1.1095e-003 |
| tblVehicleEF | LDT1 | 0.02 | 3.1829e-003 |
| tblVehicleEF | LDT1 | 2.0000e-003 | 2.0000e-003 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | LDT1 | 5.4100e-004 | 5.7882e-004 |
| tblVehicleEF | LDT1 | 7.7400e-004 | 1.0202e-003 |
| tblVehicleEF | LDT1 | 0.02 | 0.34 |
| tblVehicleEF | LDT1 | 0.05 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.00 |
| tblVehicleEF | LDT1 | 2.1050e-003 | 4.2146e-003 |
| tblVehicleEF | LDT1 | 0.03 | 0.25 |
| tblVehicleEF | LDT1 | 0.08 | 0.17 |
| tblVehicleEF | LDT1 | 2.1180e-003 | 2.5090e-003 |
| tblVehicleEF | LDT1 | 4.4200e-004 | 6.2710e-004 |
| tblVehicleEF | LDT1 | 0.02 | 0.34 |
| tblVehicleEF | LDT1 | 0.05 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.00 |
| tblVehicleEF | LDT1 | 3.0720e-003 | 6.1499e-003 |
| tblVehicleEF | LDT1 | 0.03 | 0.25 |
| tblVehicleEF | LDT1 | 0.09 | 0.18 |
| tblVehicleEF | LDT2 | 9.2200e-004 | 1.3441e-003 |
| tblVehicleEF | LDT2 | 0.03 | 0.04 |
| tblVehicleEF | LDT2 | 0.43 | 0.55 |
| tblVehicleEF | LDT2 | 1.90 | 2.14 |
| tblVehicleEF | LDT2 | 215.05 | 261.09 |
| tblVehicleEF | LDT2 | 45.04 | 65.08 |
| tblVehicleEF | LDT2 | 3.1900e-003 | 3.5744e-003 |
| tblVehicleEF | LDT2 | 0.02 | 0.03 |
| tblVehicleEF | LDT2 | 0.02 | 0.03 |
| tblVehicleEF | LDT2 | 0.12 | 0.21 |
| tblVehicleEF | LDT2 | 0.04 | 8.9685e-003 |
| tblVehicleEF | LDT2 | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | LDT2 | 6.0400e-004 | 5.7875e-004 |
| tblVehicleEF | LDT2 | 7.8800e-004 | 9.6698e-004 |
| tblVehicleEF | LDT2 | 0.02 | 3.1390e-003 |
| tblVehicleEF | LDT2 | 2.0000e-003 | 2.0000e-003 |
| tblVehicleEF | LDT2 | 5.5700e-004 | 5.3270e-004 |
| tblVehicleEF | LDT2 | 7.2500e-004 | 8.8910e-004 |
| tblVehicleEF | LDT2 | 0.03 | 0.23 |
| tblVehicleEF | LDT2 | 0.05 | 0.04 |
| tblVehicleEF | LDT2 | 0.03 | 0.00 |
| tblVehicleEF | LDT2 | 3.0390e-003 | 4.3769e-003 |
| tblVehicleEF | LDT2 | 0.03 | 0.17 |
| tblVehicleEF | LDT2 | 0.10 | 0.18 |
| tblVehicleEF | LDT2 | 2.1270e-003 | 2.5808e-003 |
| tblVehicleEF | LDT2 | 4.4600e-004 | 6.4335e-004 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | LDT2 | 0.03 | 0.23 |
| tblVehicleEF | LDT2 | 0.05 | 0.04 |
| tblVehicleEF | LDT2 | 0.03 | 0.00 |
| tblVehicleEF | LDT2 | 4.3940e-003 | 6.3725e-003 |
| tblVehicleEF | LDT2 | 0.03 | 0.17 |
| tblVehicleEF | LDT2 | 0.11 | 0.20 |
| tblVehicleEF | LHD1 | 3.4210e-003 | 2.7756e-003 |
| tblVehicleEF | LHD1 | 3.9080e-003 | 1.5648e-003 |
| tblVehicleEF | LHD1 | 5.9710e-003 | 9.8913e-003 |
| tblVehicleEF | LHD1 | 0.17 | 0.13 |
| tblVehicleEF | LHD1 | 0.36 | 0.29 |
| tblVehicleEF | LHD1 | 0.77 | 1.49 |
| tblVehicleEF | LHD1 | 7.58 | 5.59 |
| tblVehicleEF | LHD1 | 637.02 | 443.66 |
| tblVehicleEF | LHD1 | 8.76 | 11.03 |
| tblVehicleEF | LHD1 | 6.9700e-004 | 4.2658e-004 |
| tblVehicleEF | LHD1 | 0.04 | 0.02 |
| tblVehicleEF | LHD1 | 0.02 | 0.02 |
| tblVehicleEF | LHD1 | 0.03 | 0.02 |
| tblVehicleEF | LHD1 | 0.09 | 0.09 |
| tblVehicleEF | LHD1 | 0.17 | 0.20 |
| tblVehicleEF | LHD1 | 9.8200e-004 | 5.2138e-004 |
| tblVehicleEF | LHD1 | 0.08 | 0.06 |
| tblVehicleEF | LHD1 | 9.9810e-003 | 8.9683e-003 |
| tblVehicleEF | LHD1 | 5.1070e-003 | 5.3106e-003 |
| tblVehicleEF | LHD1 | 1.8200e-004 | 5.9386e-005 |
| tblVehicleEF | LHD1 | 9.4000e-004 | 4.9882e-004 |
| tblVehicleEF | LHD1 | 0.03 | 0.02 |
| tblVehicleEF | LHD1 | 2.4950e-003 | 2.2421e-003 |
| tblVehicleEF | LHD1 | 4.8440e-003 | 5.0621e-003 |
| tblVehicleEF | LHD1 | 1.6700e-004 | 5.4603e-005 |
| tblVehicleEF | LHD1 | 9.7100e-004 | 0.06 |
| tblVehicleEF | LHD1 | 0.03 | 0.01 |
| tblVehicleEF | LHD1 | 0.01 | 0.01 |
| tblVehicleEF | LHD1 | 6.1300e-004 | 0.00 |
| tblVehicleEF | LHD1 | 0.07 | 0.02 |
| tblVehicleEF | LHD1 | 0.08 | 0.08 |
| tblVehicleEF | LHD1 | 0.03 | 0.05 |
| tblVehicleEF | LHD1 | 7.3000e-005 | 5.4332e-005 |
| tblVehicleEF | LHD1 | 6.2070e-003 | 4.3258e-003 |
| tblVehicleEF | LHD1 | 8.7000e-005 | 1.0903e-004 |
| tblVehicleEF | LHD1 | 9.7100e-004 | 0.06 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | LHD1 | 0.03 | 0.01 |
| tblVehicleEF | LHD1 | 0.02 | 0.02 |
| tblVehicleEF | LHD1 | 6.1300e-004 | 0.00 |
| tblVehicleEF | LHD1 | 0.08 | 0.03 |
| tblVehicleEF | LHD1 | 0.08 | 0.08 |
| tblVehicleEF | LHD1 | 0.03 | 0.05 |
| tblVehicleEF | LHD2 | 2.0850e-003 | 1.9367e-003 |
| tblVehicleEF | LHD2 | 4.8230e-003 | 2.5818e-003 |
| tblVehicleEF | LHD2 | 3.0030e-003 | 5.9125e-003 |
| tblVehicleEF | LHD2 | 0.13 | 0.13 |
| tblVehicleEF | LHD2 | 0.47 | 0.24 |
| tblVehicleEF | LHD2 | 0.43 | 1.03 |
| tblVehicleEF | LHD2 | 12.02 | 13.01 |
| tblVehicleEF | LHD2 | 624.36 | 481.89 |
| tblVehicleEF | LHD2 | 5.60 | 7.41 |
| tblVehicleEF | LHD2 | 1.5630e-003 | 1.6789e-003 |
| tblVehicleEF | LHD2 | 0.06 | 0.05 |
| tblVehicleEF | LHD2 | 8.8060e-003 | 0.01 |
| tblVehicleEF | LHD2 | 0.05 | 0.06 |
| tblVehicleEF | LHD2 | 0.16 | 0.22 |
| tblVehicleEF | LHD2 | 0.09 | 0.12 |
| tblVehicleEF | LHD2 | 1.5090e-003 | 1.4929e-003 |
| tblVehicleEF | LHD2 | 0.09 | 0.07 |
| tblVehicleEF | LHD2 | 0.01 | 9.8449e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 1.0000e-004 | 3.3048e-005 |
| tblVehicleEF | LHD2 | 1.4430e-003 | 1.4283e-003 |
| tblVehicleEF | LHD2 | 0.04 | 0.03 |
| tblVehicleEF | LHD2 | 2.7210e-003 | 2.4612e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 9.2000e-005 | 3.0386e-005 |
| tblVehicleEF | LHD2 | 4.8400e-004 | 0.04 |
| tblVehicleEF | LHD2 | 0.02 | 7.2214e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 3.1000e-004 | 0.00 |
| tblVehicleEF | LHD2 | 0.09 | 0.05 |
| tblVehicleEF | LHD2 | 0.04 | 0.06 |
| tblVehicleEF | LHD2 | 0.01 | 0.03 |
| tblVehicleEF | LHD2 | 1.1500e-004 | 1.2440e-004 |
| tblVehicleEF | LHD2 | 6.0190e-003 | 4.6300e-003 |
| tblVehicleEF | LHD2 | 5.5000e-005 | 7.3304e-005 |
| tblVehicleEF | LHD2 | 4.8400e-004 | 0.04 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | LHD2 | 0.02 | 7.2214e-003 |
| tblVehicleEF | LHD2 | 0.02 | 0.02 |
| tblVehicleEF | LHD2 | 3.1000e-004 | 0.00 |
| tblVehicleEF | LHD2 | 0.11 | 0.06 |
| tblVehicleEF | LHD2 | 0.04 | 0.06 |
| tblVehicleEF | LHD2 | 0.01 | 0.03 |
| tblVehicleEF | MCY | 0.32 | 0.13 |
| tblVehicleEF | MCY | 0.24 | 0.14 |
| tblVehicleEF | MCY | 17.07 | 10.07 |
| tblVehicleEF | MCY | 9.32 | 7.74 |
| tblVehicleEF | MCY | 209.59 | 184.59 |
| tblVehicleEF | MCY | 58.06 | 38.03 |
| tblVehicleEF | MCY | 0.07 | 0.04 |
| tblVehicleEF | MCY | 0.02 | 4.8625e-003 |
| tblVehicleEF | MCY | 1.13 | 0.47 |
| tblVehicleEF | MCY | 0.27 | 0.07 |
| tblVehicleEF | MCY | 0.01 | 0.01 |
| tblVehicleEF | MCY | 4.0000e-003 | 4.0000e-003 |
| tblVehicleEF | MCY | 2.2350e-003 | 2.1182e-003 |
| tblVehicleEF | MCY | 2.9700e-003 | 3.5755e-003 |
| tblVehicleEF | MCY | 5.0400e-003 | 4.2000e-003 |
| tblVehicleEF | MCY | 1.0000e-003 | 1.0000e-003 |
| tblVehicleEF | MCY | 2.0830e-003 | 1.9751e-003 |
| tblVehicleEF | MCY | 2.7710e-003 | 3.3370e-003 |
| tblVehicleEF | MCY | 0.91 | 3.39 |
| tblVehicleEF | MCY | 0.63 | 3.55 |
| tblVehicleEF | MCY | 0.48 | 0.00 |
| tblVehicleEF | MCY | 2.10 | 0.79 |
| tblVehicleEF | MCY | 0.42 | 3.79 |
| tblVehicleEF | MCY | 1.84 | 0.96 |
| tblVehicleEF | MCY | 2.0740e-003 | 1.8248e-003 |
| tblVehicleEF | MCY | 5.7500e-004 | 3.7601e-004 |
| tblVehicleEF | MCY | 0.91 | 0.08 |
| tblVehicleEF | MCY | 0.63 | 3.55 |
| tblVehicleEF | MCY | 0.48 | 0.00 |
| tblVehicleEF | MCY | 2.64 | 0.98 |
| tblVehicleEF | MCY | 0.42 | 3.79 |
| tblVehicleEF | MCY | 2.01 | 1.05 |
| tblVehicleEF | MDV | 9.3100e-004 | 1.3905e-003 |
| tblVehicleEF | MDV | 0.03 | 0.04 |
| tblVehicleEF | MDV | 0.43 | 0.56 |
| tblVehicleEF | MDV | 1.90 | 2.14 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | MDV | 259.75 | 310.49 |
| tblVehicleEF | MDV | 53.21 | 77.08 |
| tblVehicleEF | MDV | 4.2990e-003 | 4.0379e-003 |
| tblVehicleEF | MDV | 0.02 | 0.03 |
| tblVehicleEF | MDV | 0.02 | 0.03 |
| tblVehicleEF | MDV | 0.13 | 0.22 |
| tblVehicleEF | MDV | 0.04 | 9.0271e-003 |
| tblVehicleEF | MDV | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | MDV | 5.9900e-004 | 5.7434e-004 |
| tblVehicleEF | MDV | 8.0000e-004 | 9.6647e-004 |
| tblVehicleEF | MDV | 0.02 | 3.1595e-003 |
| tblVehicleEF | MDV | 2.0000e-003 | 2.0000e-003 |
| tblVehicleEF | MDV | 5.5200e-004 | 5.2861e-004 |
| tblVehicleEF | MDV | 7.3500e-004 | 8.8863e-004 |
| tblVehicleEF | MDV | 0.04 | 0.24 |
| tblVehicleEF | MDV | 0.07 | 0.05 |
| tblVehicleEF | MDV | 0.05 | 0.00 |
| tblVehicleEF | MDV | 3.1220e-003 | 4.6344e-003 |
| tblVehicleEF | MDV | 0.04 | 0.18 |
| tblVehicleEF | MDV | 0.11 | 0.19 |
| tblVehicleEF | MDV | 2.5670e-003 | 3.0682e-003 |
| tblVehicleEF | MDV | 5.2700e-004 | 7.6201e-004 |
| tblVehicleEF | MDV | 0.04 | 0.24 |
| tblVehicleEF | MDV | 0.07 | 0.05 |
| tblVehicleEF | MDV | 0.05 | 0.00 |
| tblVehicleEF | MDV | 4.5050e-003 | 6.7455e-003 |
| tblVehicleEF | MDV | 0.04 | 0.18 |
| tblVehicleEF | MDV | 0.12 | 0.21 |
| tblVehicleEF | MH | 3.8070e-003 | 4.1244e-003 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 0.19 | 0.20 |
| tblVehicleEF | MH | 1.47 | 1.60 |
| tblVehicleEF | MH | 1,245.00 | 1,640.30 |
| tblVehicleEF | MH | 13.78 | 18.59 |
| tblVehicleEF | MH | 0.05 | 0.07 |
| tblVehicleEF | MH | 0.03 | 0.03 |
| tblVehicleEF | MH | 0.87 | 1.02 |
| tblVehicleEF | MH | 0.22 | 0.26 |
| tblVehicleEF | MH | 0.13 | 0.04 |
| tblVehicleEF | MH | 0.01 | 0.01 |
| tblVehicleEF | MH | 9.1090e-003 | 0.01 |
| tblVehicleEF | MH | 2.1200e-004 | 2.2471e-004 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | MH | 0.06 | 0.02 |
| tblVehicleEF | MH | 3.3040e-003 | 3.3551e-003 |
| tblVehicleEF | MH | 8.6790e-003 | 0.01 |
| tblVehicleEF | MH | 1.9500e-004 | 2.0661e-004 |
| tblVehicleEF | MH | 0.22 | 11.66 |
| tblVehicleEF | MH | 0.01 | 2.06 |
| tblVehicleEF | MH | 0.10 | 0.00 |
| tblVehicleEF | MH | 0.03 | 0.04 |
| tblVehicleEF | MH | 1.9660e-003 | 0.07 |
| tblVehicleEF | MH | 0.07 | 0.07 |
| tblVehicleEF | MH | 0.01 | 0.02 |
| tblVehicleEF | MH | 1.3600e-004 | 1.8382e-004 |
| tblVehicleEF | MH | 0.22 | 11.66 |
| tblVehicleEF | MH | 0.01 | 2.06 |
| tblVehicleEF | MH | 0.10 | 0.00 |
| tblVehicleEF | MH | 0.04 | 0.05 |
| tblVehicleEF | MH | 1.9660e-003 | 0.07 |
| tblVehicleEF | MH | 0.07 | 0.08 |
| tblVehicleEF | MHD | 4.2930e-003 | 0.01 |
| tblVehicleEF | MHD | 8.5200e-004 | 7.4197e-003 |
| tblVehicleEF | MHD | 9.1640e-003 | 4.2529e-003 |
| tblVehicleEF | MHD | 0.43 | 0.45 |
| tblVehicleEF | MHD | 0.13 | 0.07 |
| tblVehicleEF | MHD | 0.86 | 0.40 |
| tblVehicleEF | MHD | 57.14 | 93.61 |
| tblVehicleEF | MHD | 910.34 | 666.86 |
| tblVehicleEF | MHD | 8.81 | 4.24 |
| tblVehicleEF | MHD | 8.0890e-003 | 0.01 |
| tblVehicleEF | MHD | 0.11 | 0.09 |
| tblVehicleEF | MHD | 9.1450e-003 | 3.1945e-003 |
| tblVehicleEF | MHD | 0.29 | 0.33 |
| tblVehicleEF | MHD | 1.37 | 0.22 |
| tblVehicleEF | MHD | 1.64 | 0.71 |
| tblVehicleEF | MHD | 8.3000e-005 | 1.6332e-004 |
| tblVehicleEF | MHD | 0.13 | 0.04 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 6.6880e-003 | 1.9589e-003 |
| tblVehicleEF | MHD | 1.2700e-004 | 5.5542e-005 |
| tblVehicleEF | MHD | 7.9000e-005 | 1.5560e-004 |
| tblVehicleEF | MHD | 0.06 | 0.01 |
| tblVehicleEF | MHD | 3.0000e-003 | 3.0000e-003 |
| tblVehicleEF | MHD | 6.3910e-003 | 1.8692e-003 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | MHD | 1.1700e-004 | 5.1069e-005 |
| tblVehicleEF | MHD | 3.0500e-004 | 0.01 |
| tblVehicleEF | MHD | 0.01 | 1.6241e-003 |
| tblVehicleEF | MHD | 0.02 | 0.01 |
| tblVehicleEF | MHD | 1.9400e-004 | 0.00 |
| tblVehicleEF | MHD | 0.01 | 4.9987e-003 |
| tblVehicleEF | MHD | 0.01 | 0.02 |
| tblVehicleEF | MHD | 0.04 | 0.02 |
| tblVehicleEF | MHD | 5.4300e-004 | 8.5031e-004 |
| tblVehicleEF | MHD | 8.6920e-003 | 6.2853e-003 |
| tblVehicleEF | MHD | 8.7000e-005 | 4.1936e-005 |
| tblVehicleEF | MHD | 3.0500e-004 | 0.01 |
| tblVehicleEF | MHD | 0.01 | 1.6241e-003 |
| tblVehicleEF | MHD | 0.03 | 0.03 |
| tblVehicleEF | MHD | 1.9400e-004 | 0.00 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 0.01 | 0.02 |
| tblVehicleEF | MHD | 0.05 | 0.02 |
| tblVehicleEF | OBUS | 7.2220e-003 | 7.0922e-003 |
| tblVehicleEF | OBUS | 1.6630e-003 | 0.01 |
| tblVehicleEF | OBUS | 0.01 | 9.0616e-003 |
| tblVehicleEF | OBUS | 0.63 | 0.51 |
| tblVehicleEF | OBUS | 0.20 | 0.18 |
| tblVehicleEF | OBUS | 1.48 | 0.98 |
| tblVehicleEF | OBUS | 86.02 | 80.36 |
| tblVehicleEF | OBUS | 1,120.11 | 1,068.65 |
| tblVehicleEF | OBUS | 12.75 | 8.15 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 0.11 | 0.14 |
| tblVehicleEF | OBUS | 0.02 | 6.6592e-003 |
| tblVehicleEF | OBUS | 0.42 | 0.23 |
| tblVehicleEF | OBUS | 1.41 | 0.56 |
| tblVehicleEF | OBUS | 1.09 | 0.70 |
| tblVehicleEF | OBUS | 1.3700e-004 | 1.7581e-004 |
| tblVehicleEF | OBUS | 0.13 | 0.05 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 7.7800e-003 | 7.3581e-003 |
| tblVehicleEF | OBUS | 1.7400e-004 | 8.6342e-005 |
| tblVehicleEF | OBUS | 1.3200e-004 | 1.6800e-004 |
| tblVehicleEF | OBUS | 0.06 | 0.02 |
| tblVehicleEF | OBUS | 3.0000e-003 | 3.0000e-003 |
| tblVehicleEF | OBUS | 7.4270e-003 | 7.0340e-003 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | OBUS | 1.6000e-004 | 7.9388e-005 |
| tblVehicleEF | OBUS | 1.1050e-003 | 0.05 |
| tblVehicleEF | OBUS | 0.02 | 8.9125e-003 |
| tblVehicleEF | OBUS | 0.05 | 0.03 |
| tblVehicleEF | OBUS | 5.2800e-004 | 0.00 |
| tblVehicleEF | OBUS | 0.01 | 0.02 |
| tblVehicleEF | OBUS | 0.05 | 0.06 |
| tblVehicleEF | OBUS | 0.07 | 0.05 |
| tblVehicleEF | OBUS | 8.1700e-004 | 7.5282e-004 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 1.2600e-004 | 8.0560e-005 |
| tblVehicleEF | OBUS | 1.1050e-003 | 0.05 |
| tblVehicleEF | OBUS | 0.02 | 8.9125e-003 |
| tblVehicleEF | OBUS | 0.06 | 0.05 |
| tblVehicleEF | OBUS | 5.2800e-004 | 0.00 |
| tblVehicleEF | OBUS | 0.02 | 0.03 |
| tblVehicleEF | OBUS | 0.05 | 0.06 |
| tblVehicleEF | OBUS | 0.08 | 0.05 |
| tblVehicleEF | SBUS | 0.10 | 0.08 |
| tblVehicleEF | SBUS | 1.6600e-003 | 0.07 |
| tblVehicleEF | SBUS | 8.7250e-003 | 4.2919e-003 |
| tblVehicleEF | SBUS | 4.08 | 1.66 |
| tblVehicleEF | SBUS | 0.16 | 0.30 |
| tblVehicleEF | SBUS | 1.12 | 0.51 |
| tblVehicleEF | SBUS | 307.32 | 139.50 |
| tblVehicleEF | SBUS | 834.52 | 687.13 |
| tblVehicleEF | SBUS | 6.63 | 3.24 |
| tblVehicleEF | SBUS | 0.04 | 0.02 |
| tblVehicleEF | SBUS | 0.09 | 0.08 |
| tblVehicleEF | SBUS | 9.1050e-003 | 4.5830e-003 |
| tblVehicleEF | SBUS | 1.30 | 0.43 |
| tblVehicleEF | SBUS | 1.09 | 0.35 |
| tblVehicleEF | SBUS | 1.78 | 0.50 |
| tblVehicleEF | SBUS | 3.6400e-004 | 1.7724e-004 |
| tblVehicleEF | SBUS | 0.74 | 0.04 |
| tblVehicleEF | SBUS | 0.01 | 0.01 |
| tblVehicleEF | SBUS | 6.8240e-003 | 2.4949e-003 |
| tblVehicleEF | SBUS | 1.0700e-004 | 4.5407e-005 |
| tblVehicleEF | SBUS | 3.4800e-004 | 1.6808e-004 |
| tblVehicleEF | SBUS | 0.32 | 0.01 |
| tblVehicleEF | SBUS | 2.5930e-003 | 2.5796e-003 |
| tblVehicleEF | SBUS | 6.5060e-003 | 2.3712e-003 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | SBUS | 9.8000e-005 | 4.1750e-005 |
| tblVehicleEF | SBUS | 1.5920e-003 | 0.06 |
| tblVehicleEF | SBUS | 0.01 | 9.6169e-003 |
| tblVehicleEF | SBUS | 0.45 | 0.17 |
| tblVehicleEF | SBUS | 7.7100e-004 | 0.00 |
| tblVehicleEF | SBUS | 0.02 | 0.01 |
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.05 | 0.02 |
| tblVehicleEF | SBUS | 2.9440e-003 | 1.2338e-003 |
| tblVehicleEF | SBUS | 8.0200e-003 | 6.3600e-003 |
| tblVehicleEF | SBUS | 6.6000e-005 | 3.2057e-005 |
| tblVehicleEF | SBUS | 1.5920e-003 | 0.06 |
| tblVehicleEF | SBUS | 0.01 | 9.6169e-003 |
| tblVehicleEF | SBUS | 0.64 | 0.29 |
| tblVehicleEF | SBUS | 7.7100e-004 | 0.00 |
| tblVehicleEF | SBUS | 0.02 | 0.08 |
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.05 | 0.03 |
| tblVehicleEF | UBUS | 1.86 | 0.14 |
| tblVehicleEF | UBUS | 1.6730e-003 | 2.5539e-003 |
| tblVehicleEF | UBUS | 14.11 | 1.62 |
| tblVehicleEF | UBUS | 0.14 | 0.55 |
| tblVehicleEF | UBUS | 1,664.74 | 211.33 |
| tblVehicleEF | UBUS | 1.26 | 3.06 |
| tblVehicleEF | UBUS | 0.28 | 0.02 |
| tblVehicleEF | UBUS | 1.1110e-003 | 4.7545e-003 |
| tblVehicleEF | UBUS | 0.70 | 0.03 |
| tblVehicleEF | UBUS | 0.01 | 0.03 |
| tblVehicleEF | UBUS | 0.07 | 1.25 |
| tblVehicleEF | UBUS | 0.03 | 0.76 |
| tblVehicleEF | UBUS | 5.1160e-003 | 6.7682e-004 |
| tblVehicleEF | UBUS | 1.5000e-005 | 1.2612e-005 |
| tblVehicleEF | UBUS | 0.03 | 0.44 |
| tblVehicleEF | UBUS | 8.3320e-003 | 0.19 |
| tblVehicleEF | UBUS | 4.8930e-003 | 6.4357e-004 |
| tblVehicleEF | UBUS | 1.4000e-005 | 1.1596e-005 |
| tblVehicleEF | UBUS | 2.4000e-005 | 7.0360e-003 |
| tblVehicleEF | UBUS | 2.0700e-004 | 2.0926e-003 |
| tblVehicleEF | UBUS | 1.1000e-005 | 0.00 |
| tblVehicleEF | UBUS | 0.03 | 7.8011e-003 |
| tblVehicleEF | UBUS | 4.1000e-005 | 7.8798e-003 |
| tblVehicleEF | UBUS | 6.9960e-003 | 8.5986e-003 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | UBUS | 0.01 | 1.6170e-003 |
| tblVehicleEF | UBUS | 1.3000e-005 | 3.0270e-005 |
| tblVehicleEF | UBUS | 2.4000e-005 | 7.0360e-003 |
| tblVehicleEF | UBUS | 2.0700e-004 | 2.0926e-003 |
| tblVehicleEF | UBUS | 1.1000e-005 | 0.00 |
| tblVehicleEF | UBUS | 1.90 | 0.15 |
| tblVehicleEF | UBUS | 4.1000e-005 | 7.8798e-003 |
| tblVehicleEF | UBUS | 7.6590e-003 | 9.4144e-003 |
| tblVehicleTrips | CC_TL | 7.30 | 12.60 |
| tblVehicleTrips | CC_TL | 7.30 | 12.60 |
| tblVehicleTrips | CC_TL | 7.30 | 12.60 |
| tblVehicleTrips | CNW_TL | 7.30 | 12.60 |
| tblVehicleTrips | CNW_TL | 7.30 | 12.60 |
| tblVehicleTrips | CNW_TL | 7.30 | 12.60 |
| tblVehicleTrips | CW_TL | 9.50 | 12.60 |
| tblVehicleTrips | CW_TL | 9.50 | 12.60 |
| tblVehicleTrips | CW_TL | 9.50 | 12.60 |
| tblVehicleTrips | DV_TP | 19.00 | 0.00 |
| tblVehicleTrips | DV_TP | 34.00 | 0.00 |
| tblVehicleTrips | DV_TP | 40.00 | 0.00 |
| tblVehicleTrips | PB_TP | 4.00 | 0.00 |
| tblVehicleTrips | PB_TP | 16.00 | 0.00 |
| tblVehicleTrips | PB_TP | 15.00 | 0.00 |
| tblVehicleTrips | PR_TP | 77.00 | 100.00 |
| tblVehicleTrips | PR_TP | 50.00 | 100.00 |
| tblVehicleTrips | PR_TP | 45.00 | 100.00 |
| tblVehicleTrips | ST_TR | 2.21 | 1.13 |
| tblVehicleTrips | ST_TR | 42.04 | 21.43 |
| tblVehicleTrips | SU_TR | 0.70 | 0.36 |
| tblVehicleTrips | SU_TR | 20.43 | 10.41 |
| tblVehicleTrips | WD_TR | 9.74 | 4.96 |
| tblVehicleTrips | WD_TR | 22.59 | 11.51 |
| tblVehicleTrips | WD_TR | 44.32 | 22.59 |

## 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 | | | | | |

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

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2024 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **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**

| | ROG | NOx | CO | SO2 | 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 | | | | | |
| 2024 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | ROG | NOx | 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** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| | | **Highest** | | |

## 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 | 82.0627 | 1.5200e-003 | 0.1692 | 1.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.5000e-004 | 0.0000 | 0.3525 |
| Energy | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 16,083.2044 | 16,083.2044 | 0.3028 | 0.2896 | 16,177.0745 |
| Mobile | 34.3274 | 23.3573 | 320.4128 | 0.9255 | 54.8747 | 0.3629 | 55.2377 | 13.9078 | 0.3387 | 14.2465 | 0.0000 | 85,317.8878 | 85,317.8878 | 2.6457 | 2.9404 | 86,260.2813 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3,506.2426 | 0.0000 | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,035.8469 | 22.3813 | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |
| **Total** | **117.9863** | **37.8693** | **332.7708** | **1.0125** | **54.8747** | **1.4663** | **56.3410** | **13.9078** | **1.4421** | **15.3499** | **4,542.0895** | **101,423.8047** | **105,965.8943** | **316.5538** | **5.7422** | **115,590.9047** |

**Mitigated Operational**

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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 | | | | | |
| Area | 82.0627 | 1.5200e-003 | 0.1692 | 1.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.5000e-004 | 0.0000 | 0.3525 |
| Energy | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 16,083.2044 | 16,083.2044 | 0.3028 | 0.2896 | 16,177.0745 |
| Mobile | 34.3274 | 23.3573 | 320.4128 | 0.9255 | 54.8747 | 0.3629 | 55.2377 | 13.9078 | 0.3387 | 14.2465 | 0.0000 | 85,317.8878 | 85,317.8878 | 2.6457 | 2.9404 | 86,260.2813 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 3,506.2426 | 0.0000 | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,035.8469 | 22.3813 | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |
| **Total** | **117.9863** | **37.8693** | **332.7708** | **1.0125** | **54.8747** | **1.4663** | **56.3410** | **13.9078** | **1.4421** | **15.3499** | **4,542.0895** | **101,423.8047** | **105,965.8943** | **316.5538** | **5.7422** | **115,590.9047** |

| | ROG | NOx | 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 | Site Preparation | Site Preparation | 10/19/2024 | 10/18/2024 | 5 | 0 | |

**Acres of Grading (Site Preparation Phase): 450**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

### 3.1 Mitigation Measures Construction

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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 Site Preparation - 2024

**Unmitigated Construction On-Site**

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

**Unmitigated Construction Off-Site**

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

**Mitigated Construction On-Site**

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

## 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 | 34.3274 | 23.3573 | 320.4128 | 0.9255 | 54.8747 | 0.3629 | 55.2377 | 13.9078 | 0.3387 | 14.2465 | 0.0000 | 85,317.8878 | 85,317.8878 | 2.6457 | 2.9404 | 86,260.2813 |
| Unmitigated | 34.3274 | 23.3573 | 320.4128 | 0.9255 | 54.8747 | 0.3629 | 55.2377 | 13.9078 | 0.3387 | 14.2465 | 0.0000 | 85,317.8878 | 85,317.8878 | 2.6457 | 2.9404 | 86,260.2813 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Office Building | 89,786.91 | 20,455.49 | 6516.79 | 311,814,160 | 311,814,160 |
| Government Office Building | 1,451.64 | 0.00 | 0.00 | 4,755,577 | 4,755,577 |
| Strip Mall | 6,896.73 | 6,542.58 | 3178.17 | 28,962,714 | 28,962,714 |
| User Defined Commercial | 0.00 | 0.00 | 0.00 | | |
| Total | 98,135.28 | 26,998.07 | 9,694.97 | 345,532,451 | 345,532,451 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Office Building | 12.60 | 12.60 | 12.60 | 33.00 | 48.00 | 19.00 | 100 | 0 | 0 |
| Government Office Building | 12.60 | 12.60 | 12.60 | 33.00 | 62.00 | 5.00 | 100 | 0 | 0 |
| Strip Mall | 12.60 | 12.60 | 12.60 | 16.60 | 64.40 | 19.00 | 100 | 0 | 0 |

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

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| User Defined Commercial | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Office Building | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |
| Government Office Building | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |
| Strip Mall | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |
| User Defined Commercial | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 286.8087 | 286.8087 | 0.0000 | 0.0000 | 286.8087 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 286.8087 | 286.8087 | 0.0000 | 0.0000 | 286.8087 |
| NaturalGas Mitigated | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 15,796.3957 | 15,796.3957 | 0.3028 | 0.2896 | 15,890.2658 |
| NaturalGas Unmitigated | 1.5962 | 14.5105 | 12.1888 | 0.0871 | | 1.1028 | 1.1028 | | 1.1028 | 1.1028 | 0.0000 | 15,796.3957 | 15,796.3957 | 0.3028 | 0.2896 | 15,890.2658 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Office Building | 2.93256e+008 | 1.5813 | 14.3753 | 12.0752 | 0.0863 | | 1.0925 | 1.0925 | | 1.0925 | 1.0925 | 0.0000 | 15,649.2403 | 15,649.2403 | 0.2999 | 0.2869 | 15,742.2359 |
| Government Office Building | 2.04318e+006 | 0.0110 | 0.1002 | 0.0841 | 6.0000e-004 | | 7.6100e-003 | 7.6100e-003 | | 7.6100e-003 | 7.6100e-003 | 0.0000 | 109.0317 | 109.0317 | 2.0900e-003 | 2.0000e-003 | 109.6796 |
| Strip Mall | 714411 | 3.8500e-003 | 0.0350 | 0.0294 | 2.1000e-004 | | 2.6600e-003 | 2.6600e-003 | | 2.6600e-003 | 2.6600e-003 | 0.0000 | 38.1237 | 38.1237 | 7.3000e-004 | 7.0000e-004 | 38.3503 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1.5962** | **14.5105** | **12.1888** | **0.0871** | | **1.1028** | **1.1028** | | **1.1028** | **1.1028** | **0.0000** | **15,796.3957** | **15,796.3957** | **0.3028** | **0.2896** | **15,890.2658** |

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

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Office Building | 2.93256e+008 | 1.5813 | 14.3753 | 12.0752 | 0.0863 | | 1.0925 | 1.0925 | | 1.0925 | 1.0925 | 0.0000 | 15,649.2403 | 15,649.2403 | 0.2999 | 0.2869 | 15,742.2359 |
| Government Office Building | 2.04318e+006 | 0.0110 | 0.1002 | 0.0841 | 6.0000e-004 | | 7.6100e-003 | 7.6100e-003 | | 7.6100e-003 | 7.6100e-003 | 0.0000 | 109.0317 | 109.0317 | 2.0900e-003 | 2.0000e-003 | 109.6796 |
| Strip Mall | 714411 | 3.8500e-003 | 0.0350 | 0.0294 | 2.1000e-004 | | 2.6600e-003 | 2.6600e-003 | | 2.6600e-003 | 2.6600e-003 | 0.0000 | 38.1237 | 38.1237 | 7.3000e-004 | 7.0000e-004 | 38.3503 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1.5962** | **14.5105** | **12.1888** | **0.0871** | | **1.1028** | **1.1028** | | **1.1028** | **1.1028** | **0.0000** | **15,796.3957** | **15,796.3957** | **0.3028** | **0.2896** | **15,890.2658** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Office Building | 3.10815e+008 | 281.9665 | 0.0000 | 0.0000 | 281.9665 |
| Government Office Building | 2.16551e+006 | 1.9645 | 0.0000 | 0.0000 | 1.9645 |
| Strip Mall | 3.17211e+006 | 2.8777 | 0.0000 | 0.0000 | 2.8777 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **286.8087** | **0.0000** | **0.0000** | **286.8087** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Office Building | 3.10815e+008 | 281.9665 | 0.0000 | 0.0000 | 281.9665 |

MPSP Existing Uses in 2040 - Santa Clara County, Annual

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

| | | | | | |
|---|---|---|---|---|---|
| Government Office Building | 2.16551e+006 | 1.9645 | 0.0000 | 0.0000 | 1.9645 |
| Strip Mall | 3.17211e+006 | 2.8777 | 0.0000 | 0.0000 | 2.8777 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **286.8087** | **0.0000** | **0.0000** | **286.8087** |

## 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 | 82.0627 | 1.5200e-003 | 0.1692 | 1.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.5000e-004 | 0.0000 | 0.3525 |
| Unmitigated | 82.0627 | 1.5200e-003 | 0.1692 | 1.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.5000e-004 | 0.0000 | 0.3525 |

### 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 | 9.6641 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 72.3831 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0155 | 1.5200e-003 | 0.1692 | 1.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.5000e-004 | 0.0000 | 0.3525 |
| **Total** | **82.0627** | **1.5200e-003** | **0.1692** | **1.0000e-005** | | **6.0000e-004** | **6.0000e-004** | | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.3312** | **0.3312** | **8.5000e-004** | **0.0000** | **0.3525** |

**Mitigated**

MPSP Existing Uses in 2040 - Santa Clara 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 9.6641 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 72.3831 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0155 | 1.5200e-003 | 0.1692 | 1.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.3312 | 0.3312 | 8.5000e-004 | 0.0000 | 0.3525 |
| **Total** | **82.0627** | **1.5200e-003** | **0.1692** | **1.0000e-005** | | **6.0000e-004** | **6.0000e-004** | | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.3312** | **0.3312** | **8.5000e-004** | **0.0000** | **0.3525** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |
| Unmitigated | 1,058.2282 | 106.3914 | 2.5121 | 4,466.6288 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Office Building | 3217.37 / 1971.94 | 1,042.7782 | 104.8381 | 2.4755 | 4,401.4165 |
| Government Office Building | 25.055 / 15.3563 | 8.1205 | 0.8164 | 0.0193 | 34.2756 |
| Strip Mall | 22.6143 / 13.8604 | 7.3295 | 0.7369 | 0.0174 | 30.9368 |
| User Defined Commercial | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1,058.2282** | **106.3914** | **2.5121** | **4,466.6288** |

MPSP Existing Uses in 2040 - Santa Clara County, Annual

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

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Office Building | 3217.37 / 1971.94 | 1,042.7782 | 104.8381 | 2.4755 | 4,401.4165 |
| Government Office Building | 25.055 / 15.3563 | 8.1205 | 0.8164 | 0.0193 | 34.2756 |
| Strip Mall | 22.6143 / 13.8604 | 7.3295 | 0.7369 | 0.0174 | 30.9368 |
| User Defined Commercial | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **1,058.2282** | **106.3914** | **2.5121** | **4,466.6288** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |
| Unmitigated | 3,506.2426 | 207.2130 | 0.0000 | 8,686.5676 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Office Building | 16835 | 3,417.3630 | 201.9604 | 0.0000 | 8,466.3722 |
| Government Office Building | 117.29 | 23.8088 | 1.4071 | 0.0000 | 58.9853 |
| Strip Mall | 320.56 | 65.0708 | 3.8456 | 0.0000 | 161.2101 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

MPSP Existing Uses in 2040 - Santa Clara County, Annual

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

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **3,506.2426** | **207.2130** | **0.0000** | **8,686.5676** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Office Building | 16835 | 3,417.3630 | 201.9604 | 0.0000 | 8,466.3722 |
| Government Office Building | 117.29 | 23.8088 | 1.4071 | 0.0000 | 58.9853 |
| Strip Mall | 320.56 | 65.0708 | 3.8456 | 0.0000 | 161.2101 |
| User Defined Commercial | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **3,506.2426** | **207.2130** | **0.0000** | **8,686.5676** |

## 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

Date: 11/21/2022 6:07 PM

MPSP Project Build Out in 2040 - Santa Clara County, Annual

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

# MPSP Project Build Out in 2040

**Santa Clara County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 32,000.00 | 1000sqft | 734.62 | 32,000,000.00 | 0 |
| Government Office Building | 326.00 | 1000sqft | 7.48 | 326,000.00 | 0 |
| Apartments High Rise | 10,000.00 | Dwelling Unit | 70.00 | 10,000,000.00 | 28600 |
| Apartments Mid Rise | 10,000.00 | Dwelling Unit | 70.00 | 10,000,000.00 | 28600 |
| Strip Mall | 1,165.30 | 1000sqft | 26.75 | 1,165,303.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 58 |
| **Climate Zone** | 4 | | | **Operational Year** | 2040 |
| **Utility Company** | Silicon Valley Clean Energy | | | | |
| **CO2 Intensity (lb/MWhr)** | 2 | **CH4 Intensity (lb/MWhr)** | 0 | **N2O Intensity (lb/MWhr)** | 0 |

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

Project Characteristics -

Land Use - Assume a 50/50 mix of Apartments mid and high rise

Construction Phase - No Construction modeling

Off-road Equipment - no construction modeling

Grading -

Vehicle Trips - Trips and VMT from traffic study

Vehicle Emission Factors - Emfac2021 Annual rates - 2040

Road Dust - County Silt Loading = 0.0435

Woodstoves - No hearths

Energy Use - Apartments adj elect = 1603,3979 Offices 10.18/7.85, R&D includes non-title 24 nat gas

Area Mitigation - Mitigation

Energy Mitigation - Include reach code

Water Mitigation - Water conservation efforts

Waste Mitigation - Redcue waste generation and divert organic waste

Fleet Mix - CalEEMod default mix

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaMitigation | UseLowVOCPaintParkingCheck | False | True |
| tblConstructionPhase | NumDays | 600.00 | 0.00 |
| tblEnergyUse | NT24E | 3,054.10 | 3,979.00 |
| tblEnergyUse | NT24E | 3,054.10 | 3,979.00 |
| tblEnergyUse | NT24E | 7.84 | 7.85 |
| tblEnergyUse | NT24E | 7.84 | 7.85 |
| tblEnergyUse | NT24NG | 3,155.00 | 0.00 |
| tblEnergyUse | NT24NG | 3,155.00 | 0.00 |
| tblEnergyUse | T24E | 70.89 | 1,603.00 |
| tblEnergyUse | T24E | 70.89 | 1,603.00 |
| tblEnergyUse | T24E | 5.45 | 10.20 |
| tblEnergyUse | T24E | 5.45 | 10.20 |
| tblEnergyUse | T24E | 2.46 | 3.14 |
| tblEnergyUse | T24NG | 5,226.68 | 0.00 |
| tblEnergyUse | T24NG | 5,226.68 | 0.00 |
| tblEnergyUse | T24NG | 16.14 | 0.00 |
| tblEnergyUse | T24NG | 16.14 | 0.00 |
| tblEnergyUse | T24NG | 2.34 | 0.00 |
| tblFireplaces | FireplaceWoodMass | 228.80 | 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**

| | | | |
|---|---|---|---|
| tblFireplaces | FireplaceWoodMass | 228.80 | 0.00 |
| tblFireplaces | NumberGas | 1,500.00 | 0.00 |
| tblFireplaces | NumberGas | 1,500.00 | 0.00 |
| tblFireplaces | NumberNoFireplace | 400.00 | 0.00 |
| tblFireplaces | NumberNoFireplace | 400.00 | 0.00 |
| tblFireplaces | NumberWood | 1,700.00 | 0.00 |
| tblFireplaces | NumberWood | 1,700.00 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 900.00 |
| tblLandUse | LandUseSquareFeet | 1,165,300.00 | 1,165,303.00 |
| tblLandUse | LotAcreage | 161.29 | 70.00 |
| tblLandUse | LotAcreage | 263.16 | 70.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 3.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblRoadDust | RoadSiltLoading | 0.1 | 0.0435 |
| tblVehicleEF | HHD | 0.02 | 0.13 |
| tblVehicleEF | HHD | 0.04 | 0.04 |
| tblVehicleEF | HHD | 0.00 | 2.4281e-008 |
| tblVehicleEF | HHD | 6.54 | 4.57 |
| tblVehicleEF | HHD | 0.40 | 0.36 |
| tblVehicleEF | HHD | 8.5380e-003 | 7.8504e-004 |
| tblVehicleEF | HHD | 851.66 | 595.88 |
| tblVehicleEF | HHD | 1,063.61 | 1,112.25 |
| tblVehicleEF | HHD | 0.06 | 6.6749e-003 |
| tblVehicleEF | HHD | 0.13 | 0.10 |
| tblVehicleEF | HHD | 0.17 | 0.18 |
| tblVehicleEF | HHD | 1.9000e-005 | 6.8538e-007 |
| tblVehicleEF | HHD | 5.29 | 2.88 |
| tblVehicleEF | HHD | 2.44 | 1.10 |
| tblVehicleEF | HHD | 2.29 | 2.18 |
| tblVehicleEF | HHD | 1.9740e-003 | 1.4160e-003 |
| tblVehicleEF | HHD | 0.06 | 0.08 |
| tblVehicleEF | HHD | 0.04 | 0.04 |
| tblVehicleEF | HHD | 0.02 | 0.02 |
| tblVehicleEF | HHD | 1.0000e-006 | 8.0144e-008 |
| tblVehicleEF | HHD | 1.8880e-003 | 1.3482e-003 |
| tblVehicleEF | HHD | 0.03 | 0.03 |
| tblVehicleEF | HHD | 8.9240e-003 | 8.8017e-003 |
| tblVehicleEF | HHD | 0.02 | 0.02 |
| tblVehicleEF | HHD | 1.0000e-006 | 7.3689e-008 |
| tblVehicleEF | HHD | 2.0000e-006 | 7.8757e-006 |
| tblVehicleEF | HHD | 8.2000e-005 | 1.2758e-006 |
| tblVehicleEF | HHD | 0.44 | 0.28 |
| tblVehicleEF | HHD | 1.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 0.02 | 0.01 |
| tblVehicleEF | HHD | 3.4000e-005 | 1.6304e-005 |
| tblVehicleEF | HHD | 2.0000e-006 | 1.3039e-007 |
| tblVehicleEF | HHD | 7.9330e-003 | 5.1764e-003 |
| tblVehicleEF | HHD | 9.7550e-003 | 0.01 |
| tblVehicleEF | HHD | 1.0000e-006 | 6.5989e-008 |
| tblVehicleEF | HHD | 2.0000e-006 | 7.8757e-006 |
| tblVehicleEF | HHD | 8.2000e-005 | 1.2758e-006 |
| tblVehicleEF | HHD | 0.50 | 0.44 |
| tblVehicleEF | HHD | 1.0000e-006 | 0.00 |
| tblVehicleEF | HHD | 0.06 | 0.05 |
| tblVehicleEF | HHD | 3.4000e-005 | 1.6304e-005 |
| tblVehicleEF | HHD | 3.0000e-006 | 1.4276e-007 |
| tblVehicleEF | LDA | 5.8600e-004 | 8.7621e-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 | LDA | 0.02 | 0.03 |
| tblVehicleEF | LDA | 0.35 | 0.41 |
| tblVehicleEF | LDA | 1.40 | 1.53 |
| tblVehicleEF | LDA | 178.98 | 193.08 |
| tblVehicleEF | LDA | 36.83 | 48.27 |
| tblVehicleEF | LDA | 2.9540e-003 | 2.7460e-003 |
| tblVehicleEF | LDA | 0.02 | 0.02 |
| tblVehicleEF | LDA | 0.02 | 0.02 |
| tblVehicleEF | LDA | 0.11 | 0.15 |
| tblVehicleEF | LDA | 0.04 | 7.1884e-003 |
| tblVehicleEF | LDA | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | LDA | 5.2600e-004 | 4.7798e-004 |
| tblVehicleEF | LDA | 7.3900e-004 | 8.5236e-004 |
| tblVehicleEF | LDA | 0.02 | 2.5159e-003 |
| tblVehicleEF | LDA | 2.0000e-003 | 2.0000e-003 |
| tblVehicleEF | LDA | 4.8400e-004 | 4.3952e-004 |
| tblVehicleEF | LDA | 6.8000e-004 | 7.8371e-004 |
| tblVehicleEF | LDA | 0.01 | 0.18 |
| tblVehicleEF | LDA | 0.04 | 0.04 |
| tblVehicleEF | LDA | 0.01 | 0.00 |
| tblVehicleEF | LDA | 1.7150e-003 | 2.6599e-003 |
| tblVehicleEF | LDA | 0.02 | 0.13 |
| tblVehicleEF | LDA | 0.07 | 0.12 |
| tblVehicleEF | LDA | 1.7700e-003 | 1.9088e-003 |
| tblVehicleEF | LDA | 3.6400e-004 | 4.7720e-004 |
| tblVehicleEF | LDA | 0.01 | 0.18 |
| tblVehicleEF | LDA | 0.04 | 0.04 |
| tblVehicleEF | LDA | 0.01 | 0.00 |
| tblVehicleEF | LDA | 2.4880e-003 | 3.8804e-003 |
| tblVehicleEF | LDA | 0.02 | 0.13 |
| tblVehicleEF | LDA | 0.08 | 0.14 |
| tblVehicleEF | LDT1 | 6.9500e-004 | 1.2639e-003 |
| tblVehicleEF | LDT1 | 0.02 | 0.04 |
| tblVehicleEF | LDT1 | 0.37 | 0.53 |
| tblVehicleEF | LDT1 | 1.50 | 1.92 |
| tblVehicleEF | LDT1 | 214.07 | 253.79 |
| tblVehicleEF | LDT1 | 44.71 | 63.43 |
| tblVehicleEF | LDT1 | 2.9130e-003 | 3.4762e-003 |
| tblVehicleEF | LDT1 | 0.02 | 0.03 |
| tblVehicleEF | LDT1 | 0.02 | 0.03 |
| tblVehicleEF | LDT1 | 0.12 | 0.19 |
| tblVehicleEF | LDT1 | 0.04 | 9.0941e-003 |
| tblVehicleEF | LDT1 | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | LDT1 | 5.8900e-004 | 6.2952e-004 |
| tblVehicleEF | LDT1 | 8.4200e-004 | 1.1095e-003 |
| tblVehicleEF | LDT1 | 0.02 | 3.1829e-003 |
| tblVehicleEF | LDT1 | 2.0000e-003 | 2.0000e-003 |
| tblVehicleEF | LDT1 | 5.4100e-004 | 5.7882e-004 |
| tblVehicleEF | LDT1 | 7.7400e-004 | 1.0202e-003 |
| tblVehicleEF | LDT1 | 0.02 | 0.34 |
| tblVehicleEF | LDT1 | 0.05 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.00 |
| tblVehicleEF | LDT1 | 2.1050e-003 | 4.2146e-003 |
| tblVehicleEF | LDT1 | 0.03 | 0.25 |
| tblVehicleEF | LDT1 | 0.08 | 0.17 |
| tblVehicleEF | LDT1 | 2.1180e-003 | 2.5090e-003 |
| tblVehicleEF | LDT1 | 4.4200e-004 | 6.2710e-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 | LDT1 | 0.02 | 0.34 |
| tblVehicleEF | LDT1 | 0.05 | 0.06 |
| tblVehicleEF | LDT1 | 0.02 | 0.00 |
| tblVehicleEF | LDT1 | 3.0720e-003 | 6.1499e-003 |
| tblVehicleEF | LDT1 | 0.03 | 0.25 |
| tblVehicleEF | LDT1 | 0.09 | 0.18 |
| tblVehicleEF | LDT2 | 9.2200e-004 | 1.3441e-003 |
| tblVehicleEF | LDT2 | 0.03 | 0.04 |
| tblVehicleEF | LDT2 | 0.43 | 0.55 |
| tblVehicleEF | LDT2 | 1.90 | 2.14 |
| tblVehicleEF | LDT2 | 215.05 | 261.09 |
| tblVehicleEF | LDT2 | 45.04 | 65.08 |
| tblVehicleEF | LDT2 | 3.1900e-003 | 3.5744e-003 |
| tblVehicleEF | LDT2 | 0.02 | 0.03 |
| tblVehicleEF | LDT2 | 0.02 | 0.03 |
| tblVehicleEF | LDT2 | 0.12 | 0.21 |
| tblVehicleEF | LDT2 | 0.04 | 8.9685e-003 |
| tblVehicleEF | LDT2 | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | LDT2 | 6.0400e-004 | 5.7875e-004 |
| tblVehicleEF | LDT2 | 7.8800e-004 | 9.6698e-004 |
| tblVehicleEF | LDT2 | 0.02 | 3.1390e-003 |
| tblVehicleEF | LDT2 | 2.0000e-003 | 2.0000e-003 |
| tblVehicleEF | LDT2 | 5.5700e-004 | 5.3270e-004 |
| tblVehicleEF | LDT2 | 7.2500e-004 | 8.8910e-004 |
| tblVehicleEF | LDT2 | 0.03 | 0.23 |
| tblVehicleEF | LDT2 | 0.05 | 0.04 |
| tblVehicleEF | LDT2 | 0.03 | 0.00 |
| tblVehicleEF | LDT2 | 3.0390e-003 | 4.3769e-003 |
| tblVehicleEF | LDT2 | 0.03 | 0.17 |
| tblVehicleEF | LDT2 | 0.10 | 0.18 |
| tblVehicleEF | LDT2 | 2.1270e-003 | 2.5808e-003 |
| tblVehicleEF | LDT2 | 4.4600e-004 | 6.4335e-004 |
| tblVehicleEF | LDT2 | 0.03 | 0.23 |
| tblVehicleEF | LDT2 | 0.05 | 0.04 |
| tblVehicleEF | LDT2 | 0.03 | 0.00 |
| tblVehicleEF | LDT2 | 4.3940e-003 | 6.3725e-003 |
| tblVehicleEF | LDT2 | 0.03 | 0.17 |
| tblVehicleEF | LDT2 | 0.11 | 0.20 |
| tblVehicleEF | LHD1 | 3.4210e-003 | 2.7756e-003 |
| tblVehicleEF | LHD1 | 3.9080e-003 | 1.5648e-003 |
| tblVehicleEF | LHD1 | 5.9710e-003 | 9.8913e-003 |
| tblVehicleEF | LHD1 | 0.17 | 0.13 |
| tblVehicleEF | LHD1 | 0.36 | 0.29 |
| tblVehicleEF | LHD1 | 0.77 | 1.49 |
| tblVehicleEF | LHD1 | 7.58 | 5.59 |
| tblVehicleEF | LHD1 | 637.02 | 443.66 |
| tblVehicleEF | LHD1 | 8.76 | 11.03 |
| tblVehicleEF | LHD1 | 6.9700e-004 | 4.2658e-004 |
| tblVehicleEF | LHD1 | 0.04 | 0.02 |
| tblVehicleEF | LHD1 | 0.02 | 0.02 |
| tblVehicleEF | LHD1 | 0.03 | 0.02 |
| tblVehicleEF | LHD1 | 0.09 | 0.09 |
| tblVehicleEF | LHD1 | 0.17 | 0.20 |
| tblVehicleEF | LHD1 | 9.8200e-004 | 5.2138e-004 |
| tblVehicleEF | LHD1 | 0.08 | 0.06 |
| tblVehicleEF | LHD1 | 9.9810e-003 | 8.9683e-003 |
| tblVehicleEF | LHD1 | 5.1070e-003 | 5.3106e-003 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | LHD1 | 1.8200e-004 | 5.9386e-005 |
| tblVehicleEF | LHD1 | 9.4000e-004 | 4.9882e-004 |
| tblVehicleEF | LHD1 | 0.03 | 0.02 |
| tblVehicleEF | LHD1 | 2.4950e-003 | 2.2421e-003 |
| tblVehicleEF | LHD1 | 4.8440e-003 | 5.0621e-003 |
| tblVehicleEF | LHD1 | 1.6700e-004 | 5.4603e-005 |
| tblVehicleEF | LHD1 | 9.7100e-004 | 0.06 |
| tblVehicleEF | LHD1 | 0.03 | 0.01 |
| tblVehicleEF | LHD1 | 0.01 | 0.01 |
| tblVehicleEF | LHD1 | 6.1300e-004 | 0.00 |
| tblVehicleEF | LHD1 | 0.07 | 0.02 |
| tblVehicleEF | LHD1 | 0.08 | 0.08 |
| tblVehicleEF | LHD1 | 0.03 | 0.05 |
| tblVehicleEF | LHD1 | 7.3000e-005 | 5.4332e-005 |
| tblVehicleEF | LHD1 | 6.2070e-003 | 4.3258e-003 |
| tblVehicleEF | LHD1 | 8.7000e-005 | 1.0903e-004 |
| tblVehicleEF | LHD1 | 9.7100e-004 | 0.06 |
| tblVehicleEF | LHD1 | 0.03 | 0.01 |
| tblVehicleEF | LHD1 | 0.02 | 0.02 |
| tblVehicleEF | LHD1 | 6.1300e-004 | 0.00 |
| tblVehicleEF | LHD1 | 0.08 | 0.03 |
| tblVehicleEF | LHD1 | 0.08 | 0.08 |
| tblVehicleEF | LHD1 | 0.03 | 0.05 |
| tblVehicleEF | LHD2 | 2.0850e-003 | 1.9367e-003 |
| tblVehicleEF | LHD2 | 4.8230e-003 | 2.5818e-003 |
| tblVehicleEF | LHD2 | 3.0030e-003 | 5.9125e-003 |
| tblVehicleEF | LHD2 | 0.13 | 0.13 |
| tblVehicleEF | LHD2 | 0.47 | 0.24 |
| tblVehicleEF | LHD2 | 0.43 | 1.03 |
| tblVehicleEF | LHD2 | 12.02 | 13.01 |
| tblVehicleEF | LHD2 | 624.36 | 481.89 |
| tblVehicleEF | LHD2 | 5.60 | 7.41 |
| tblVehicleEF | LHD2 | 1.5630e-003 | 1.6789e-003 |
| tblVehicleEF | LHD2 | 0.06 | 0.05 |
| tblVehicleEF | LHD2 | 8.8060e-003 | 0.01 |
| tblVehicleEF | LHD2 | 0.05 | 0.06 |
| tblVehicleEF | LHD2 | 0.16 | 0.22 |
| tblVehicleEF | LHD2 | 0.09 | 0.12 |
| tblVehicleEF | LHD2 | 1.5090e-003 | 1.4929e-003 |
| tblVehicleEF | LHD2 | 0.09 | 0.07 |
| tblVehicleEF | LHD2 | 0.01 | 9.8449e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 1.0000e-004 | 3.3048e-005 |
| tblVehicleEF | LHD2 | 1.4430e-003 | 1.4283e-003 |
| tblVehicleEF | LHD2 | 0.04 | 0.03 |
| tblVehicleEF | LHD2 | 2.7210e-003 | 2.4612e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 9.2000e-005 | 3.0386e-005 |
| tblVehicleEF | LHD2 | 4.8400e-004 | 0.04 |
| tblVehicleEF | LHD2 | 0.02 | 7.2214e-003 |
| tblVehicleEF | LHD2 | 0.01 | 0.01 |
| tblVehicleEF | LHD2 | 3.1000e-004 | 0.00 |
| tblVehicleEF | LHD2 | 0.09 | 0.05 |
| tblVehicleEF | LHD2 | 0.04 | 0.06 |
| tblVehicleEF | LHD2 | 0.01 | 0.03 |
| tblVehicleEF | LHD2 | 1.1500e-004 | 1.2440e-004 |
| tblVehicleEF | LHD2 | 6.0190e-003 | 4.6300e-003 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | LHD2 | 5.5000e-005 | 7.3304e-005 |
| tblVehicleEF | LHD2 | 4.8400e-004 | 0.04 |
| tblVehicleEF | LHD2 | 0.02 | 7.2214e-003 |
| tblVehicleEF | LHD2 | 0.02 | 0.02 |
| tblVehicleEF | LHD2 | 3.1000e-004 | 0.00 |
| tblVehicleEF | LHD2 | 0.11 | 0.06 |
| tblVehicleEF | LHD2 | 0.04 | 0.06 |
| tblVehicleEF | LHD2 | 0.01 | 0.03 |
| tblVehicleEF | MCY | 0.32 | 0.13 |
| tblVehicleEF | MCY | 0.24 | 0.14 |
| tblVehicleEF | MCY | 17.07 | 10.07 |
| tblVehicleEF | MCY | 9.32 | 7.74 |
| tblVehicleEF | MCY | 209.59 | 184.59 |
| tblVehicleEF | MCY | 58.06 | 38.03 |
| tblVehicleEF | MCY | 0.07 | 0.04 |
| tblVehicleEF | MCY | 0.02 | 4.8625e-003 |
| tblVehicleEF | MCY | 1.13 | 0.47 |
| tblVehicleEF | MCY | 0.27 | 0.07 |
| tblVehicleEF | MCY | 0.01 | 0.01 |
| tblVehicleEF | MCY | 4.0000e-003 | 4.0000e-003 |
| tblVehicleEF | MCY | 2.2350e-003 | 2.1182e-003 |
| tblVehicleEF | MCY | 2.9700e-003 | 3.5755e-003 |
| tblVehicleEF | MCY | 5.0400e-003 | 4.2000e-003 |
| tblVehicleEF | MCY | 1.0000e-003 | 1.0000e-003 |
| tblVehicleEF | MCY | 2.0830e-003 | 1.9751e-003 |
| tblVehicleEF | MCY | 2.7710e-003 | 3.3370e-003 |
| tblVehicleEF | MCY | 0.91 | 3.39 |
| tblVehicleEF | MCY | 0.63 | 3.55 |
| tblVehicleEF | MCY | 0.48 | 0.00 |
| tblVehicleEF | MCY | 2.10 | 0.79 |
| tblVehicleEF | MCY | 0.42 | 3.79 |
| tblVehicleEF | MCY | 1.84 | 0.96 |
| tblVehicleEF | MCY | 2.0740e-003 | 1.8248e-003 |
| tblVehicleEF | MCY | 5.7500e-004 | 3.7601e-004 |
| tblVehicleEF | MCY | 0.91 | 0.08 |
| tblVehicleEF | MCY | 0.63 | 3.55 |
| tblVehicleEF | MCY | 0.48 | 0.00 |
| tblVehicleEF | MCY | 2.64 | 0.98 |
| tblVehicleEF | MCY | 0.42 | 3.79 |
| tblVehicleEF | MCY | 2.01 | 1.05 |
| tblVehicleEF | MDV | 9.3100e-004 | 1.3905e-003 |
| tblVehicleEF | MDV | 0.03 | 0.04 |
| tblVehicleEF | MDV | 0.43 | 0.56 |
| tblVehicleEF | MDV | 1.90 | 2.14 |
| tblVehicleEF | MDV | 259.75 | 310.49 |
| tblVehicleEF | MDV | 53.21 | 77.08 |
| tblVehicleEF | MDV | 4.2990e-003 | 4.0379e-003 |
| tblVehicleEF | MDV | 0.02 | 0.03 |
| tblVehicleEF | MDV | 0.02 | 0.03 |
| tblVehicleEF | MDV | 0.13 | 0.22 |
| tblVehicleEF | MDV | 0.04 | 9.0271e-003 |
| tblVehicleEF | MDV | 8.0000e-003 | 8.0000e-003 |
| tblVehicleEF | MDV | 5.9900e-004 | 5.7434e-004 |
| tblVehicleEF | MDV | 8.0000e-004 | 9.6647e-004 |
| tblVehicleEF | MDV | 0.02 | 3.1595e-003 |
| tblVehicleEF | MDV | 2.0000e-003 | 2.0000e-003 |
| tblVehicleEF | MDV | 5.5200e-004 | 5.2861e-004 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | MDV | 7.3500e-004 | 8.8863e-004 |
| tblVehicleEF | MDV | 0.04 | 0.24 |
| tblVehicleEF | MDV | 0.07 | 0.05 |
| tblVehicleEF | MDV | 0.05 | 0.00 |
| tblVehicleEF | MDV | 3.1220e-003 | 4.6344e-003 |
| tblVehicleEF | MDV | 0.04 | 0.18 |
| tblVehicleEF | MDV | 0.11 | 0.19 |
| tblVehicleEF | MDV | 2.5670e-003 | 3.0682e-003 |
| tblVehicleEF | MDV | 5.2700e-004 | 7.6201e-004 |
| tblVehicleEF | MDV | 0.04 | 0.24 |
| tblVehicleEF | MDV | 0.07 | 0.05 |
| tblVehicleEF | MDV | 0.05 | 0.00 |
| tblVehicleEF | MDV | 4.5050e-003 | 6.7455e-003 |
| tblVehicleEF | MDV | 0.04 | 0.18 |
| tblVehicleEF | MDV | 0.12 | 0.21 |
| tblVehicleEF | MH | 3.8070e-003 | 4.1244e-003 |
| tblVehicleEF | MH | 0.02 | 0.02 |
| tblVehicleEF | MH | 0.19 | 0.20 |
| tblVehicleEF | MH | 1.47 | 1.60 |
| tblVehicleEF | MH | 1,245.00 | 1,640.30 |
| tblVehicleEF | MH | 13.78 | 18.59 |
| tblVehicleEF | MH | 0.05 | 0.07 |
| tblVehicleEF | MH | 0.03 | 0.03 |
| tblVehicleEF | MH | 0.87 | 1.02 |
| tblVehicleEF | MH | 0.22 | 0.26 |
| tblVehicleEF | MH | 0.13 | 0.04 |
| tblVehicleEF | MH | 0.01 | 0.01 |
| tblVehicleEF | MH | 9.1090e-003 | 0.01 |
| tblVehicleEF | MH | 2.1200e-004 | 2.2471e-004 |
| tblVehicleEF | MH | 0.06 | 0.02 |
| tblVehicleEF | MH | 3.3040e-003 | 3.3551e-003 |
| tblVehicleEF | MH | 8.6790e-003 | 0.01 |
| tblVehicleEF | MH | 1.9500e-004 | 2.0661e-004 |
| tblVehicleEF | MH | 0.22 | 11.66 |
| tblVehicleEF | MH | 0.01 | 2.06 |
| tblVehicleEF | MH | 0.10 | 0.00 |
| tblVehicleEF | MH | 0.03 | 0.04 |
| tblVehicleEF | MH | 1.9660e-003 | 0.07 |
| tblVehicleEF | MH | 0.07 | 0.07 |
| tblVehicleEF | MH | 0.01 | 0.02 |
| tblVehicleEF | MH | 1.3600e-004 | 1.8382e-004 |
| tblVehicleEF | MH | 0.22 | 11.66 |
| tblVehicleEF | MH | 0.01 | 2.06 |
| tblVehicleEF | MH | 0.10 | 0.00 |
| tblVehicleEF | MH | 0.04 | 0.05 |
| tblVehicleEF | MH | 1.9660e-003 | 0.07 |
| tblVehicleEF | MH | 0.07 | 0.08 |
| tblVehicleEF | MHD | 4.2930e-003 | 0.01 |
| tblVehicleEF | MHD | 8.5200e-004 | 7.4197e-003 |
| tblVehicleEF | MHD | 9.1640e-003 | 4.2529e-003 |
| tblVehicleEF | MHD | 0.43 | 0.45 |
| tblVehicleEF | MHD | 0.13 | 0.07 |
| tblVehicleEF | MHD | 0.86 | 0.40 |
| tblVehicleEF | MHD | 57.14 | 93.61 |
| tblVehicleEF | MHD | 910.34 | 666.86 |
| tblVehicleEF | MHD | 8.81 | 4.24 |
| tblVehicleEF | MHD | 8.0890e-003 | 0.01 |

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

| | | | |
|---|---|---|---|
| tblVehicleEF | MHD | 0.11 | 0.09 |
| tblVehicleEF | MHD | 9.1450e-003 | 3.1945e-003 |
| tblVehicleEF | MHD | 0.29 | 0.33 |
| tblVehicleEF | MHD | 1.37 | 0.22 |
| tblVehicleEF | MHD | 1.64 | 0.71 |
| tblVehicleEF | MHD | 8.3000e-005 | 1.6332e-004 |
| tblVehicleEF | MHD | 0.13 | 0.04 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 6.6880e-003 | 1.9589e-003 |
| tblVehicleEF | MHD | 1.2700e-004 | 5.5542e-005 |
| tblVehicleEF | MHD | 7.9000e-005 | 1.5560e-004 |
| tblVehicleEF | MHD | 0.06 | 0.01 |
| tblVehicleEF | MHD | 3.0000e-003 | 3.0000e-003 |
| tblVehicleEF | MHD | 6.3910e-003 | 1.8692e-003 |
| tblVehicleEF | MHD | 1.1700e-004 | 5.1069e-005 |
| tblVehicleEF | MHD | 3.0500e-004 | 0.01 |
| tblVehicleEF | MHD | 0.01 | 1.6241e-003 |
| tblVehicleEF | MHD | 0.02 | 0.01 |
| tblVehicleEF | MHD | 1.9400e-004 | 0.00 |
| tblVehicleEF | MHD | 0.01 | 4.9987e-003 |
| tblVehicleEF | MHD | 0.01 | 0.02 |
| tblVehicleEF | MHD | 0.04 | 0.02 |
| tblVehicleEF | MHD | 5.4300e-004 | 8.5031e-004 |
| tblVehicleEF | MHD | 8.6920e-003 | 6.2853e-003 |
| tblVehicleEF | MHD | 8.7000e-005 | 4.1936e-005 |
| tblVehicleEF | MHD | 3.0500e-004 | 0.01 |
| tblVehicleEF | MHD | 0.01 | 1.6241e-003 |
| tblVehicleEF | MHD | 0.03 | 0.03 |
| tblVehicleEF | MHD | 1.9400e-004 | 0.00 |
| tblVehicleEF | MHD | 0.01 | 0.01 |
| tblVehicleEF | MHD | 0.01 | 0.02 |
| tblVehicleEF | MHD | 0.05 | 0.02 |
| tblVehicleEF | OBUS | 7.2220e-003 | 7.0922e-003 |
| tblVehicleEF | OBUS | 1.6630e-003 | 0.01 |
| tblVehicleEF | OBUS | 0.01 | 9.0616e-003 |
| tblVehicleEF | OBUS | 0.63 | 0.51 |
| tblVehicleEF | OBUS | 0.20 | 0.18 |
| tblVehicleEF | OBUS | 1.48 | 0.98 |
| tblVehicleEF | OBUS | 86.02 | 80.36 |
| tblVehicleEF | OBUS | 1,120.11 | 1,068.65 |
| tblVehicleEF | OBUS | 12.75 | 8.15 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 0.11 | 0.14 |
| tblVehicleEF | OBUS | 0.02 | 6.6592e-003 |
| tblVehicleEF | OBUS | 0.42 | 0.23 |
| tblVehicleEF | OBUS | 1.41 | 0.56 |
| tblVehicleEF | OBUS | 1.09 | 0.70 |
| tblVehicleEF | OBUS | 1.3700e-004 | 1.7581e-004 |
| tblVehicleEF | OBUS | 0.13 | 0.05 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 7.7800e-003 | 7.3581e-003 |
| tblVehicleEF | OBUS | 1.7400e-004 | 8.6342e-005 |
| tblVehicleEF | OBUS | 1.3200e-004 | 1.6800e-004 |
| tblVehicleEF | OBUS | 0.06 | 0.02 |
| tblVehicleEF | OBUS | 3.0000e-003 | 3.0000e-003 |
| tblVehicleEF | OBUS | 7.4270e-003 | 7.0340e-003 |
| tblVehicleEF | OBUS | 1.6000e-004 | 7.9388e-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 | 1.1050e-003 | 0.05 |
| tblVehicleEF | OBUS | 0.02 | 8.9125e-003 |
| tblVehicleEF | OBUS | 0.05 | 0.03 |
| tblVehicleEF | OBUS | 5.2800e-004 | 0.00 |
| tblVehicleEF | OBUS | 0.01 | 0.02 |
| tblVehicleEF | OBUS | 0.05 | 0.06 |
| tblVehicleEF | OBUS | 0.07 | 0.05 |
| tblVehicleEF | OBUS | 8.1700e-004 | 7.5282e-004 |
| tblVehicleEF | OBUS | 0.01 | 0.01 |
| tblVehicleEF | OBUS | 1.2600e-004 | 8.0560e-005 |
| tblVehicleEF | OBUS | 1.1050e-003 | 0.05 |
| tblVehicleEF | OBUS | 0.02 | 8.9125e-003 |
| tblVehicleEF | OBUS | 0.06 | 0.05 |
| tblVehicleEF | OBUS | 5.2800e-004 | 0.00 |
| tblVehicleEF | OBUS | 0.02 | 0.03 |
| tblVehicleEF | OBUS | 0.05 | 0.06 |
| tblVehicleEF | OBUS | 0.08 | 0.05 |
| tblVehicleEF | SBUS | 0.10 | 0.08 |
| tblVehicleEF | SBUS | 1.6600e-003 | 0.07 |
| tblVehicleEF | SBUS | 8.7250e-003 | 4.2919e-003 |
| tblVehicleEF | SBUS | 4.08 | 1.66 |
| tblVehicleEF | SBUS | 0.16 | 0.30 |
| tblVehicleEF | SBUS | 1.12 | 0.51 |
| tblVehicleEF | SBUS | 307.32 | 139.50 |
| tblVehicleEF | SBUS | 834.52 | 687.13 |
| tblVehicleEF | SBUS | 6.63 | 3.24 |
| tblVehicleEF | SBUS | 0.04 | 0.02 |
| tblVehicleEF | SBUS | 0.09 | 0.08 |
| tblVehicleEF | SBUS | 9.1050e-003 | 4.5830e-003 |
| tblVehicleEF | SBUS | 1.30 | 0.43 |
| tblVehicleEF | SBUS | 1.09 | 0.35 |
| tblVehicleEF | SBUS | 1.78 | 0.50 |
| tblVehicleEF | SBUS | 3.6400e-004 | 1.7724e-004 |
| tblVehicleEF | SBUS | 0.74 | 0.04 |
| tblVehicleEF | SBUS | 0.01 | 0.01 |
| tblVehicleEF | SBUS | 6.8240e-003 | 2.4949e-003 |
| tblVehicleEF | SBUS | 1.0700e-004 | 4.5407e-005 |
| tblVehicleEF | SBUS | 3.4800e-004 | 1.6808e-004 |
| tblVehicleEF | SBUS | 0.32 | 0.01 |
| tblVehicleEF | SBUS | 2.5930e-003 | 2.5796e-003 |
| tblVehicleEF | SBUS | 6.5060e-003 | 2.3712e-003 |
| tblVehicleEF | SBUS | 9.8000e-005 | 4.1750e-005 |
| tblVehicleEF | SBUS | 1.5920e-003 | 0.06 |
| tblVehicleEF | SBUS | 0.01 | 9.6169e-003 |
| tblVehicleEF | SBUS | 0.45 | 0.17 |
| tblVehicleEF | SBUS | 7.7100e-004 | 0.00 |
| tblVehicleEF | SBUS | 0.02 | 0.01 |
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.05 | 0.02 |
| tblVehicleEF | SBUS | 2.9440e-003 | 1.2338e-003 |
| tblVehicleEF | SBUS | 8.0200e-003 | 6.3600e-003 |
| tblVehicleEF | SBUS | 6.6000e-005 | 3.2057e-005 |
| tblVehicleEF | SBUS | 1.5920e-003 | 0.06 |
| tblVehicleEF | SBUS | 0.01 | 9.6169e-003 |
| tblVehicleEF | SBUS | 0.64 | 0.29 |
| tblVehicleEF | SBUS | 7.7100e-004 | 0.00 |
| tblVehicleEF | SBUS | 0.02 | 0.08 |

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| | | | |
|---|---|---|---|
| tblVehicleEF | SBUS | 0.02 | 0.04 |
| tblVehicleEF | SBUS | 0.05 | 0.03 |
| tblVehicleEF | UBUS | 1.86 | 0.14 |
| tblVehicleEF | UBUS | 1.6730e-003 | 2.5539e-003 |
| tblVehicleEF | UBUS | 14.11 | 1.62 |
| tblVehicleEF | UBUS | 0.14 | 0.55 |
| tblVehicleEF | UBUS | 1,664.74 | 211.33 |
| tblVehicleEF | UBUS | 1.26 | 3.06 |
| tblVehicleEF | UBUS | 0.28 | 0.02 |
| tblVehicleEF | UBUS | 1.1110e-003 | 4.7545e-003 |
| tblVehicleEF | UBUS | 0.70 | 0.03 |
| tblVehicleEF | UBUS | 0.01 | 0.03 |
| tblVehicleEF | UBUS | 0.07 | 1.25 |
| tblVehicleEF | UBUS | 0.03 | 0.76 |
| tblVehicleEF | UBUS | 5.1160e-003 | 6.7682e-004 |
| tblVehicleEF | UBUS | 1.5000e-005 | 1.2612e-005 |
| tblVehicleEF | UBUS | 0.03 | 0.44 |
| tblVehicleEF | UBUS | 8.3320e-003 | 0.19 |
| tblVehicleEF | UBUS | 4.8930e-003 | 6.4357e-004 |
| tblVehicleEF | UBUS | 1.4000e-005 | 1.1596e-005 |
| tblVehicleEF | UBUS | 2.4000e-005 | 7.0360e-003 |
| tblVehicleEF | UBUS | 2.0700e-004 | 2.0926e-003 |
| tblVehicleEF | UBUS | 1.1000e-005 | 0.00 |
| tblVehicleEF | UBUS | 0.03 | 7.8011e-003 |
| tblVehicleEF | UBUS | 4.1000e-005 | 7.8798e-003 |
| tblVehicleEF | UBUS | 6.9960e-003 | 8.5986e-003 |
| tblVehicleEF | UBUS | 0.01 | 1.6170e-003 |
| tblVehicleEF | UBUS | 1.3000e-005 | 3.0270e-005 |
| tblVehicleEF | UBUS | 2.4000e-005 | 7.0360e-003 |
| tblVehicleEF | UBUS | 2.0700e-004 | 2.0926e-003 |
| tblVehicleEF | UBUS | 1.1000e-005 | 0.00 |
| tblVehicleEF | UBUS | 1.90 | 0.15 |
| tblVehicleEF | UBUS | 4.1000e-005 | 7.8798e-003 |
| tblVehicleEF | UBUS | 7.6590e-003 | 9.4144e-003 |
| tblVehicleTrips | CC_TL | 7.30 | 13.17 |
| tblVehicleTrips | CC_TL | 7.30 | 13.17 |
| tblVehicleTrips | CC_TL | 7.30 | 13.17 |
| tblVehicleTrips | CNW_TL | 7.30 | 13.17 |
| tblVehicleTrips | CNW_TL | 7.30 | 13.17 |
| tblVehicleTrips | CNW_TL | 7.30 | 13.17 |
| tblVehicleTrips | CW_TL | 9.50 | 13.17 |
| tblVehicleTrips | CW_TL | 9.50 | 13.17 |
| tblVehicleTrips | CW_TL | 9.50 | 13.17 |
| tblVehicleTrips | DV_TP | 11.00 | 0.00 |
| tblVehicleTrips | DV_TP | 11.00 | 0.00 |
| tblVehicleTrips | DV_TP | 19.00 | 0.00 |
| tblVehicleTrips | DV_TP | 34.00 | 0.00 |
| tblVehicleTrips | DV_TP | 40.00 | 0.00 |
| tblVehicleTrips | HO_TL | 5.70 | 13.17 |
| tblVehicleTrips | HO_TL | 5.70 | 13.17 |
| tblVehicleTrips | HS_TL | 4.80 | 13.17 |
| tblVehicleTrips | HS_TL | 4.80 | 13.17 |
| tblVehicleTrips | HW_TL | 10.80 | 13.17 |
| tblVehicleTrips | HW_TL | 10.80 | 13.17 |
| tblVehicleTrips | PB_TP | 3.00 | 0.00 |
| tblVehicleTrips | PB_TP | 3.00 | 0.00 |
| tblVehicleTrips | PB_TP | 4.00 | 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**

| | | | |
|---|---|---|---|
| tblVehicleTrips | PB_TP | 16.00 | 0.00 |
| tblVehicleTrips | PB_TP | 15.00 | 0.00 |
| tblVehicleTrips | PR_TP | 86.00 | 100.00 |
| tblVehicleTrips | PR_TP | 86.00 | 100.00 |
| tblVehicleTrips | PR_TP | 77.00 | 100.00 |
| tblVehicleTrips | PR_TP | 50.00 | 100.00 |
| tblVehicleTrips | PR_TP | 45.00 | 100.00 |
| tblVehicleTrips | ST_TR | 4.53 | 2.51 |
| tblVehicleTrips | ST_TR | 4.91 | 2.72 |
| tblVehicleTrips | ST_TR | 2.21 | 1.23 |
| tblVehicleTrips | ST_TR | 42.04 | 23.31 |
| tblVehicleTrips | SU_TR | 3.59 | 1.99 |
| tblVehicleTrips | SU_TR | 4.09 | 2.27 |
| tblVehicleTrips | SU_TR | 0.70 | 0.39 |
| tblVehicleTrips | SU_TR | 20.43 | 11.33 |
| tblVehicleTrips | WD_TR | 4.45 | 2.47 |
| tblVehicleTrips | WD_TR | 5.44 | 3.02 |
| tblVehicleTrips | WD_TR | 9.74 | 5.40 |
| tblVehicleTrips | WD_TR | 22.59 | 12.53 |
| tblVehicleTrips | WD_TR | 44.32 | 24.58 |
| tblWoodstoves | NumberCatalytic | 200.00 | 0.00 |
| tblWoodstoves | NumberCatalytic | 200.00 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 200.00 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 200.00 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 582.40 | 0.00 |

## 2.0 Emissions Summary

| | ROG | NOx | 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** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| | | **Highest** | | |

### 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 | 244.9028 | 1.7093 | 148.1557 | 7.8600e-003 | | 0.8246 | 0.8246 | | 0.8246 | 0.8246 | 0.0000 | 243.1743 | 243.1743 | 0.2324 | 0.0000 | 248.9852 |
| Energy | 0.0105 | 0.0951 | 0.0799 | 5.7000e-004 | | 7.2300e-003 | 7.2300e-003 | | 7.2300e-003 | 7.2300e-003 | 0.0000 | 873.0471 | 873.0471 | 1.9800e-003 | 1.9000e-003 | 873.6621 |
| Mobile | 98.0547 | 68.1378 | 938.1668 | 2.7287 | 173.0775 | 1.0672 | 174.1447 | 43.7767 | 0.9961 | 44.7728 | 0.0000 | 251,557.4245 | 251,557.4245 | 7.6742 | 8.5905 | 254,309.2451 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 8,218.4444 | 0.0000 | 8,218.4444 | 485.6962 | 0.0000 | 20,360.8481 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 2,265.7130 | 49.0273 | 2,314.7403 | 232.7105 | 5.4948 | 9,769.9513 |
| **Total** | **342.9679** | **69.9422** | **1,086.4024** | **2.7371** | **173.0775** | **1.8991** | **174.9765** | **43.7767** | **1.8279** | **45.6046** | **10,484.1573** | **252,722.6731** | **263,206.8305** | **726.3152** | **14.0872** | **285,562.6917** |

**Mitigated Operational**

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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 | | | | | |
| Area | 229.2833 | 1.7093 | 148.1557 | 7.8600e-003 | | 0.8246 | 0.8246 | | 0.8246 | 0.8246 | 0.0000 | 243.1743 | 243.1743 | 0.2324 | 0.0000 | 248.9852 |
| Energy | 0.0105 | 0.0951 | 0.0799 | 5.7000e-004 | | 7.2300e-003 | 7.2300e-003 | | 7.2300e-003 | 7.2300e-003 | 0.0000 | 334.3657 | 334.3657 | 1.9800e-003 | 1.9000e-003 | 334.9808 |
| Mobile | 98.0547 | 68.1378 | 938.1668 | 2.7287 | 173.0775 | 1.0672 | 174.1447 | 43.7767 | 0.9961 | 44.7728 | 0.0000 | 251,557.4245 | 251,557.4245 | 7.6742 | 8.5905 | 254,309.2451 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 6,574.7555 | 0.0000 | 6,574.7555 | 388.5569 | 0.0000 | 16,288.6785 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 1,472.7134 | 31.8677 | 1,504.5812 | 151.2618 | 3.5716 | 6,350.4683 |
| **Total** | **327.3484** | **69.9422** | **1,086.4024** | **2.7371** | **173.0775** | **1.8991** | **174.9765** | **43.7767** | **1.8279** | **45.6046** | **8,047.4689** | **252,166.8322** | **260,214.3012** | **547.7273** | **12.1640** | **277,532.3579** |

| | ROG | NOx | 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** | **4.55** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **23.24** | **0.22** | **1.14** | **24.59** | **13.65** | **2.81** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 1/1/2024 | 12/31/2023 | 5 | 0 | |

**Acres of Grading (Site Preparation Phase): 900**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Rubber Tired Dozers | 0 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

### 3.1 Mitigation Measures Construction

## 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 | 98.0547 | 68.1378 | 938.1668 | 2.7287 | 173.0775 | 1.0672 | 174.1447 | 43.7767 | 0.9961 | 44.7728 | 0.0000 | 251,557.4245 | 251,557.4245 | 7.6742 | 8.5905 | 254,309.2451 |
| Unmitigated | 98.0547 | 68.1378 | 938.1668 | 2.7287 | 173.0775 | 1.0672 | 174.1447 | 43.7767 | 0.9961 | 44.7728 | 0.0000 | 251,557.4245 | 251,557.4245 | 7.6742 | 8.5905 | 254,309.2451 |

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**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 |
| Apartments High Rise | 24,670.00 | 25,120.00 | 19910.00 | 115,313,359 | 115,313,359 |
| Apartments Mid Rise | 30,160.00 | 27,230.00 | 22680.00 | 137,454,236 | 137,454,236 |
| General Office Building | 172,832.00 | 39,200.00 | 12416.00 | 627,160,036 | 627,160,036 |
| Government Office Building | 4,083.48 | 0.00 | 0.00 | 13,982,639 | 13,982,639 |
| Strip Mall | 28,637.25 | 27,163.14 | 13200.52 | 125,702,313 | 125,702,313 |
| Total | 260,382.72 | 118,713.14 | 68,206.52 | 1,019,612,583 | 1,019,612,583 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments High Rise | 13.17 | 13.17 | 13.17 | 31.00 | 15.00 | 54.00 | 100 | 0 | 0 |
| Apartments Mid Rise | 13.17 | 13.17 | 13.17 | 31.00 | 15.00 | 54.00 | 100 | 0 | 0 |
| General Office Building | 13.17 | 13.17 | 13.17 | 33.00 | 48.00 | 19.00 | 100 | 0 | 0 |
| Government Office Building | 13.17 | 13.17 | 13.17 | 33.00 | 62.00 | 5.00 | 100 | 0 | 0 |
| Strip Mall | 13.17 | 13.17 | 13.17 | 16.60 | 64.40 | 19.00 | 100 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments High Rise | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |
| Apartments Mid Rise | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |
| General Office Building | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |
| Government Office Building | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |
| Strip Mall | 0.577056 | 0.057826 | 0.179089 | 0.117268 | 0.020812 | 0.005778 | 0.007769 | 0.005479 | 0.000778 | 0.000286 | 0.024618 | 0.000725 | 0.002517 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 230.8634 | 230.8634 | 0.0000 | 0.0000 | 230.8634 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 769.5448 | 769.5448 | 0.0000 | 0.0000 | 769.5448 |
| NaturalGas Mitigated | 0.0105 | 0.0951 | 0.0799 | 5.7000e-004 | | 7.2300e-003 | 7.2300e-003 | | 7.2300e-003 | 7.2300e-003 | 0.0000 | 103.5023 | 103.5023 | 1.9800e-003 | 1.9000e-003 | 104.1174 |
| NaturalGas Unmitigated | 0.0105 | 0.0951 | 0.0799 | 5.7000e-004 | | 7.2300e-003 | 7.2300e-003 | | 7.2300e-003 | 7.2300e-003 | 0.0000 | 103.5023 | 103.5023 | 1.9800e-003 | 1.9000e-003 | 104.1174 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Apartments Mid Rise | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Office Building | 1.92e+006 | 0.0104 | 0.0941 | 0.0791 | 5.6000e-004 | | 7.1500e-003 | 7.1500e-003 | | 7.1500e-003 | 7.1500e-003 | 0.0000 | 102.4585 | 102.4585 | 1.9600e-003 | 1.8800e-003 | 103.0674 |
| Government Office Building | 19560 | 1.1000e-004 | 9.6000e-004 | 8.1000e-004 | 1.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | 1.0438 | 1.0438 | 2.0000e-005 | 2.0000e-005 | 1.0500 |

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

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Strip Mall | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0105** | **0.0951** | **0.0799** | **5.7000e-004** | | **7.2200e-003** | **7.2200e-003** | | **7.2200e-003** | **7.2200e-003** | **0.0000** | **103.5023** | **103.5023** | **1.9800e-003** | **1.9000e-003** | **104.1174** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments High Rise | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Apartments Mid Rise | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Office Building | 1.92e+006 | 0.0104 | 0.0941 | 0.0791 | 5.6000e-004 | | 7.1500e-003 | 7.1500e-003 | | 7.1500e-003 | 7.1500e-003 | 0.0000 | 102.4585 | 102.4585 | 1.9600e-003 | 1.8800e-003 | 103.0674 |
| Government Office Building | 19560 | 1.1000e-004 | 9.6000e-004 | 8.1000e-004 | 1.0000e-005 | | 7.0000e-005 | 7.0000e-005 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | 1.0438 | 1.0438 | 2.0000e-005 | 2.0000e-005 | 1.0500 |
| Strip Mall | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0105** | **0.0951** | **0.0799** | **5.7000e-004** | | **7.2200e-003** | **7.2200e-003** | | **7.2200e-003** | **7.2200e-003** | **0.0000** | **103.5023** | **103.5023** | **1.9800e-003** | **1.9000e-003** | **104.1174** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 6.32344e+007 | 57.3653 | 0.0000 | 0.0000 | 57.3653 |
| Apartments Mid Rise | 6.32344e+007 | 57.3653 | 0.0000 | 0.0000 | 57.3653 |
| General Office Building | 7.0176e+008 | 636.6260 | 0.0000 | 0.0000 | 636.6260 |
| Government Office Building | 7.14918e+006 | 6.4856 | 0.0000 | 0.0000 | 6.4856 |
| Strip Mall | 1.28999e+007 | 11.7026 | 0.0000 | 0.0000 | 11.7026 |
| **Total** | | **769.5448** | **0.0000** | **0.0000** | **769.5448** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments High Rise | 1.89703e+007 | 17.2096 | 0.0000 | 0.0000 | 17.2096 |
| Apartments Mid Rise | 1.89703e+007 | 17.2096 | 0.0000 | 0.0000 | 17.2096 |
| General Office Building | 2.10528e+008 | 190.9878 | 0.0000 | 0.0000 | 190.9878 |
| Government Office Building | 2.14475e+006 | 1.9457 | 0.0000 | 0.0000 | 1.9457 |
| Strip Mall | 3.86997e+006 | 3.5108 | 0.0000 | 0.0000 | 3.5108 |
| **Total** | | **230.8634** | **0.0000** | **0.0000** | **230.8634** |

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

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

| | ROG | NOx | CO | SO2 | 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 | 229.2833 | 1.7093 | 148.1557 | 7.8600e-003 | | 0.8246 | 0.8246 | | 0.8246 | 0.8246 | 0.0000 | 243.1743 | 243.1743 | 0.2324 | 0.0000 | 248.9852 |
| Unmitigated | 244.9028 | 1.7093 | 148.1557 | 7.8600e-003 | | 0.8246 | 0.8246 | | 0.8246 | 0.8246 | 0.0000 | 243.1743 | 243.1743 | 0.2324 | 0.0000 | 248.9852 |

### 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 | 31.5424 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 208.9103 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 4.4501 | 1.7093 | 148.1557 | 7.8600e-003 | | 0.8246 | 0.8246 | | 0.8246 | 0.8246 | 0.0000 | 243.1743 | 243.1743 | 0.2324 | 0.0000 | 248.9852 |
| **Total** | **244.9028** | **1.7093** | **148.1557** | **7.8600e-003** | | **0.8246** | **0.8246** | | **0.8246** | **0.8246** | **0.0000** | **243.1743** | **243.1743** | **0.2324** | **0.0000** | **248.9852** |

**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 | 31.5424 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 193.2908 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 4.4501 | 1.7093 | 148.1557 | 7.8600e-003 | | 0.8246 | 0.8246 | | 0.8246 | 0.8246 | 0.0000 | 243.1743 | 243.1743 | 0.2324 | 0.0000 | 248.9852 |
| **Total** | **229.2833** | **1.7093** | **148.1557** | **7.8600e-003** | | **0.8246** | **0.8246** | | **0.8246** | **0.8246** | **0.0000** | **243.1743** | **243.1743** | **0.2324** | **0.0000** | **248.9852** |

## 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**

Apply Water Conservation Strategy

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 1,504.5812 | 151.2618 | 3.5716 | 6,350.4683 |
| Unmitigated | 2,314.7403 | 232.7105 | 5.4948 | 9,769.9513 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 651.54 / 410.754 | 211.2061 | 21.2305 | 0.5013 | 891.3538 |
| Apartments Mid Rise | 651.54 / 410.754 | 211.2061 | 21.2305 | 0.5013 | 891.3538 |
| General Office Building | 5687.48 / 3485.87 | 1,843.3617 | 185.3266 | 4.3760 | 7,780.5641 |
| Government Office Building | 64.7631 / 39.6935 | 20.9903 | 2.1103 | 0.0498 | 88.5969 |
| Strip Mall | 86.3167 / 52.9038 | 27.9760 | 2.8126 | 0.0664 | 118.0827 |
| **Total** | | **2,314.7403** | **232.7105** | **5.4948** | **9,769.9513** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments High Rise | 423.501 / 266.99 | 137.2840 | 13.7998 | 0.3258 | 579.3800 |
| Apartments Mid Rise | 423.501 / 266.99 | 137.2840 | 13.7998 | 0.3258 | 579.3800 |
| General Office Building | 3696.86 / 2265.82 | 1,198.1851 | 120.4623 | 2.8444 | 5,057.3666 |
| Government Office Building | 42.096 / 25.8008 | 13.6437 | 1.3717 | 0.0324 | 57.5880 |
| Strip Mall | 56.1059 / 34.3875 | 18.1844 | 1.8282 | 0.0432 | 76.7537 |
| **Total** | | **1,504.5812** | **151.2618** | **3.5716** | **6,350.4683** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

**Category/Year**

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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 |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 6,574.7555 | 388.5569 | 0.0000 | 16,288.6785 |
| Unmitigated | 8,218.4444 | 485.6962 | 0.0000 | 20,360.8481 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 4600 | 933.7584 | 55.1835 | 0.0000 | 2,313.3470 |
| Apartments Mid Rise | 4600 | 933.7584 | 55.1835 | 0.0000 | 2,313.3470 |
| General Office Building | 29760 | 6,041.0111 | 357.0135 | 0.0000 | 14,966.3492 |
| Government Office Building | 303.18 | 61.5428 | 3.6371 | 0.0000 | 152.4697 |
| Strip Mall | 1223.57 | 248.3737 | 14.6785 | 0.0000 | 615.3352 |
| **Total** | | **8,218.4444** | **485.6962** | **0.0000** | **20,360.8481** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments High Rise | 3680 | 747.0067 | 44.1468 | 0.0000 | 1,850.6776 |
| Apartments Mid Rise | 3680 | 747.0067 | 44.1468 | 0.0000 | 1,850.6776 |
| General Office Building | 23808 | 4,832.8088 | 285.6108 | 0.0000 | 11,973.0794 |
| Government Office Building | 242.544 | 49.2342 | 2.9097 | 0.0000 | 121.9758 |
| Strip Mall | 978.856 | 198.6989 | 11.7428 | 0.0000 | 492.2682 |
| **Total** | | **6,574.7555** | **388.5569** | **0.0000** | **16,288.6785** |

## 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 |
|---|---|

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

## 11.0 Vegetation

# CalEEMod Traffic Inputs

**Existing Uses**

| | CalEEMod Default Rates | | | | CalEEMod (total trips) | | |
|---|---|---|---|---|---|---|---|
| | Weekday | Saturday | Sunday | | Weekday | Saturday | Sunday |
| General Office | 9.74 | 2.21 | 0.7 | | 176315.43 | 40005.86 | 12671.54 |
| Government Office | 22.59 | 0 | 0 | | 2849.05 | 0 | 0 |
| Strip Mall | 44.32 | 42.04 | 20.43 | | 13530.9 | 12834.81 | 6237.28 |
| Total | | | | CalEEMod = | 192,695 | | |
| | | | | Traffic Forecast = | 98,217 | | |

| Existing Uses | Adjusted Rates for CalEEMod | | |
|---|---|---|---|
| General Office | 4.96 | 1.13 | 0.36 |
| Government Office | 11.51 | 0.00 | 0.00 |
| Strip Mall | 22.59 | 21.43 | 10.41 |

| | |
|---|---|
| VMT | 1,237,695 |
| VMT/Trip | 12.60 |

**MPSP Uses**

| | CalEEMod Default Rates | | | | CalEEMod (total trips) | | |
|---|---|---|---|---|---|---|---|
| | Weekday | Saturday | Sunday | | Weekday | Saturday | Sunday |
| Apartment High Rise | 4.45 | 4.53 | 3.59 | | 44500 | 45300 | 35900 |
| Apartment Mid rise | 5.44 | 4.91 | 4.09 | | 54400 | 49100 | 40900 |
| General Office | 9.74 | 2.21 | 0.7 | | 311680 | 70720 | 22400 |
| Government Office | 22.59 | 0 | 0 | | 7634.34 | 0 | 0 |
| Strip Mall | 44.32 | 42.04 | 20.43 | | 51646.1 | 48989.21 | 23807.08 |
| Total | | | | CalEEMod = | 469,860 | | |
| | | | | Traffic Forecast = | 260,529 | | |

| MPSP Uses | Adjusted Rates for CalEEMod | | | | |
|---|---|---|---|---|---|
| Apartment High Rise | 2.467 | 2.512 | 1.991 | 10000 | 24674.43418 |
| Apartment Mid rise | 3.016 | 2.723 | 2.268 | 10000 | 30163.80268 |
| General Office | 5.401 | 1.225 | 0.388 | 32000 | 172820.846 |
| Government (Civic Center) | 12.526 | 0.000 | 0.000 | 326 | 4083.391519 |
| Strip Mall | 24.575 | 23.310 | 11.328 | 1165.3 | 28636.8134 |
| | | | | | |
| VMT | 3,432,442 | | | | 260379.2877 |
| VMT/Trip | 13.17 | | | | |

**Table 1.3-1: Summary of Existing, Recently Approved, Allowed, and Proposed Development within MPSP**

| | Residential Units | Commercial | Office/Industrial/ R&D | Institutional | Non Residential | Daily Trips | Daily VMT | VMT/trip | Population | Jobs | VMT/pop | VMT/capita |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. Existing Development | 0 | 305,304 | 18,102,203 | 126,122 | 18,533,629 | 98,217 | 1,237,695 | 12.60 | - | 35,212 | | 35.15 |
| B. Existing Development + Recently Approved but not yet Constructed Projects | 0 | 515,303 | 22,000,000 | 126,122 | 22,641,425 | | | | - | | | |
| C. Allowed Development under the Adopted MPSP[3,4,5] | 0 | 230,000 | 24,100,000 | None Specified | 24,330,000 | 127,792 | 1,592,494 | | - | 51,584 | | 30.87 |
| | | -75,304 | 5,997,797 | | | 29,575 | 354,799 | | | 16,372 | | |
| D. Allowed Development under the Proposed MPSP | 20,000 | 1,165,303 | 32,000,000 | 326,000 | 33,491,303 | 260,529 | 3,432,442 | 13.17 | 42,000 | 95,683 | 82 | 24.93 |
| | | *-75,304* | *5,997,797* | | | 162,312 | 2,194,747 | | | 60,471 | | |

1 Existing commercial square footage includes retail and hospitality uses .

2. Existing office/industrial/R&D uses includes ancillary commercial uses.

3 Existing institutional uses include the fire station, post office, government offices, Veteran Affairs research center, and community college.

4 The adopted MPSP allows ancillary commercial uses as part of this 24.1 million square feet.

5 City of Sunnyvale. Moffett Park Specific Plan. Updated 2013. Table 2.1, page 10.

6 Commercial land uses include retail and hospitality uses. City Council approved for study, 500,000 square feet of retail uses. In addition, the project would include about 150,000 square feet of hospitality.

From Ollie at Hexagon (6/17/2022)

James – the previous trip generation table we provided was depicting trip generation external to Moffett Park. For your analysis, I believe you also care about vehicle trips happening internal to Moffett Park. That's why the existing trip gen is higher than what was provided to you before. The cumulative+MPSP trip gen is the same because all internal trips are non-vehicular.

| Scenario | Total Daily | Total Daily VMT |
|---|---|---|
| Existing | 98,217 | 1,237,695 |
| Cumulative | 127,792 | 1,592,494 |
| Cumulative | 260,528 | 3,432,442 |

# Attachment 3 - Emfac2021 Emission Rates

## CalEEMod EMFAC2021 Emission Factors Input

| Season | EmissionType | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | CH4_IDLEX | 0 | 0 | 0 | 0 | 0.005911 | 0.003701 | 0.011967 | 0.184596037 | 0.007687 | 0 | 0 | 0.068962 | 0 |
| A | CH4_RUNEX | 0.003376 | 0.009396 | 0.004054 | 0.006462 | 0.01262 | 0.009939 | 0.014276 | 0.129140814 | 0.011673 | 0.345464864 | 0.184734 | 0.098137 | 0.023375 |
| A | CH4_STREX | 0.083531 | 0.133812 | 0.101841 | 0.134665 | 0.027941 | 0.016027 | 0.010432 | 7.48621E-08 | 0.020222 | 0.00474995 | 0.20355 | 0.00433 | 0.031178 |
| A | CO_IDLEX | 0 | 0 | 0 | 0 | 0.200606 | 0.149006 | 0.660944 | 4.547169667 | 0.488701 | 0 | 0 | 1.52543 | 0 |
| A | CO_RUNEX | 0.907103 | 2.002874 | 1.105392 | 1.43753 | 1.264253 | 0.815011 | 0.813312 | 0.949311461 | 0.814161 | 4.070560284 | 14.70283 | 0.950198 | 3.18416 |
| A | CO_STREX | 3.864776 | 7.091015 | 4.652153 | 5.313672 | 2.123079 | 1.330412 | 1.405964 | 0.000130598 | 2.273564 | 0.511767385 | 8.213474 | 0.654453 | 3.106946 |
| A | CO2_NBIO_IDLEX | 0 | 0 | 0 | 0 | 9.037257 | 14.06575 | 169.9309 | 875.0793048 | 85.66689 | 0 | 0 | 194.2182 | 0 |
| A | CO2_NBIO_RUNEX | 271.3773 | 343.5239 | 368.9174 | 446.2855 | 848.2301 | 884.4331 | 1247.413 | 1699.474754 | 1429.382 | 1102.321022 | 189.8191 | 1098.298 | 1720.615 |
| A | CO2_NBIO_STREX | 70.6865 | 93.57211 | 95.87539 | 115.2293 | 18.40396 | 11.2496 | 9.720624 | 0.045179178 | 17.58606 | 3.358734712 | 53.42461 | 3.547631 | 25.23894 |
| A | NOX_IDLEX | 0 | 0 | 0 | 0 | 0.055322 | 0.107338 | 1.457216 | 4.662155183 | 0.4859 | 0 | 0 | 1.567818 | 0 |
| A | NOX_RUNEX | 0.065195 | 0.197177 | 0.112529 | 0.182575 | 1.075835 | 1.388955 | 2.584138 | 3.388460328 | 1.573728 | 0.329684421 | 0.643795 | 3.46588 | 1.778951 |
| A | NOX_STREX | 0.299113 | 0.478963 | 0.456424 | 0.61492 | 0.512892 | 0.29751 | 1.044977 | 2.029911275 | 0.842337 | 0.051385359 | 0.163955 | 0.432833 | 0.297438 |
| A | PM10_IDLEX | 0 | 0 | 0 | 0 | 0.000651 | 0.001296 | 0.006614 | 0.006932153 | 0.001456 | 0 | 0 | 0.001837 | 0 |
| A | PM10_PMBW | 0.007428 | 0.009266 | 0.008962 | 0.009194 | 0.078 | 0.091 | 0.045484 | 0.084652014 | 0.050189 | 0.110401978 | 0.012 | 0.046043 | 0.044956 |
| A | PM10_PMTW | 0.008 | 0.008 | 0.008 | 0.008 | 0.009322 | 0.010529 | 0.012 | 0.035106343 | 0.012 | 0.032513069 | 0.004 | 0.011146 | 0.01306 |
| A | PM10_RUNEX | 0.001417 | 0.002489 | 0.001538 | 0.001702 | 0.019117 | 0.029132 | 0.053672 | 0.051666767 | 0.030764 | 0.006225756 | 0.001849 | 0.01865 | 0.034508 |
| A | PM10_STREX | 0.002241 | 0.003649 | 0.002365 | 0.002667 | 0.000332 | 0.00016 | 0.000145 | 1.7434E-06 | 0.000164 | 8.34901E-06 | 0.003896 | 3.39E-05 | 0.000479 |
| A | PM25_IDLEX | 0 | 0 | 0 | 0 | 0.000623 | 0.00124 | 0.006328 | 0.006628538 | 0.001393 | 0 | 0 | 0.001757 | 0 |
| A | PM25_PMBW | 0.0026 | 0.003243 | 0.003137 | 0.003218 | 0.0273 | 0.03185 | 0.015919 | 0.029628205 | 0.017566 | 0.038640692 | 0.0042 | 0.016115 | 0.015735 |
| A | PM25_PMTW | 0.002 | 0.002 | 0.002 | 0.002 | 0.00233 | 0.002632 | 0.003 | 0.008776586 | 0.003 | 0.008128267 | 0.001 | 0.002786 | 0.003265 |
| A | PM25_RUNEX | 0.001306 | 0.002292 | 0.001415 | 0.00157 | 0.01824 | 0.027847 | 0.051342 | 0.049428067 | 0.029425 | 0.005953456 | 0.001736 | 0.01783 | 0.03295 |
| A | PM25_STREX | 0.002061 | 0.003356 | 0.002174 | 0.002454 | 0.000306 | 0.000147 | 0.000134 | 1.60299E-06 | 0.000152 | 7.67661E-06 | 0.003679 | 3.11E-05 | 0.000442 |
| A | ROG_DIURN | 0.318525 | 0.699416 | 0.310241 | 0.376756 | 0.148301 | 0.082832 | 0.0366 | 0.000523321 | 0.06089 | 0.012731848 | 3.980053 | 0.019034 | 41.27005 |
| A | ROG_HTSK | 0.097953 | 0.199959 | 0.092972 | 0.113166 | 0.041778 | 0.023103 | 0.00994 | 0.00015565 | 0.01793 | 0.004370729 | 3.558872 | 0.005758 | 12.63388 |
| A | ROG_IDLEX | 0 | 0 | 0 | 0 | 0.024813 | 0.018229 | 0.037173 | 0.337272835 | 0.045185 | 0 | 0 | 0.168574 | 0 |
| A | ROG_RESTL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | ROG_RUNEX | 0.014266 | 0.043601 | 0.017103 | 0.030676 | 0.124722 | 0.147848 | 0.136058 | 0.077997893 | 0.098899 | 0.063206104 | 1.263313 | 0.066569 | 0.143261 |
| A | ROG_RUNLS | 0.244177 | 0.586714 | 0.23487 | 0.295141 | 0.214229 | 0.120066 | 0.076576 | 0.001402293 | 0.068347 | 0.008129564 | 3.698285 | 0.012361 | 0.275245 |
| A | ROG_STREX | 0.410994 | 0.728973 | 0.502922 | 0.725083 | 0.145185 | 0.082244 | 0.062329 | 4.07384E-07 | 0.110035 | 0.017573748 | 1.540104 | 0.025173 | 0.145812 |
| A | SO2_IDLEX | 0 | 0 | 0 | 0 | 8.81E-05 | 0.000135 | 0.001589 | 0.00784326 | 0.000812 | 0 | 0 | 0.001776 | 0 |
| A | SO2_RUNEX | 0.002683 | 0.003396 | 0.003647 | 0.004409 | 0.008298 | 0.008539 | 0.011842 | 0.015515068 | 0.013684 | 0.009484501 | 0.001877 | 0.010191 | 0.016893 |
| A | SO2_STREX | 0.000699 | 0.000925 | 0.000948 | 0.001139 | 0.000182 | 0.000111 | 9.61E-05 | 4.46642E-07 | 0.000174 | 3.32045E-05 | 0.000528 | 3.51E-05 | 0.00025 |
| A | TOG_DIURN | 0.318525 | 0.699416 | 0.310241 | 0.376756 | 0.148301 | 0.082832 | 0.0366 | 0.000523321 | 0.06089 | 0.012731848 | 0.087898 | 0.019034 | 41.27005 |
| A | TOG_HTSK | 0.097953 | 0.199959 | 0.092972 | 0.113166 | 0.041778 | 0.023103 | 0.00994 | 0.00015565 | 0.01793 | 0.004370729 | 3.558872 | 0.005758 | 12.63388 |
| A | TOG_IDLEX | 0 | 0 | 0 | 0 | 0.035406 | 0.024998 | 0.05386 | 0.553745258 | 0.059229 | 0 | 0 | 0.275181 | 0 |
| A | TOG_RESTL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | TOG_RUNEX | 0.020771 | 0.063514 | 0.024928 | 0.043536 | 0.156326 | 0.174499 | 0.166577 | 0.215080895 | 0.123733 | 0.416197808 | 1.493928 | 0.174452 | 0.194635 |
| A | TOG_RUNLS | 0.244177 | 0.586714 | 0.23487 | 0.295141 | 0.214229 | 0.120066 | 0.076576 | 0.001402293 | 0.068347 | 0.008129564 | 3.698285 | 0.012361 | 0.275245 |
| A | TOG_STREX | 0.449983 | 0.798126 | 0.550635 | 0.793812 | 0.158944 | 0.090047 | 0.068242 | 4.46035E-07 | 0.120447 | 0.019241042 | 1.673644 | 0.027561 | 0.15955 |
| A | N2O_IDLEX | 0 | 0 | 0 | 0 | 0.000633 | 0.00166 | 0.026101 | 0.140036471 | 0.01201 | 0 | 0 | 0.026103 | 0 |
| A | N2O_RUNEX | 0.005866 | 0.01303 | 0.008294 | 0.01265 | 0.044056 | 0.083919 | 0.166129 | 0.270568565 | 0.160576 | 0.166363012 | 0.042546 | 0.145045 | 0.072145 |
| A | N2O_STREX | 0.033498 | 0.042319 | 0.042781 | 0.048709 | 0.0373 | 0.021925 | 0.00591 | 3.54422E-05 | 0.015989 | 0.007438987 | 0.009462 | 0.00354 | 0.028918 |

**CalEEMod EMFAC2021 Fleet Mix Input**

| FleetMixLandUseSubType | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.543257 | 0.047173 | 0.217422 | 0.120464 | 0.022676 | 0.005191 | 0.009649 | 0.0068 | 0.001086 | 0.000427 | 0.022085 | 0.000667 | 0.003104 |

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2020
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 Ca | Model Yea | Speed | Fuel | Population | Total VMT | CVMT | EVMT | Trips | NOx RUN | NOx IDLE | NOx STRE | PM2.5 RU | PM2.5 IDL | PM2.5 STI | PM2.5 PM | PM2.5 PM | PM10 RU | PM10 IDL | PM10 STR | PM10 PM | PM10 PM | CO2 RUNI | CO2 IDLE | CO2 STRE | CH4 RUNI | CH4 IDLE | CH4 STRE | N2O RUN | N2O IDLE | N2O STRE | ROG RUN | ROG IDLE | ROG STRE | ROG HOT | ROG RUN | ROG DIUR | TOG RUN | TOG IDLE | TOG STRE | TOG HOT | TOG RUN | TOG DIUR | NH3 RUN | CO RUNEX | CO_IDLEX | CO_STREX | SOx RUNE | SOx IDLEX | SOx_STREX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Clara | 2020 | HHDT | Aggregate | Aggregate | Gasoline | 5.43168 | 94.2269 | 94.2269 | 0 | 108.677 | 13.4851 | 0 | 1.30609 | 0.00815 | 0 | 0.00175 | 0.005 | 0.04 | 0.00886 | 0 | 0.0019 | 0.02 | 0.1143 | 2680.3 | 0 | 49.2177 | 0.63104 | 0 | 8.2E-05 | 0.30394 | 0 | 0.03861 | 4.01933 | 0 | 0.00044 | 0.16956 | 1.52764 | 11.4066 | 5.86499 | 0 | 0.00049 | 0.16956 | 1.52764 | 11.4066 | 0.03752 | 128.133 | 0 | 0.14227 | 0.0265 | 0 | 0.00049 |
| Santa Clara | 2020 | HHDT | Aggregate | Aggregate | Diesel | 7818.58 | 965849 | 965849 | 0 | 113617 | 3.46433 | 69.6237 | 2.11397 | 0.05148 | 0.09898 | 0 | 0.00877 | 0.02884 | 0.05381 | 0.10345 | 0 | 0.03507 | 0.08241 | 1709.35 | 12542 | 0 | 0.00361 | 0.23529 | 0 | 0.26931 | 1.976 | 0 | 0.0777 | 5.06579 | 0 | 0 | 0 | 0 | 0.08845 | 5.76702 | 0 | 0 | 0 | 0 | 0.18599 | 0.29898 | 63.69 | 0 | 0.01619 | 0.11877 | 0 |
| Santa Clara | 2020 | HHDT | Aggregate | Aggregate | Natural Ga | 548.798 | 41866.2 | 41866.2 | 0 | 4665.95 | 1.61541 | 13.8518 | 0 | 0.00213 | 0.01986 | 0 | 0.009 | 0.0477 | 0.00232 | 0.0216 | 0 | 0.036 | 0.13627 | 1469.45 | 10097.3 | 0 | 3.02402 | 36.4706 | 0 | 0.29956 | 2.05839 | 0 | 0.07611 | 0.58858 | 0 | 0 | 0 | 0 | 3.12373 | 37.2978 | 0 | 0 | 0 | 0 | 0.851 | 15.6662 | 73.5825 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | LDA | Aggregate | Aggregate | Gasoline | 613904 | 2E+07 | 2E+07 | 0 | 2855173 | 0.07056 | 0 | 0.32519 | 0.00135 | 0 | 0.00221 | 0.002 | 0.00271 | 0.00146 | 0 | 0.00241 | 0.008 | 0.00773 | 294.174 | 0 | 76.2044 | 0.00369 | 0 | 0.09066 | 0.00631 | 0 | 0.0363 | 0.01553 | 0 | 0.4466 | 0.10648 | 0.2664 | 1.61112 | 0.02264 | 0 | 0.48896 | 0.10648 | 0.2664 | 1.61112 | 0.03108 | 0.9904 | 0 | 4.20411 | 0.00291 | 0 | 0.00075 |
| Santa Clara | 2020 | LDA | Aggregate | Aggregate | Diesel | 2205.54 | 60887 | 60887 | 0 | 9658.87 | 0.3172 | 0 | 0 | 0.02235 | 0 | 0 | 0.002 | 0.00272 | 0.02336 | 0 | 0 | 0.008 | 0.00778 | 239.837 | 0 | 0 | 0.00167 | 0 | 0 | 0.03779 | 0 | 0 | 0.0359 | 0 | 0 | 0 | 0 | 0 | 0.04087 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 0.37396 | 0 | 0 | 0.00227 | 0 | 0 |
| Santa Clara | 2020 | LDA | Aggregate | Aggregate | Electricity | 42022.7 | 1444645 | 0 | 1444645 | 211801 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00153 | 0 | 0 | 0 | 0.008 | 0.00436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | LDA | Aggregate | Aggregate | Plug-in Hy | 10820.2 | 419724 | 225376 | 194348 | 44741.6 | 0.0035 | 0 | 0.11551 | 0.00084 | 0 | 0.00257 | 0.002 | 0.00137 | 0.00091 | 0 | 0.0028 | 0.008 | 0.00391 | 149.215 | 0 | 68.4454 | 0.00047 | 0 | 0.0422 | 0.00062 | 0 | 0.02054 | 0.00151 | 0 | 0.17328 | 0.03888 | 0.03466 | 0.47702 | 0.0022 | 0 | 0.18973 | 0.03888 | 0.03466 | 0.47702 | 0.01951 | 0.23058 | 0 | 1.33989 | 0.00148 | 0 | 0.00068 |
| Santa Clara | 2020 | LDT1 | Aggregate | Aggregate | Gasoline | 57869.1 | 1611764 | 1611764 | 0 | 258685 | 0.19736 | 0 | 0.48076 | 0.00222 | 0 | 0.00337 | 0.002 | 0.00325 | 0.00242 | 0 | 0.00366 | 0.008 | 0.00928 | 344.61 | 0 | 93.9208 | 0.00943 | 0 | 0.13431 | 0.01306 | 0 | 0.04248 | 0.04366 | 0 | 0.73171 | 0.20071 | 0.58892 | 3.13827 | 0.06363 | 0 | 0.80112 | 0.20071 | 0.58892 | 3.13827 | 0.03518 | 2.00951 | 0 | 7.11768 | 0.00341 | 0 | 0.00093 |
| Santa Clara | 2020 | LDT1 | Aggregate | Aggregate | Diesel | 35.9784 | 499.562 | 499.562 | 0 | 109.832 | 1.67429 | 0 | 0 | 0.24271 | 0 | 0 | 0.002 | 0.00376 | 0.25369 | 0 | 0 | 0.008 | 0.01075 | 416.915 | 0 | 0 | 0.01406 | 0 | 0 | 0.06569 | 0 | 0 | 0.30272 | 0 | 0 | 0 | 0 | 0 | 0.34463 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 1.64353 | 0 | 0 | 0.00395 | 0 | 0 |
| Santa Clara | 2020 | LDT1 | Aggregate | Aggregate | Electricity | 178.666 | 5124.92 | 0 | 5124.92 | 851.627 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00154 | 0 | 0 | 0 | 0.008 | 0.0044 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | LDT1 | Aggregate | Aggregate | Plug-in Hy | 3.34255 | 137.214 | 71.629 | 65.585 | 13.8214 | 0.0034 | 0 | 0.11551 | 0.00071 | 0 | 0.00231 | 0.002 | 0.00137 | 0.00077 | 0 | 0.00251 | 0.008 | 0.00391 | 145.149 | 0 | 76.2951 | 0.00046 | 0 | 0.04235 | 0.00061 | 0 | 0.02068 | 0.00146 | 0 | 0.17328 | 0.02734 | 0.02725 | 0.35627 | 0.00214 | 0 | 0.18973 | 0.02734 | 0.02725 | 0.35627 | 0.02193 | 0.2246 | 0 | 1.33989 | 0.00143 | 0 | 0.00075 |
| Santa Clara | 2020 | LDT2 | Aggregate | Aggregate | Gasoline | 266256 | 8235794 | 8235794 | 0 | 1248300 | 0.11304 | 0 | 0.45871 | 0.0014 | 0 | 0.00218 | 0.002 | 0.00314 | 0.00152 | 0 | 0.00237 | 0.008 | 0.00898 | 369.769 | 0 | 96.255 | 0.00408 | 0 | 0.10232 | 0.00817 | 0 | 0.04298 | 0.01716 | 0 | 0.50536 | 0.09343 | 0.2361 | 1.46167 | 0.02502 | 0 | 0.5533 | 0.09343 | 0.2361 | 1.46167 | 0.03295 | 1.11139 | 0 | 4.67513 | 0.00366 | 0 | 0.00095 |
| Santa Clara | 2020 | LDT2 | Aggregate | Aggregate | Diesel | 837.957 | 28175.9 | 28175.9 | 0 | 4060.72 | 0.05754 | 0 | 0 | 0.00605 | 0 | 0 | 0.002 | 0.00307 | 0.00632 | 0 | 0 | 0.008 | 0.00878 | 328.179 | 0 | 0 | 0.00068 | 0 | 0 | 0.0517 | 0 | 0 | 0.01472 | 0 | 0 | 0 | 0 | 0 | 0.01676 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 0.13202 | 0 | 0 | 0.00311 | 0 | 0 |
| Santa Clara | 2020 | LDT2 | Aggregate | Aggregate | Electricity | 114.063 | 3298.57 | 0 | 3298.57 | 575.776 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00153 | 0 | 0 | 0 | 0.008 | 0.00436 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | LDT2 | Aggregate | Aggregate | Plug-in Hy | 519.07 | 20899.8 | 11005.7 | 9894.09 | 2146.35 | 0.00343 | 0 | 0.11551 | 0.00085 | 0 | 0.00272 | 0.002 | 0.00137 | 0.00092 | 0 | 0.00296 | 0.008 | 0.0039 | 146.403 | 0 | 82.2189 | 0.00046 | 0 | 0.0423 | 0.00061 | 0 | 0.02063 | 0.00148 | 0 | 0.17328 | 0.02881 | 0.02859 | 0.38203 | 0.00215 | 0 | 0.18973 | 0.02881 | 0.02859 | 0.38203 | 0.02195 | 0.22649 | 0 | 1.33989 | 0.00145 | 0 | 0.00081 |
| Santa Clara | 2020 | LHDT1 | Aggregate | Aggregate | Gasoline | 19020.2 | 576076 | 576076 | 0 | 283373 | 0.28736 | 0.04055 | 0.71557 | 0.00186 | 0 | 0.00043 | 0.002 | 0.0273 | 0.00202 | 0 | 0.00046 | 0.008 | 0.078 | 948.6 | 123.235 | 25.6766 | 0.0134 | 0.12049 | 0.03898 | 0.01565 | 0.00298 | 0.05204 | 0.06905 | 0.4644 | 0.20256 | 0.05829 | 0.29889 | 3.08258 | 0.10002 | 0.67746 | 0.22175 | 0.05829 | 0.29889 | 3.08258 | 0.04481 | 1.54145 | 3.74398 | 2.96205 | 0.00938 | 0.00122 | 0.00025 |
| Santa Clara | 2020 | LHDT1 | Aggregate | Aggregate | Diesel | 8902.27 | 284333 | 284333 | 0 | 111979 | 2.67333 | 2.37023 | 0 | 0.05143 | 0.02766 | 0 | 0.003 | 0.0273 | 0.05376 | 0.02891 | 0 | 0.012 | 0.078 | 644.875 | 138.048 | 0 | 0.01103 | 0.0051 | 0 | 0.1016 | 0.02175 | 0 | 0.23752 | 0.10976 | 0 | 0 | 0 | 0 | 0.27041 | 0.12495 | 0 | 0 | 0 | 0 | 0.13571 | 0.70263 | 0.90975 | 0 | 0.00611 | 0.00131 | 0 |
| Santa Clara | 2020 | LHDT2 | Aggregate | Aggregate | Gasoline | 2473.87 | 75667.9 | 75667.9 | 0 | 36857 | 0.26984 | 0.04024 | 0.69531 | 0.00169 | 0 | 0.00034 | 0.002 | 0.03185 | 0.00184 | 0 | 0.00037 | 0.008 | 0.091 | 1051.56 | 141.875 | 26.2916 | 0.01079 | 0.1208 | 0.03746 | 0.01496 | 0.003 | 0.05124 | 0.05242 | 0.4609 | 0.19221 | 0.05399 | 0.28061 | 2.88418 | 0.07649 | 0.67254 | 0.21045 | 0.05399 | 0.28061 | 2.88418 | 0.04494 | 1.25544 | 3.74755 | 3.10932 | 0.0104 | 0.0014 | 0.00026 |
| Santa Clara | 2020 | LHDT2 | Aggregate | Aggregate | Diesel | 3917.87 | 130091 | 130091 | 0 | 49281.9 | 2.03989 | 2.33455 | 0 | 0.04306 | 0.02725 | 0 | 0.003 | 0.03185 | 0.04501 | 0.02849 | 0 | 0.012 | 0.091 | 787.221 | 219.667 | 0 | 0.00945 | 0.0051 | 0 | 0.12403 | 0.03461 | 0 | 0.20335 | 0.10976 | 0 | 0 | 0 | 0 | 0.2315 | 0.12495 | 0 | 0 | 0 | 0 | 0.15762 | 0.55883 | 0.90975 | 0 | 0.00746 | 0.00208 | 0 |
| Santa Clara | 2020 | MCY | Aggregate | Aggregate | Gasoline | 27194.5 | 139531 | 139531 | 0 | 54389 | 0.6438 | 0 | 0.16395 | 0.00174 | 0 | 0.00368 | 0.001 | 0.0042 | 0.00185 | 0 | 0.0039 | 0.004 | 0.012 | 189.819 | 0 | 53.4246 | 0.18473 | 0 | 0.20355 | 0.04255 | 0 | 0.00946 | 1.26331 | 0 | 1.5401 | 3.55887 | 3.69828 | 3.98005 | 1.49393 | 0 | 1.67364 | 3.55887 | 3.69828 | 3.98005 | 0.00859 | 14.7028 | 0 | 8.21347 | 0.00188 | 0 | 0.00053 |
| Santa Clara | 2020 | MDV | Aggregate | Aggregate | Gasoline | 145494 | 4285060 | 4285060 | 0 | 672578 | 0.18546 | 0 | 0.62683 | 0.0015 | 0 | 0.00249 | 0.002 | 0.00323 | 0.00163 | 0 | 0.00271 | 0.008 | 0.00923 | 448.244 | 0 | 117.208 | 0.00659 | 0 | 0.13722 | 0.01177 | 0 | 0.04962 | 0.03114 | 0 | 0.73901 | 0.11533 | 0.30093 | 1.77493 | 0.04425 | 0 | 0.80906 | 0.11533 | 0.30093 | 1.77493 | 0.03294 | 1.46523 | 0 | 5.41553 | 0.00443 | 0 | 0.00116 |
| Santa Clara | 2020 | MDV | Aggregate | Aggregate | Diesel | 2248.41 | 74329.4 | 74329.4 | 0 | 10888.6 | 0.06822 | 0 | 0 | 0.00585 | 0 | 0 | 0.002 | 0.0031 | 0.00612 | 0 | 0 | 0.008 | 0.00886 | 424.785 | 0 | 0 | 0.00058 | 0 | 0 | 0.06693 | 0 | 0 | 0.01247 | 0 | 0 | 0 | 0 | 0 | 0.01419 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 0.19942 | 0 | 0 | 0.00403 | 0 | 0 |
| Santa Clara | 2020 | MDV | Aggregate | Aggregate | Electricity | 84.119 | 2517.62 | 0 | 2517.62 | 426.623 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00152 | 0 | 0 | 0 | 0.008 | 0.00435 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | MDV | Aggregate | Aggregate | Plug-in Hy | 510.123 | 19096.4 | 10256.2 | 8840.23 | 2109.36 | 0.0035 | 0 | 0.11551 | 0.00093 | 0 | 0.00293 | 0.002 | 0.00137 | 0.00102 | 0 | 0.00318 | 0.008 | 0.0039 | 149.278 | 0 | 102.46 | 0.00047 | 0 | 0.04202 | 0.00062 | 0 | 0.02038 | 0.00151 | 0 | 0.17328 | 0.03059 | 0.03145 | 0.42004 | 0.0022 | 0 | 0.18973 | 0.03059 | 0.03145 | 0.42004 | 0.02256 | 0.2308 | 0 | 1.33989 | 0.00148 | 0 | 0.00101 |
| Santa Clara | 2020 | MH | Aggregate | Aggregate | Gasoline | 2913.42 | 21235.3 | 21235.3 | 0 | 291.458 | 0.69808 | 0 | 0.39013 | 0.00225 | 0 | 0.00058 | 0.003 | 0.01576 | 0.00245 | 0 | 0.00063 | 0.012 | 0.04502 | 1951.78 | 0 | 33.1047 | 0.02959 | 0 | 0.0409 | 0.03681 | 0 | 0.03793 | 0.14723 | 0 | 0.19125 | 16.5713 | 0.36103 | 5.41536 | 0.04426 | 4.17034 | 0 | 4.07523 | 0.0193 | 0 | 0.00033 |
| Santa Clara | 2020 | MH | Aggregate | Aggregate | Diesel | 908.337 | 7659.08 | 7659.08 | 0 | 90.8337 | 4.77574 | 0 | 0 | 0.11806 | 0 | 0 | 0.004 | 0.01567 | 0.1234 | 0 | 0 | 0.016 | 0.04479 | 1079.7 | 0 | 0 | 0.00614 | 0 | 0 | 0.17011 | 0 | 0 | 0.13225 | 0 | 0 | 0 | 0 | 0 | 0.15056 | 0 | 0 | 0 | 0 | 0 | 0.13084 | 0.4499 | 0 | 0 | 0.01023 | 0 | 0 |
| Santa Clara | 2020 | MHDT | Aggregate | Aggregate | Gasoline | 1479.84 | 58617.1 | 58617.1 | 0 | 29608.6 | 0.99074 | 0.08751 | 0.48388 | 0.00158 | 0 | 0.00069 | 0.003 | 0.01576 | 0.00172 | 0 | 0.00075 | 0.012 | 0.04502 | 1874.86 | 552.434 | 50.2305 | 0.03334 | 0.23643 | 0.05391 | 0.0421 | 0.00611 | 0.03054 | 0.17394 | 0.99812 | 0.32208 | 0.05136 | 0.3957 | 3.78403 | 0.25381 | 1.45645 | 0.35263 | 0.05136 | 0.3957 | 3.78403 | 0.04481 | 3.73965 | 14.9473 | 7.2652 | 0.01853 | 0.00546 | 0.0005 |
| Santa Clara | 2020 | MHDT | Aggregate | Aggregate | Diesel | 10331.9 | 421370 | 421370 | 0 | 122728 | 2.82463 | 21.5225 | 1.18599 | 0.05866 | 0.0936 | 0 | 0.003 | 0.01594 | 0.06131 | 0.09783 | 0 | 0.012 | 0.04555 | 1161.96 | 2401.88 | 0 | 0.00612 | 0.01885 | 0 | 0.18307 | 0.37842 | 0 | 0.13177 | 0.40574 | 0 | 0 | 0 | 0 | 0.15001 | 0.46191 | 0 | 0 | 0 | 0 | 0.16933 | 0.38928 | 7.45099 | 0 | 0.011 | 0.02274 | 0 |
| Santa Clara | 2020 | MHDT | Aggregate | Aggregate | Natural Ga | 70.2977 | 3291.86 | 3291.86 | 0 | 663.228 | 0.17399 | 6.5014 | 0 | 0.00097 | 0.01544 | 0 | 0.003 | 0.01601 | 0.00105 | 0.01679 | 0 | 0.012 | 0.04573 | 1012.9 | 5206.43 | 0 | 0.71886 | 18.2985 | 0 | 0.20649 | 1.06137 | 0 | 0.01027 | 0.26145 | 0 | 0 | 0 | 0 | 0.73365 | 18.675 | 0 | 0 | 0 | 0 | 1.06 | 2.98197 | 28.7646 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | OBUS | Aggregate | Aggregate | Gasoline | 498.507 | 20517.1 | 20517.1 | 0 | 9974.13 | 0.69255 | 0.06492 | 0.40937 | 0.00082 | 0 | 0.00028 | 0.003 | 0.01568 | 0.00089 | 0 | 0.00031 | 0.012 | 0.0448 | 1839.44 | 388.248 | 32.8309 | 0.02005 | 0.19097 | 0.03775 | 0.03156 | 0.00505 | 0.02985 | 0.10067 | 0.74457 | 0.20542 | 0.03347 | 0.1276 | 2.27438 | 0.1461 | 1.08596 | 0.22486 | 0.03347 | 0.1276 | 2.27438 | 0.04489 | 2.28987 | 5.76233 | 4.24444 | 0.01818 | 0.00384 | 0.00032 |
| Santa Clara | 2020 | OBUS | Aggregate | Aggregate | Diesel | 833.898 | 60840.1 | 60840.1 | 0 | 8597.85 | 1.87844 | 10.8007 | 1.34936 | 0.03924 | 0.03108 | 0 | 0.003 | 0.01821 | 0.04102 | 0.03248 | 0 | 0.012 | 0.05203 | 1293.37 | 1673.15 | 0 | 0.00459 | 0.02617 | 0 | 0.20377 | 0.26361 | 0 | 0.09883 | 0.56339 | 0 | 0 | 0 | 0 | 0.11251 | 0.64138 | 0 | 0 | 0 | 0 | 0.2001 | 0.303 | 7.43574 | 0 | 0.01125 | 0.01584 | 0 |
| Santa Clara | 2020 | OBUS | Aggregate | Aggregate | Natural Ga | 5.43896 | 360.764 | 360.764 | 0 | 48.4067 | 0.30074 | 1.58325 | 0 | 0.00053 | 0.00281 | 0 | 0.003 | 0.01615 | 0.00058 | 0.00305 | 0 | 0.012 | 0.04614 | 1046.14 | 1171.06 | 0 | 0.7295 | 4.80278 | 0 | 0.21326 | 0.23873 | 0 | 0.01042 | 0.06862 | 0 | 0 | 0 | 0 | 0.7445 | 4.90159 | 0 | 0 | 0 | 0 | 1.06 | 3.09187 | 4.88816 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | SBUS | Aggregate | Aggregate | Gasoline | 147.665 | 6269.89 | 6269.89 | 0 | 590.659 | 0.54455 | 0.92536 | 0.66113 | 0.00083 | 0 | 0.00053 | 0.002 | 0.01572 | 0.0009 | 0 | 0.00058 | 0.008 | 0.04492 | 830.526 | 2646.8 | 60.312 | 0.01359 | 2.4071 | 0.07361 | 0.02865 | 0.08495 | 0.06019 | 0.06687 | 10.6244 | 0.42796 | 0.0979 | 0.21014 | 1.29437 | 0.09758 | 15.5031 | 0.46856 | 0.0979 | 0.21014 | 1.29437 | 0.045 | 1.70693 | 82.1367 | 11.1261 | 0.00821 | 0.02617 | 0.0006 |
| Santa Clara | 2020 | SBUS | Aggregate | Aggregate | Diesel | 652.687 | 15447.8 | 15447.8 | 0 | 9450.91 | 4.62854 | 23.7415 | 0.41856 | 0.02461 | 0.0267 | 0 | 0.003 | 0.01572 | 0.02572 | 0.02791 | 0 | 0.012 | 0.04492 | 1161.05 | 2260.67 | 0 | 0.003 | 0.00848 | 0 | 0.18292 | 0.35617 | 0 | 0.0646 | 0.18258 | 0 | 0 | 0 | 0 | 0.07354 | 0.20786 | 0 | 0 | 0 | 0 | 0.13271 | 0.19326 | 4.31507 | 0 | 0.01099 | 0.02141 | 0 |
| Santa Clara | 2020 | SBUS | Aggregate | Aggregate | Natural Ga | 20.8323 | 544.304 | 544.304 | 0 | 301.652 | 0.65391 | 5.32407 | 0 | 0.00338 | 0.01009 | 0 | 0.003 | 0.01572 | 0.00367 | 0.01097 | 0 | 0.012 | 0.04492 | 1303.65 | 4027.71 | 0 | 3.67395 | 15.9132 | 0 | 0.26576 | 0.82107 | 0 | 0.05249 | 0.22737 | 0 | 0 | 0 | 0 | 3.74953 | 16.2406 | 0 | 0 | 0 | 0 | 1.06 | 12.7656 | 17.887 | 0 | 0 | 0 | 0 |
| Santa Clara | 2020 | UBUS | Aggregate | Aggregate | Gasoline | 45.539 | 4755.62 | 4755.62 | 0 | 182.156 | 0.03394 | 0 | 0.59264 | 0.0009 | 0 | 8.9E-05 | 0.002 | 0.03185 | 0.00098 | 0 | 9.6E-05 | 0.008 | 0.091 | 975.202 | 0 | 38.7374 | 0.00251 | 0 | 0.05478 | 0.00496 | 0 | 0.0858 | 0.00718 | 0 | 0.20268 | 0.05041 | 0.09376 | 0.58736 | 0.01047 | 0 | 0.22191 | 0.05041 | 0.09376 | 0.58736 | 0.045 | 0.58394 | 0 | 5.90238 | 0.00964 | 0 | 0.00038 |
| Santa Clara | 2020 | UBUS | Aggregate | Aggregate | Diesel | 433.606 | 48489 | 48489 | 0 | 1734.43 | 0.38626 | 0 | 0 | 0.00702 | 0 | 0 | 0.0083 | 0.0385 | 0.00734 | 0 | 0 | 0.0332 | 0.11 | 1100.29 | 0 | 0 | 0.00321 | 0 | 0 | 0.17335 | 0 | 0 | 0.06921 | 0 | 0 | 0 | 0 | 0 | 0.07879 | 0 | 0 | 0 | 0 | 0 | 0.18762 | 0.07937 | 0 | 0 | 0.01043 | 0 | 0 |
| Santa Clara | 2020 | UBUS | Aggregate | Aggregate | Electricity | 5.04676 | 199.003 | 0 | 199.003 | 20.187 | 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 |
| Santa Clara | 2020 | UBUS | Aggregate | Aggregate | Natural Ga | 41.024 | 4692 | 4692 | 0 | 164.096 | 0.05876 | 0 | 0 | 0.00028 | 0 | 0 | 0.00818 | 0.0385 | 0.00029 | 0 | 0 | 0.03271 | 0.11 | 1298.86 | 0 | 0 | 4.24468 | 0 | 0 | 0.26478 | 0 | 0 | 0.06065 | 0 | 0 | 0 | 0 | 0 | 4.332 | 0 | 0 | 0 | 0 | 0 | 0.97 | 49.0237 | 0 | 0 | 0 | 0 | 0 |

## CalEEMod EMFAC2021 Emission Factors Input

| Season | EmissionType | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | CH4_IDLEX | 0 | 0 | 0 | 0 | 0.002776 | 0.001937 | 0.013075 | 0.13318389 | 0.007092 | 0 | 0 | 0.075655 | 0 |
| A | CH4_RUNEX | 0.000876 | 0.001264 | 0.001344 | 0.001391 | 0.001565 | 0.002582 | 0.00742 | 0.039187541 | 0.011752 | 0.141373149 | 0.131619 | 0.065654 | 0.004124 |
| A | CH4_STREX | 0.031172 | 0.040013 | 0.043435 | 0.044852 | 0.009891 | 0.005913 | 0.004253 | 2.42814E-08 | 0.009062 | 0.002553877 | 0.136725 | 0.004292 | 0.020233 |
| A | CO_IDLEX | 0 | 0 | 0 | 0 | 0.134379 | 0.129629 | 0.448168 | 4.57262763 | 0.514902 | 0 | 0 | 1.659035 | 0 |
| A | CO_RUNEX | 0.412306 | 0.530578 | 0.550096 | 0.556273 | 0.289284 | 0.242098 | 0.071106 | 0.363041211 | 0.177068 | 1.624901903 | 10.0701 | 0.29617 | 0.201575 |
| A | CO_STREX | 1.532643 | 1.916656 | 2.140605 | 2.13661 | 1.486201 | 1.034151 | 0.396405 | 0.000785044 | 0.98104 | 0.554434354 | 7.739799 | 0.513032 | 1.598715 |
| A | CO2_NBIO_IDLEX | 0 | 0 | 0 | 0 | 5.587865 | 13.01363 | 93.60552 | 595.8812153 | 80.35855 | 0 | 0 | 139.4991 | 0 |
| A | CO2_NBIO_RUNEX | 193.08 | 253.7903 | 261.0938 | 310.4936 | 443.6567 | 481.8896 | 666.8584 | 1112.247038 | 1068.646 | 211.3258872 | 184.5867 | 687.1322 | 1640.3 |
| A | CO2_NBIO_STREX | 48.27057 | 63.43348 | 65.0766 | 77.07919 | 11.0282 | 7.414902 | 4.241977 | 0.006674946 | 8.148873 | 3.061944547 | 38.03481 | 3.242705 | 18.59367 |
| A | NOX_IDLEX | 0 | 0 | 0 | 0 | 0.020549 | 0.06061 | 0.329949 | 2.877179091 | 0.227494 | 0 | 0 | 0.434665 | 0 |
| A | NOX_RUNEX | 0.017421 | 0.025522 | 0.025643 | 0.027736 | 0.093726 | 0.218007 | 0.222428 | 1.099146615 | 0.563134 | 0.03291206 | 0.47139 | 0.349397 | 1.024401 |
| A | NOX_STREX | 0.147752 | 0.188987 | 0.205831 | 0.217921 | 0.196725 | 0.12132 | 0.710723 | 2.175495432 | 0.697948 | 0.027004983 | 0.07466 | 0.497865 | 0.262073 |
| A | PM10_IDLEX | 0 | 0 | 0 | 0 | 0.000521 | 0.001493 | 0.000163 | 0.001415992 | 0.000176 | 0 | 0 | 0.000177 | 0 |
| A | PM10_PMBW | 0.007188 | 0.009094 | 0.008969 | 0.009027 | 0.063673 | 0.074741 | 0.036365 | 0.080136037 | 0.049168 | 1.251252127 | 0.012 | 0.038902 | 0.044935 |
| A | PM10_PMTW | 0.008 | 0.008 | 0.008 | 0.008 | 0.008968 | 0.009845 | 0.012 | 0.035206925 | 0.012 | 0.759417391 | 0.004 | 0.010318 | 0.01342 |
| A | PM10_RUNEX | 0.000478 | 0.00063 | 0.000579 | 0.000574 | 0.005311 | 0.01104 | 0.001959 | 0.020689521 | 0.007358 | 0.000676824 | 0.002118 | 0.002495 | 0.012582 |
| A | PM10_STREX | 0.000852 | 0.00111 | 0.000967 | 0.000966 | 5.94E-05 | 3.3E-05 | 5.55E-05 | 8.01437E-08 | 8.63E-05 | 1.26121E-05 | 0.003575 | 4.54E-05 | 0.000225 |
| A | PM25_IDLEX | 0 | 0 | 0 | 0 | 0.000499 | 0.001428 | 0.000156 | 0.001348246 | 0.000168 | 0 | 0 | 0.000168 | 0 |
| A | PM25_PMBW | 0.002516 | 0.003183 | 0.003139 | 0.003159 | 0.022285 | 0.026159 | 0.012728 | 0.028047613 | 0.017209 | 0.437938244 | 0.0042 | 0.013616 | 0.015727 |
| A | PM25_PMTW | 0.002 | 0.002 | 0.002 | 0.002 | 0.002242 | 0.002461 | 0.003 | 0.008801731 | 0.003 | 0.189854348 | 0.001 | 0.00258 | 0.003355 |
| A | PM25_RUNEX | 0.00044 | 0.000579 | 0.000533 | 0.000529 | 0.005062 | 0.010554 | 0.001869 | 0.019792024 | 0.007034 | 0.000643574 | 0.001975 | 0.002371 | 0.012002 |
| A | PM25_STREX | 0.000784 | 0.00102 | 0.000889 | 0.000889 | 5.46E-05 | 3.04E-05 | 5.11E-05 | 7.36892E-08 | 7.94E-05 | 1.15963E-05 | 0.003337 | 4.18E-05 | 0.000207 |
| A | ROG_DIURN | 0.179832 | 0.338967 | 0.230491 | 0.242116 | 0.0613 | 0.043797 | 0.010303 | 7.8757E-06 | 0.051514 | 0.007035988 | 3.387301 | 0.059821 | 11.66427 |
| A | ROG_HTSK | 0.036395 | 0.063304 | 0.044821 | 0.046624 | 0.010392 | 0.007221 | 0.001624 | 1.27583E-06 | 0.008912 | 0.002092559 | 3.548752 | 0.009617 | 2.063419 |
| A | ROG_IDLEX | 0 | 0 | 0 | 0 | 0.011331 | 0.011636 | 0.013804 | 0.284098981 | 0.034454 | 0 | 0 | 0.174222 | 0 |
| A | ROG_RESTL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | ROG_RUNEX | 0.00266 | 0.004215 | 0.004377 | 0.004634 | 0.024437 | 0.051655 | 0.004999 | 0.010246913 | 0.017118 | 0.007801122 | 0.787465 | 0.010346 | 0.03871 |
| A | ROG_RUNLS | 0.133238 | 0.247033 | 0.171516 | 0.17872 | 0.081604 | 0.058679 | 0.01984 | 1.63043E-05 | 0.05666 | 0.00787977 | 3.792527 | 0.041612 | 0.065187 |
| A | ROG_STREX | 0.123354 | 0.165552 | 0.178223 | 0.189638 | 0.045047 | 0.026327 | 0.021103 | 1.30388E-07 | 0.049116 | 0.008598625 | 0.960456 | 0.023589 | 0.074134 |
| A | SO2_IDLEX | 0 | 0 | 0 | 0 | 5.43E-05 | 0.000124 | 0.00085 | 0.00517637 | 0.000753 | 0 | 0 | 0.001234 | 0 |
| A | SO2_RUNEX | 0.001909 | 0.002509 | 0.002581 | 0.003068 | 0.004326 | 0.00463 | 0.006285 | 0.010079227 | 0.010083 | 0.00161705 | 0.001825 | 0.00636 | 0.016058 |
| A | SO2_STREX | 0.000477 | 0.000627 | 0.000643 | 0.000762 | 0.000109 | 7.33E-05 | 4.19E-05 | 6.59886E-08 | 8.06E-05 | 3.02704E-05 | 0.000376 | 3.21E-05 | 0.000184 |
| A | TOG_DIURN | 0.179832 | 0.338967 | 0.230491 | 0.242116 | 0.0613 | 0.043797 | 0.010303 | 7.8757E-06 | 0.051514 | 0.007035988 | 0.075072 | 0.059821 | 11.66427 |
| A | TOG_HTSK | 0.036395 | 0.063304 | 0.044821 | 0.046624 | 0.010392 | 0.007221 | 0.001624 | 1.27583E-06 | 0.008912 | 0.002092559 | 3.548752 | 0.009617 | 2.063419 |
| A | TOG_IDLEX | 0 | 0 | 0 | 0 | 0.015866 | 0.015065 | 0.0288 | 0.444011937 | 0.045945 | 0 | 0 | 0.288224 | 0 |
| A | TOG_RESTL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | TOG_RUNEX | 0.00388 | 0.00615 | 0.006373 | 0.006746 | 0.028387 | 0.05904 | 0.013033 | 0.050586251 | 0.030972 | 0.150588206 | 0.981097 | 0.07764 | 0.046554 |
| A | TOG_RUNLS | 0.133238 | 0.247033 | 0.171516 | 0.17872 | 0.081604 | 0.058679 | 0.01984 | 1.63043E-05 | 0.05666 | 0.00787977 | 3.792527 | 0.041612 | 0.065187 |
| A | TOG_STREX | 0.135057 | 0.181258 | 0.195132 | 0.20763 | 0.049321 | 0.028825 | 0.023105 | 1.42759E-07 | 0.053776 | 0.009414412 | 1.045673 | 0.025827 | 0.081167 |
| A | N2O_IDLEX | 0 | 0 | 0 | 0 | 0.000427 | 0.001679 | 0.014547 | 0.09616142 | 0.011985 | 0 | 0 | 0.017632 | 0 |
| A | N2O_RUNEX | 0.002746 | 0.003476 | 0.003574 | 0.004038 | 0.023915 | 0.051873 | 0.086734 | 0.177429444 | 0.144385 | 0.024628867 | 0.03541 | 0.075755 | 0.06904 |
| A | N2O_STREX | 0.022598 | 0.027068 | 0.029232 | 0.029559 | 0.018332 | 0.011424 | 0.003195 | 6.85385E-07 | 0.006659 | 0.004754521 | 0.004863 | 0.004583 | 0.030332 |

## CalEEMod EMFAC2021 Fleet Mix I

| FleetMixLandUseSubType | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD |
|---|---|---|---|---|---|---|---|
| | 0.498979 | 0.030227 | 0.246674 | 0.14571 | 0.026576 | 0.006798 | 0.010114 |

**nput**

| HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|
| 0.008642 | 0.001034 | 0.000368 | 0.022163 | 0.000657 | 0.002059 |

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Santa Clara
Calendar Year: 2040
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 Ca | Model Yea | Speed | Fuel | Population | Total VMT | CVMT | EVMT | Trips | NOx RUN | NOx IDLEI | NOx STRE | PM2.5 RU | PM2.5 IDL | PM2.5 STI | PM2.5 PM | PM10 RU | PM10 IDL | PM10 STR | PM10 PM | PM10 PM | CO2 RUNI | CO2 IDLE | CO2 STRE | CH4 RUNI | CH4 IDLE | CH4 STRE | N2O RUN | N2O IDLE | N2O STRE | ROG RUN | ROG IDLE | ROG STRE | ROG HOT | ROG RUN | ROG DIUR | TOG RUN | TOG IDLE | TOG STRE | TOG HOT | TOG RUN | TOG DIUR | NH3 RUN | CO RUNEI | CO_IDLEX | CO_STREX | SOx RUNE | SOx IDLEX | SOx_STREX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Clara | 2040 | HHDT | Aggregate | Aggregate | Gasoline | 1.4222 | 166.728 | 166.728 | 0 | 28.4554 | 2.30143 | 0 | 0.08162 | 0.00143 | 0 | 0.00048 | 0.005 | 0.03341 | 0.00156 | 0 | 0.00052 | 0.02 | 0.09547 | 1834.33 | 0 | 43.3242 | 0.09691 | 0 | 0.00016 | 0.10765 | 0 | 0.00445 | 0.44929 | 0 | 0.00085 | 0.00828 | 0.10582 | 1.02276 | 0.6556 | 0 | 0.00093 | 0.00828 | 0.10582 | 1.02276 | 0.045 | 30.5456 | 0 | 5.09538 | 0.01813 | 0 | 0.00043 |
| Santa Clara | 2040 | HHDT | Aggregate | Aggregate | Diesel | 9626.36 | 1127210 | 1127210 | 0 | 148799 | 1.34597 | 54.261 | 2.70025 | 0.02449 | 0.0228 | 0 | 0.00885 | 0.0292 | 0.0256 | 0.02383 | 0 | 0.03542 | 0.08342 | 1320.88 | 10487.9 | 0 | 0.00055 | 0.25161 | 0 | 0.2081 | 1.65237 | 0 | 0.01174 | 5.41711 | 0 | 0 | 0 | 0 | 0.01336 | 6.16697 | 0 | 0 | 0 | 0 | 0.21908 | 0.04974 | 79.909 | 0 | 0.01251 | 0.09931 | 0 |
| Santa Clara | 2040 | HHDT | Aggregate | Aggregate | Electricity | 2381.74 | 217900 | 0 | 217900 | 27991.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00848 | 0.01591 | 0 | 0 | 0 | 0.03393 | 0.04545 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | HHDT | Aggregate | Aggregate | Natural Ga | 889.017 | 53845.1 | 53845.1 | 0 | 7873 | 0.37633 | 10.1861 | 0 | 0.00158 | 0.03326 | 0 | 0.009 | 0.05309 | 0.00172 | 0.03617 | 0 | 0.036 | 0.15168 | 1243.53 | 10229.4 | 0 | 1.00654 | 24.9443 | 0 | 0.2535 | 2.08534 | 0 | 0.01912 | 0.36412 | 0 | 0 | 0 | 0 | 1.03265 | 25.4663 | 0 | 0 | 0 | 0 | 0.80367 | 8.2974 | 84.6947 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | LDA | Aggregate | Aggregate | Gasoline | 628013 | 2.3E+07 | 2.3E+07 | 0 | 2926122 | 0.02062 | 0 | 0.16977 | 0.00051 | 0 | 0.00089 | 0.002 | 0.00271 | 0.00056 | 0 | 0.00097 | 0.008 | 0.00774 | 224.452 | 0 | 54.6874 | 0.00103 | 0 | 0.03514 | 0.00323 | 0 | 0.02591 | 0.00311 | 0 | 0.13853 | 0.04134 | 0.15402 | 0.95267 | 0.00454 | 0 | 0.15168 | 0.04134 | 0.15402 | 0.95267 | 0.04176 | 0.48269 | 0 | 1.75514 | 0.00222 | 0 | 0.00054 |
| Santa Clara | 2040 | LDA | Aggregate | Aggregate | Diesel | 454.406 | 14495.3 | 14495.3 | 0 | 2013.09 | 0.02778 | 0 | 0 | 0.00175 | 0 | 0 | 0.002 | 0.00273 | 0.00183 | 0 | 0 | 0.008 | 0.00779 | 183.267 | 0 | 0 | 0.00027 | 0 | 0 | 0.02887 | 0 | 0 | 0.00571 | 0 | 0 | 0 | 0 | 0 | 0.0065 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 0.15191 | 0 | 0 | 0.00174 | 0 | 0 |
| Santa Clara | 2040 | LDA | Aggregate | Aggregate | Electricity | 86789 | 3292083 | 0 | 3292083 | 407446 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00154 | 0 | 0 | 0 | 0.008 | 0.00439 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | LDA | Aggregate | Aggregate | Plug-in Hy | 29485.5 | 1100066 | 454297 | 645769 | 121964 | 0.00274 | 0 | 0.11551 | 0.00022 | 0 | 0.00093 | 0.002 | 0.00142 | 0.00023 | 0 | 0.00101 | 0.008 | 0.00406 | 116.212 | 0 | 56.3757 | 0.00036 | 0 | 0.04054 | 0.00045 | 0 | 0.01899 | 0.00119 | 0 | 0.17328 | 0.03986 | 0.08191 | 0.79633 | 0.00174 | 0 | 0.18973 | 0.03986 | 0.08191 | 0.79633 | 0.01731 | 0.18047 | 0 | 1.33989 | 0.00115 | 0 | 0.00056 |
| Santa Clara | 2040 | LDT1 | Aggregate | Aggregate | Gasoline | 43290 | 1408216 | 1408216 | 0 | 195420 | 0.02675 | 0 | 0.19501 | 0.0006 | 0 | 0.00105 | 0.002 | 0.00327 | 0.00066 | 0 | 0.00114 | 0.008 | 0.00934 | 264.191 | 0 | 65.0401 | 0.00132 | 0 | 0.04102 | 0.00364 | 0 | 0.02789 | 0.0044 | 0 | 0.16963 | 0.06549 | 0.25681 | 1.58654 | 0.00642 | 0 | 0.18572 | 0.06549 | 0.25681 | 1.58654 | 0.04102 | 0.55362 | 0 | 1.97498 | 0.00261 | 0 | 0.00064 |
| Santa Clara | 2040 | LDT1 | Aggregate | Aggregate | Diesel | 0.43026 | 15.2786 | 15.2786 | 0 | 2.03046 | 0.02747 | 0 | 0 | 0.00391 | 0 | 0 | 0.002 | 0.0032 | 0.00408 | 0 | 0 | 0.008 | 0.00914 | 333.02 | 0 | 0 | 0.00057 | 0 | 0 | 0.05247 | 0 | 0 | 0.0123 | 0 | 0 | 0 | 0 | 0 | 0.01401 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 0.12694 | 0 | 0 | 0.00316 | 0 | 0 |
| Santa Clara | 2040 | LDT1 | Aggregate | Aggregate | Electricity | 1038.08 | 41635.6 | 0 | 41635.6 | 4964.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00154 | 0 | 0 | 0 | 0.008 | 0.00439 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | LDT1 | Aggregate | Aggregate | Plug-in Hy | 787.581 | 29356.5 | 11970.7 | 17385.8 | 3256.65 | 0.0027 | 0 | 0.11551 | 0.00019 | 0 | 0.00078 | 0.002 | 0.00142 | 0.0002 | 0 | 0.00085 | 0.008 | 0.00406 | 114.758 | 0 | 63.7741 | 0.00036 | 0 | 0.0405 | 0.00045 | 0 | 0.01895 | 0.00118 | 0 | 0.17328 | 0.02841 | 0.03707 | 0.44049 | 0.00172 | 0 | 0.18973 | 0.02841 | 0.03707 | 0.44049 | 0.01713 | 0.17824 | 0 | 1.33989 | 0.00113 | 0 | 0.00063 |
| Santa Clara | 2040 | LDT2 | Aggregate | Aggregate | Gasoline | 346355 | 1.2E+07 | 1.2E+07 | 0 | 1600133 | 0.02695 | 0 | 0.21597 | 0.00054 | 0 | 0.00093 | 0.002 | 0.00323 | 0.00059 | 0 | 0.00101 | 0.008 | 0.00922 | 272.229 | 0 | 67.6007 | 0.00141 | 0 | 0.04522 | 0.00362 | 0 | 0.03062 | 0.00455 | 0 | 0.18538 | 0.04687 | 0.18092 | 1.11642 | 0.00664 | 0 | 0.20297 | 0.04687 | 0.18092 | 1.11642 | 0.04157 | 0.57671 | 0 | 2.24299 | 0.00269 | 0 | 0.00067 |
| Santa Clara | 2040 | LDT2 | Aggregate | Aggregate | Diesel | 1298.77 | 44800.2 | 44800.2 | 0 | 6039.45 | 0.02834 | 0 | 0 | 0.00399 | 0 | 0 | 0.002 | 0.00322 | 0.00417 | 0 | 0 | 0.008 | 0.0092 | 249.59 | 0 | 0 | 0.00058 | 0 | 0 | 0.03932 | 0 | 0 | 0.01241 | 0 | 0 | 0 | 0 | 0 | 0.01413 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 0.13013 | 0 | 0 | 0.00236 | 0 | 0 |
| Santa Clara | 2040 | LDT2 | Aggregate | Aggregate | Electricity | 11971.9 | 331468 | 0 | 331468 | 57270.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00154 | 0 | 0 | 0 | 0.008 | 0.00439 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | LDT2 | Aggregate | Aggregate | Plug-in Hy | 8547.72 | 305878 | 125451 | 180426 | 35344.8 | 0.00272 | 0 | 0.11551 | 0.0002 | 0 | 0.00084 | 0.002 | 0.00142 | 0.00022 | 0 | 0.00091 | 0.008 | 0.00406 | 115.418 | 0 | 67.3732 | 0.00036 | 0 | 0.04032 | 0.00045 | 0 | 0.01878 | 0.00119 | 0 | 0.17328 | 0.03235 | 0.05279 | 0.5705 | 0.00173 | 0 | 0.18973 | 0.03235 | 0.05279 | 0.5705 | 0.01722 | 0.17925 | 0 | 1.33989 | 0.00114 | 0 | 0.00067 |
| Santa Clara | 2040 | LHDT1 | Aggregate | Aggregate | Gasoline | 17222.4 | 580103 | 580103 | 0 | 256588 | 0.0266 | 0.026 | 0.42632 | 0.00119 | 0 | 0.00012 | 0.002 | 0.0273 | 0.00129 | 0 | 0.00013 | 0.008 | 0.078 | 760.617 | 108.822 | 23.899 | 0.00131 | 0.08649 | 0.02144 | 0.0021 | 0.00249 | 0.03973 | 0.00453 | 0.29861 | 0.09762 | 0.02252 | 0.17684 | 1.97915 | 0.00662 | 0.43573 | 0.10688 | 0.02252 | 0.17684 | 1.97915 | 0.045 | 0.59131 | 3.7814 | 3.22071 | 0.00752 | 0.00108 | 0.00024 |
| Santa Clara | 2040 | LHDT1 | Aggregate | Aggregate | Diesel | 10547.9 | 359552 | 359552 | 0 | 132680 | 0.34426 | 1.04083 | 0 | 0.019 | 0.0263 | 0 | 0.003 | 0.0273 | 0.01985 | 0.02749 | 0 | 0.012 | 0.078 | 605.562 | 116.889 | 0 | 0.00435 | 0.0051 | 0 | 0.09541 | 0.01842 | 0 | 0.09363 | 0.10976 | 0 | 0 | 0 | 0 | 0.10659 | 0.12495 | 0 | 0 | 0 | 0 | 0.21473 | 0.24101 | 0.90975 | 0 | 0.00574 | 0.00111 | 0 |
| Santa Clara | 2040 | LHDT1 | Aggregate | Aggregate | Electricity | 11895.5 | 545654 | 0 | 545654 | 166779 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01365 | 0 | 0 | 0 | 0.008 | 0.039 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | LHDT2 | Aggregate | Aggregate | Gasoline | 2015.7 | 66498.2 | 66498.2 | 0 | 30031 | 0.027 | 0.02328 | 0.38423 | 0.00115 | 0 | 9.6E-05 | 0.002 | 0.03185 | 0.00125 | 0 | 0.0001 | 0.008 | 0.091 | 856.826 | 125.54 | 23.4833 | 0.00119 | 0.0783 | 0.01873 | 0.00244 | 0.00225 | 0.03618 | 0.00402 | 0.26734 | 0.08338 | 0.02287 | 0.18584 | 2.06652 | 0.00587 | 0.3901 | 0.09129 | 0.02287 | 0.18584 | 2.06652 | 0.045 | 0.59876 | 3.7814 | 3.2752 | 0.00847 | 0.00124 | 0.00023 |
| Santa Clara | 2040 | LHDT2 | Aggregate | Aggregate | Diesel | 5173.67 | 169049 | 169049 | 0 | 65078.3 | 0.46204 | 1.10515 | 0 | 0.02243 | 0.02626 | 0 | 0.003 | 0.03185 | 0.02345 | 0.02744 | 0 | 0.012 | 0.091 | 707.739 | 190.322 | 0 | 0.00513 | 0.0051 | 0 | 0.1115 | 0.02999 | 0 | 0.11041 | 0.10976 | 0 | 0 | 0 | 0 | 0.1257 | 0.12495 | 0 | 0 | 0 | 0 | 0.21274 | 0.28936 | 0.90975 | 0 | 0.00671 | 0.0018 | 0 |
| Santa Clara | 2040 | LHDT2 | Aggregate | Aggregate | Electricity | 2956.34 | 130968 | 0 | 130968 | 39147.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.01593 | 0 | 0 | 0 | 0.008 | 0.0455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | MCY | Aggregate | Aggregate | Gasoline | 33079.3 | 181420 | 181420 | 0 | 66158.6 | 0.47139 | 0 | 0.07466 | 0.00198 | 0 | 0.00334 | 0.001 | 0.0042 | 0.00212 | 0 | 0.00358 | 0.004 | 0.012 | 184.587 | 0 | 38.0348 | 0.13162 | 0 | 0.13672 | 0.03541 | 0 | 0.00486 | 0.78746 | 0 | 0.96046 | 3.54875 | 3.79253 | 3.3873 | 0.9811 | 0 | 1.04567 | 3.54875 | 3.79253 | 3.3873 | 0.00914 | 10.0701 | 0 | 7.7398 | 0.00182 | 0 | 0.00038 |
| Santa Clara | 2040 | MDV | Aggregate | Aggregate | Gasoline | 198811 | 6625923 | 6625923 | 0 | 914059 | 0.02988 | 0 | 0.23543 | 0.00055 | 0 | 0.00095 | 0.002 | 0.00328 | 0.0006 | 0 | 0.00103 | 0.008 | 0.00937 | 329.996 | 0 | 82.2777 | 0.0015 | 0 | 0.04806 | 0.00379 | 0 | 0.03186 | 0.00494 | 0 | 0.20312 | 0.05015 | 0.19393 | 1.20018 | 0.00721 | 0 | 0.22239 | 0.05015 | 0.19393 | 1.20018 | 0.04156 | 0.5969 | 0 | 2.30329 | 0.00326 | 0 | 0.00081 |
| Santa Clara | 2040 | MDV | Aggregate | Aggregate | Diesel | 2276.06 | 74223 | 74223 | 0 | 10382.9 | 0.01238 | 0 | 0 | 0.0013 | 0 | 0 | 0.002 | 0.00331 | 0.00136 | 0 | 0 | 0.008 | 0.00945 | 328.896 | 0 | 0 | 0.00024 | 0 | 0 | 0.05182 | 0 | 0 | 0.00512 | 0 | 0 | 0 | 0 | 0 | 0.00583 | 0 | 0 | 0 | 0 | 0 | 0.0031 | 0.1512 | 0 | 0 | 0.00312 | 0 | 0 |
| Santa Clara | 2040 | MDV | Aggregate | Aggregate | Electricity | 11053.3 | 302876 | 0 | 302876 | 52691.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.00154 | 0 | 0 | 0 | 0.008 | 0.0044 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | MDV | Aggregate | Aggregate | Plug-in Hy | 5339.02 | 187456 | 76962.7 | 110494 | 22076.8 | 0.00272 | 0 | 0.11551 | 0.0002 | 0 | 0.00086 | 0.002 | 0.00142 | 0.00022 | 0 | 0.00094 | 0.008 | 0.00407 | 115.537 | 0 | 82.0608 | 0.00036 | 0 | 0.04024 | 0.00044 | 0 | 0.01871 | 0.00119 | 0 | 0.17328 | 0.03395 | 0.05961 | 0.62109 | 0.00173 | 0 | 0.18973 | 0.03395 | 0.05961 | 0.62109 | 0.01724 | 0.17943 | 0 | 1.33989 | 0.00114 | 0 | 0.00081 |
| Santa Clara | 2040 | MH | Aggregate | Aggregate | Gasoline | 1899.72 | 19906.2 | 19906.2 | 0 | 190.048 | 0.10999 | 0 | 0.42386 | 0.00134 | 0 | 0.00033 | 0.003 | 0.01576 | 0.00146 | 0 | 0.00036 | 0.012 | 0.04502 | 1944.86 | 0 | 30.0724 | 0.00417 | 0 | 0.03272 | 0.01273 | 0 | 0.04906 | 0.01201 | 0 | 0.1199 | 3.33727 | 0.10543 | 1.88727 | 0.01753 | 0 | 0.13128 | 3.33727 | 0.10543 | 1.88727 | 0.045 | 0.169 | 0 | 2.58568 | 0.01923 | 0 | 0.0003 |
| Santa Clara | 2040 | MH | Aggregate | Aggregate | Diesel | 1173.26 | 10961.8 | 10961.8 | 0 | 117.326 | 2.68494 | 0 | 0 | 0.03136 | 0 | 0 | 0.004 | 0.01567 | 0.02377 | 0 | 0 | 0.016 | 0.04479 | 1087.24 | 0 | 0 | 0.00405 | 0 | 0 | 0.17129 | 0 | 0 | 0.0872 | 0 | 0 | 0 | 0 | 0 | 0.09927 | 0 | 0 | 0 | 0 | 0 | 0.20664 | 0.26073 | 0 | 0 | 0.0103 | 0 | 0 |
| Santa Clara | 2040 | MHDT | Aggregate | Aggregate | Gasoline | 1077 | 49488.6 | 49488.6 | 0 | 21548.6 | 0.08856 | 0.06098 | 0.32807 | 0.00136 | 0 | 0.00046 | 0.003 | 0.01576 | 0.00148 | 0 | 0.0005 | 0.012 | 0.04502 | 1568.23 | 472.984 | 38.1694 | 0.00344 | 0.27047 | 0.03827 | 0.00774 | 0.00567 | 0.02874 | 0.01355 | 1.02837 | 0.18989 | 0.01461 | 0.17852 | 1.85493 | 0.01976 | 1.50059 | 0.2079 | 0.01461 | 0.17852 | 1.85493 | 0.045 | 0.22442 | 15.2984 | 3.56686 | 0.0155 | 0.00468 | 0.00038 |
| Santa Clara | 2040 | MHDT | Aggregate | Aggregate | Diesel | 8498.56 | 324167 | 324167 | 0 | 101442 | 0.41921 | 7.41427 | 1.28878 | 0.00341 | 0.00318 | 0 | 0.003 | 0.01593 | 0.00357 | 0.00333 | 0 | 0.012 | 0.04551 | 1045.26 | 1986.11 | 0 | 0.00035 | 0.00841 | 0 | 0.16468 | 0.31291 | 0 | 0.00749 | 0.18097 | 0 | 0 | 0 | 0 | 0.00853 | 0.20603 | 0 | 0 | 0 | 0 | 0.21919 | 0.05168 | 7.56099 | 0 | 0.0099 | 0.01881 | 0 |
| Santa Clara | 2040 | MHDT | Aggregate | Aggregate | Electricity | 5371.41 | 253173 | 0 | 253173 | 69393.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0.003 | 0.00796 | 0 | 0 | 0 | 0.012 | 0.02275 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | MHDT | Aggregate | Aggregate | Natural Ga | 149.221 | 5735.9 | 5735.9 | 0 | 1510.87 | 0.07403 | 6.02492 | 0 | 0.00147 | 0.02091 | 0 | 0.003 | 0.016 | 0.00216 | 0.02274 | 0 | 0.012 | 0.0457 | 938.537 | 5100.3 | 0 | 0.76888 | 14.5587 | 0 | 0.19133 | 1.03973 | 0 | 0.01099 | 0.20802 | 0 | 0 | 0 | 0 | 0.7847 | 14.8583 | 0 | 0 | 0 | 0 | 1.06 | 2.98493 | 41.3032 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | OBUS | Aggregate | Aggregate | Gasoline | 273.016 | 8967.04 | 8967.04 | 0 | 5462.51 | 0.20591 | 0.05134 | 0.33338 | 0.00119 | 0 | 0.00028 | 0.003 | 0.01568 | 0.0013 | 0 | 0.00031 | 0.012 | 0.0448 | 1561.02 | 353.12 | 28.9793 | 0.00638 | 0.1888 | 0.03223 | 0.01149 | 0.00399 | 0.02368 | 0.02974 | 0.74936 | 0.17467 | 0.03169 | 0.2015 | 3.66537 | 0.0434 | 1.09346 | 0.19124 | 0.03169 | 0.2015 | 3.66537 | 0.045 | 0.63691 | 5.79317 | 3.48881 | 0.01543 | 0.00349 | 0.00029 |
| Santa Clara | 2040 | OBUS | Aggregate | Aggregate | Diesel | 1143.31 | 68486.9 | 68486.9 | 0 | 11622.1 | 0.67763 | 3.82945 | 1.00991 | 0.00864 | 0.00277 | 0 | 0.003 | 0.01843 | 0.00903 | 0.0029 | 0 | 0.012 | 0.05265 | 1121.19 | 1262.75 | 0 | 0.00081 | 0.01884 | 0 | 0.17664 | 0.19895 | 0 | 0.01737 | 0.40565 | 0 | 0 | 0 | 0 | 0.01978 | 0.4618 | 0 | 0 | 0 | 0 | 0.21862 | 0.08595 | 7.20016 | 0 | 0.01062 | 0.01196 | 0 |
| Santa Clara | 2040 | OBUS | Aggregate | Aggregate | Electricity | 108.912 | 7331.1 | 0 | 7331.1 | 2179.12 | 0 | 0 | 0 | 0 | 0 | 0 | 0.003 | 0.00784 | 0 | 0 | 0 | 0.012 | 0.0224 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | OBUS | Aggregate | Aggregate | Natural Ga | 18.2344 | 1053.37 | 1053.37 | 0 | 162.286 | 0.07892 | 1.48158 | 0 | 0.00159 | 0.00523 | 0 | 0.003 | 0.01615 | 0.00173 | 0.00569 | 0 | 0.012 | 0.04614 | 898.464 | 1147.15 | 0 | 0.85092 | 3.5475 | 0 | 0.18316 | 0.23385 | 0 | 0.01216 | 0.05069 | 0 | 0 | 0 | 0 | 0.86843 | 3.62049 | 0 | 0 | 0 | 0 | 1.06 | 3.41901 | 10.3559 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | SBUS | Aggregate | Aggregate | Gasoline | 181.908 | 8759.89 | 8759.89 | 0 | 727.632 | 0.14261 | 0.73536 | 0.80453 | 0.00099 | 0 | 0.00067 | 0.002 | 0.01572 | 0.00108 | 0 | 0.00073 | 0.008 | 0.04492 | 756.597 | 2434.23 | 51.9925 | 0.00202 | 2.48775 | 0.06881 | 0.01302 | 0.0725 | 0.07348 | 0.00865 | 10.6415 | 0.37822 | 0.15419 | 0.6672 | 3.8366 | 0.01262 | 15.5281 | 0.4141 | 0.15419 | 0.6672 | 3.8366 | 0.045 | 0.19506 | 82.2409 | 8.22579 | 0.00748 | 0.02406 | 0.00051 |
| Santa Clara | 2040 | SBUS | Aggregate | Aggregate | Diesel | 532.542 | 10822.3 | 10822.3 | 0 | 7711.21 | 0.75447 | 8.97415 | 0.67733 | 0.00505 | 0.00288 | 0 | 0.003 | 0.01572 | 0.00528 | 0.00301 | 0 | 0.012 | 0.04492 | 1073.07 | 1986.26 | 0 | 0.00079 | 0.00791 | 0 | 0.16906 | 0.31294 | 0 | 0.01702 | 0.17034 | 0 | 0 | 0 | 0 | 0.01938 | 0.19392 | 0 | 0 | 0 | 0 | 0.20967 | 0.08014 | 6.71678 | 0 | 0.01016 | 0.01881 | 0 |
| Santa Clara | 2040 | SBUS | Aggregate | Aggregate | Electricity | 234.954 | 7390.44 | 0 | 7390.44 | 2783.89 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00262 | 0.00786 | 0 | 0 | 0 | 0.01046 | 0.02246 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | SBUS | Aggregate | Aggregate | Natural Ga | 30.6546 | 620.165 | 620.165 | 0 | 443.879 | 0.36508 | 5.16045 | 0 | 0.00338 | 0.01399 | 0 | 0.003 | 0.01572 | 0.00367 | 0.01522 | 0 | 0.012 | 0.04492 | 1159.6 | 4139.92 | 0 | 2.87876 | 13.893 | 0 | 0.23639 | 0.84395 | 0 | 0.04113 | 0.1985 | 0 | 0 | 0 | 0 | 2.93799 | 14.1788 | 0 | 0 | 0 | 0 | 1.06 | 9.02355 | 26.6869 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | UBUS | Aggregate | Aggregate | Gasoline | 47.5796 | 4968.73 | 4968.73 | 0 | 190.318 | 0.01874 | 0 | 0.31146 | 0.0012 | 0 | 0.00013 | 0.002 | 0.03185 | 0.0013 | 0 | 0.00015 | 0.008 | 0.091 | 850.19 | 0 | 35.3144 | 0.00149 | 0 | 0.02945 | 0.00329 | 0 | 0.05484 | 0.00391 | 0 | 0.09917 | 0.02413 | 0.09088 | 0.32459 | 0.00571 | 0 | 0.10858 | 0.02413 | 0.09088 | 0.32459 | 0.045 | 0.59232 | 0 | 6.39448 | 0.0084 | 0 | 0.00035 |
| Santa Clara | 2040 | UBUS | Aggregate | Aggregate | Diesel | 46.189 | 5341.15 | 5341.15 | 0 | 184.756 | 0.33569 | 0 | 0 | 0.0061 | 0 | 0 | 0.00734 | 0.0385 | 0.00637 | 0 | 0 | 0.02936 | 0.11 | 1115.56 | 0 | 0 | 0.00289 | 0 | 0 | 0.17576 | 0 | 0 | 0.06217 | 0 | 0 | 0 | 0 | 0 | 0.07077 | 0 | 0 | 0 | 0 | 0 | 0.22 | 0.06909 | 0 | 0 | 0.01057 | 0 | 0 |
| Santa Clara | 2040 | UBUS | Aggregate | Aggregate | Electricity | 436.32 | 48272.7 | 0 | 48272.7 | 1745.28 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00844 | 0.01925 | 0 | 0 | 0 | 0.03376 | 0.055 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Clara | 2040 | UBUS | Aggregate | Aggregate | Natural Ga | 18.6631 | 2158.14 | 2158.14 | 0 | 74.6524 | 0.05237 | 0 | 0 | 0.00026 | 0 | 0 | 0.00734 | 0.0385 | 0.00028 | 0 | 0 | 0.02936 | 0.11 | 1229.46 | 0 | 0 | 3.96836 | 0 | 0 | 0.25063 | 0 | 0 | 0.0567 | 0 | 0 | 0 | 0 | 0 | 4.05 | 0 | 0 | 0 | 0 | 0 | 0.97 | 44.1981 | 0 | 0 | 0 | 0 | 0 |

# Attachment 4 - Roadway Health Risk Modeling

| | |
|---|---|
| File Name: | Highways 2030.EF |
| CT-EMFAC2017 Version: | 1.0.2.27401 |
| Run Date: | 7/15/2022 11:57:57 AM |
| Area: | Santa Clara (SF) |
| Analysis Year: | 2030 |
| Season: | Annual |

| Vehicle Category | VMT Fraction Across Category | Diesel VMT Fraction Within Category | Gas VMT Fraction Within Category |
|---|---|---|---|
| Truck 1 | 0.015 | 0.525 | 0.475 |
| Truck 2 | 0.020 | 0.932 | 0.051 |
| Non-Truck | 0.965 | 0.015 | 0.941 |

| | | | |
|---|---|---|---|
| Road Type: | Freeway | | |
| Silt Loading Factor: | CARB | 0.015 g/m2 | |
| Precipitation Correction: | CARB | P = 64 days | N = 365 days |

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

| Pollutant Name | 65 mph | 70 mph |
|---|---|---|
| PM2.5 | 0.001451 | 0.001521 |
| TOG | 0.021466 | 0.023155 |
| Diesel PM | 0.000695 | 0.000695 |

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

| Pollutant Name | Emission Factor |
|---|---|
| TOG | 1.043155 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.002109 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.016788 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.007426 |

END

| | |
|---|---|
| File Name: | Local Roadways 2030.EF |
| CT-EMFAC2017 Version: | 1.0.2.27401 |
| Run Date: | 7/14/2022 3:10:50 PM |
| Area: | Santa Clara (SF) |
| Analysis Year: | 2030 |
| Season: | Annual |

| Vehicle Category | VMT Fraction Across Category | Diesel VMT Fraction Within Category | Gas VMT Fraction Within Category |
|---|---|---|---|
| Truck 1 | 0.015 | 0.525 | 0.475 |
| Truck 2 | 0.020 | 0.932 | 0.051 |
| Non-Truck | 0.965 | 0.015 | 0.941 |

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

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

| Pollutant Name | 45 mph |
|---|---|
| PM2.5 | 0.000985 |
| TOG | 0.018258 |
| Diesel PM | 0.000349 |

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

| Pollutant Name | Emission Factor |
|---|---|
| TOG | 1.043155 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.002109 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.016788 |

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.014798 |

END

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Caribbean Drive**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| DPM_EB_CAR | Caribbean Drive Eastbound | EB | 3 | 2511.2 | 1.56 | 17.0 | 55.7 | 3.4 | 45 | 7,043 |
| DPM_WB_CAR | Caribbean Drive Westbound | WB | 3 | 2536.8 | 1.58 | 17.0 | 55.7 | 3.4 | 45 | 7,043 |
| | | | | | | | | | Total | 14,085 |

**Emission Factors**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.00035 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and DPM Emissions - DPM_EB_CAR**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 279 | 4.22E-05 | 9 | 6.46% | 455 | 6.88E-05 | 17 | 5.61% | 395 | 5.98E-05 |
| 2 | 2.66% | 187 | 2.83E-05 | 10 | 7.36% | 519 | 7.84E-05 | 18 | 3.24% | 228 | 3.45E-05 |
| 3 | 2.88% | 203 | 3.07E-05 | 11 | 6.40% | 451 | 6.82E-05 | 19 | 2.22% | 156 | 2.36E-05 |
| 4 | 3.28% | 231 | 3.49E-05 | 12 | 6.97% | 491 | 7.42E-05 | 20 | 0.86% | 60 | 9.14E-06 |
| 5 | 2.09% | 147 | 2.23E-05 | 13 | 6.23% | 439 | 6.64E-05 | 21 | 3.06% | 216 | 3.26E-05 |
| 6 | 3.34% | 235 | 3.56E-05 | 14 | 6.17% | 435 | 6.58E-05 | 22 | 4.25% | 299 | 4.53E-05 |
| 7 | 6.06% | 427 | 6.46E-05 | 15 | 5.10% | 359 | 5.43E-05 | 23 | 2.55% | 179 | 2.71E-05 |
| 8 | 4.54% | 320 | 4.84E-05 | 16 | 3.86% | 272 | 4.11E-05 | 24 | 0.85% | 60 | 9.04E-06 |
| | | | | | | | | Total | | 7,043 | |

**2030 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WB_CAR**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 279 | 4.26E-05 | 9 | 6.46% | 455 | 6.95E-05 | 17 | 5.61% | 395 | 6.04E-05 |
| 2 | 2.66% | 187 | 2.86E-05 | 10 | 7.36% | 519 | 7.92E-05 | 18 | 3.24% | 228 | 3.49E-05 |
| 3 | 2.88% | 203 | 3.10E-05 | 11 | 6.40% | 451 | 6.89E-05 | 19 | 2.22% | 156 | 2.38E-05 |
| 4 | 3.28% | 231 | 3.53E-05 | 12 | 6.97% | 491 | 7.50E-05 | 20 | 0.86% | 60 | 9.23E-06 |
| 5 | 2.09% | 147 | 2.25E-05 | 13 | 6.23% | 439 | 6.71E-05 | 21 | 3.06% | 216 | 3.30E-05 |
| 6 | 3.34% | 235 | 3.59E-05 | 14 | 6.17% | 435 | 6.65E-05 | 22 | 4.25% | 299 | 4.58E-05 |
| 7 | 6.06% | 427 | 6.52E-05 | 15 | 5.10% | 359 | 5.49E-05 | 23 | 2.55% | 179 | 2.74E-05 |
| 8 | 4.54% | 320 | 4.89E-05 | 16 | 3.86% | 272 | 4.15E-05 | 24 | 0.85% | 60 | 9.13E-06 |
| | | | | | | | | Total | | 7,043 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Caribbean Drive**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| PM2.5_EB_CAR | Caribbean Drive Eastbound | EB | 3 | 2511.2 | 1.56 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| PM2.5_WB_CAR | Caribbean Drive Westbound | WB | 3 | 2536.8 | 1.58 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| | | | | | | | | | Total | 14,085 |

**Emission Factors - PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.000985 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_EB_CAR**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 3.46E-05 | 9 | 7.11% | 501 | 2.14E-04 | 17 | 7.39% | 521 | 2.22E-04 |
| 2 | 0.42% | 29 | 1.26E-05 | 10 | 4.39% | 309 | 1.32E-04 | 18 | 8.18% | 576 | 2.46E-04 |
| 3 | 0.40% | 29 | 1.22E-05 | 11 | 4.66% | 328 | 1.40E-04 | 19 | 5.70% | 401 | 1.71E-04 |
| 4 | 0.26% | 18 | 7.82E-06 | 12 | 5.89% | 415 | 1.77E-04 | 20 | 4.27% | 301 | 1.29E-04 |
| 5 | 0.49% | 35 | 1.48E-05 | 13 | 6.15% | 433 | 1.85E-04 | 21 | 3.25% | 229 | 9.79E-05 |
| 6 | 0.90% | 63 | 2.71E-05 | 14 | 6.04% | 425 | 1.81E-04 | 22 | 3.30% | 232 | 9.93E-05 |
| 7 | 3.79% | 267 | 1.14E-04 | 15 | 7.01% | 494 | 2.11E-04 | 23 | 2.46% | 173 | 7.40E-05 |
| 8 | 7.76% | 547 | 2.33E-04 | 16 | 7.14% | 503 | 2.15E-04 | 24 | 1.87% | 131 | 5.61E-05 |
| | | | | | | | | Total | | 7,043 | |

**2030 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_WB_CAR**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 3.49E-05 | 9 | 7.11% | 501 | 2.16E-04 | 17 | 7.39% | 521 | 2.25E-04 |
| 2 | 0.42% | 29 | 1.27E-05 | 10 | 4.39% | 309 | 1.33E-04 | 18 | 8.18% | 576 | 2.48E-04 |
| 3 | 0.40% | 29 | 1.23E-05 | 11 | 4.66% | 328 | 1.42E-04 | 19 | 5.70% | 401 | 1.73E-04 |
| 4 | 0.26% | 18 | 7.90E-06 | 12 | 5.89% | 415 | 1.79E-04 | 20 | 4.27% | 301 | 1.30E-04 |
| 5 | 0.49% | 35 | 1.49E-05 | 13 | 6.15% | 433 | 1.87E-04 | 21 | 3.25% | 229 | 9.89E-05 |
| 6 | 0.90% | 63 | 2.74E-05 | 14 | 6.04% | 425 | 1.83E-04 | 22 | 3.30% | 232 | 1.00E-04 |
| 7 | 3.79% | 267 | 1.15E-04 | 15 | 7.01% | 494 | 2.13E-04 | 23 | 2.46% | 173 | 7.48E-05 |
| 8 | 7.76% | 547 | 2.36E-04 | 16 | 7.14% | 503 | 2.17E-04 | 24 | 1.87% | 131 | 5.67E-05 |
| | | | | | | | | Total | | 7,043 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Caribbean Drive**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| TEXH_EB_CAR | Caribbean Drive Eastbound | EB | 3 | 2511.2 | 1.56 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| TEXH_WB_CAR | Caribbean Drive Westbound | WB | 3 | 2536.8 | 1.58 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| | | | | | | | | | Total | 14,085 |

**Emission Factors - TOG Exhaust**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.01826 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EB_CAR**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 6.41E-04 | 9 | 7.11% | 501 | 3.96E-03 | 17 | 7.39% | 521 | 4.12E-03 |
| 2 | 0.42% | 29 | 2.33E-04 | 10 | 4.39% | 309 | 2.45E-03 | 18 | 8.18% | 576 | 4.56E-03 |
| 3 | 0.40% | 29 | 2.26E-04 | 11 | 4.66% | 328 | 2.60E-03 | 19 | 5.70% | 401 | 3.18E-03 |
| 4 | 0.26% | 18 | 1.45E-04 | 12 | 5.89% | 415 | 3.28E-03 | 20 | 4.27% | 301 | 2.38E-03 |
| 5 | 0.49% | 35 | 2.74E-04 | 13 | 6.15% | 433 | 3.43E-03 | 21 | 3.25% | 229 | 1.81E-03 |
| 6 | 0.90% | 63 | 5.02E-04 | 14 | 6.04% | 425 | 3.36E-03 | 22 | 3.30% | 232 | 1.84E-03 |
| 7 | 3.79% | 267 | 2.11E-03 | 15 | 7.01% | 494 | 3.91E-03 | 23 | 2.46% | 173 | 1.37E-03 |
| 8 | 7.76% | 547 | 4.33E-03 | 16 | 7.14% | 503 | 3.98E-03 | 24 | 1.87% | 131 | 1.04E-03 |
| | | | | | | | | Total | | 7,043 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WB_CAR**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 6.47E-04 | 9 | 7.11% | 501 | 4.00E-03 | 17 | 7.39% | 521 | 4.16E-03 |
| 2 | 0.42% | 29 | 2.35E-04 | 10 | 4.39% | 309 | 2.47E-03 | 18 | 8.18% | 576 | 4.61E-03 |
| 3 | 0.40% | 29 | 2.28E-04 | 11 | 4.66% | 328 | 2.63E-03 | 19 | 5.70% | 401 | 3.21E-03 |
| 4 | 0.26% | 18 | 1.46E-04 | 12 | 5.89% | 415 | 3.31E-03 | 20 | 4.27% | 301 | 2.41E-03 |
| 5 | 0.49% | 35 | 2.77E-04 | 13 | 6.15% | 433 | 3.46E-03 | 21 | 3.25% | 229 | 1.83E-03 |
| 6 | 0.90% | 63 | 5.07E-04 | 14 | 6.04% | 425 | 3.40E-03 | 22 | 3.30% | 232 | 1.86E-03 |
| 7 | 3.79% | 267 | 2.13E-03 | 15 | 7.01% | 494 | 3.95E-03 | 23 | 2.46% | 173 | 1.39E-03 |
| 8 | 7.76% | 547 | 4.37E-03 | 16 | 7.14% | 503 | 4.02E-03 | 24 | 1.87% | 131 | 1.05E-03 |
| | | | | | | | | Total | | 7,043 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Caribbean Drive**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| TEVAP_EB_CAR | Caribbean Drive Eastbound | EB | 3 | 2511.2 | 1.56 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| TEVAP_WB_CAR | Caribbean Drive Westbound | WB | 3 | 2536.8 | 1.58 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| | | | | | | | | | Total | 14,085 |

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

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.04316 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.02318 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EB_CAR**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 8.13E-04 | 9 | 7.11% | 501 | 5.03E-03 | 17 | 7.39% | 521 | 5.23E-03 |
| 2 | 0.42% | 29 | 2.96E-04 | 10 | 4.39% | 309 | 3.10E-03 | 18 | 8.18% | 576 | 5.79E-03 |
| 3 | 0.40% | 29 | 2.86E-04 | 11 | 4.66% | 328 | 3.30E-03 | 19 | 5.70% | 401 | 4.03E-03 |
| 4 | 0.26% | 18 | 1.84E-04 | 12 | 5.89% | 415 | 4.17E-03 | 20 | 4.27% | 301 | 3.02E-03 |
| 5 | 0.49% | 35 | 3.48E-04 | 13 | 6.15% | 433 | 4.35E-03 | 21 | 3.25% | 229 | 2.30E-03 |
| 6 | 0.90% | 63 | 6.37E-04 | 14 | 6.04% | 425 | 4.27E-03 | 22 | 3.30% | 232 | 2.34E-03 |
| 7 | 3.79% | 267 | 2.68E-03 | 15 | 7.01% | 494 | 4.96E-03 | 23 | 2.46% | 173 | 1.74E-03 |
| 8 | 7.76% | 547 | 5.49E-03 | 16 | 7.14% | 503 | 5.05E-03 | 24 | 1.87% | 131 | 1.32E-03 |
| | | | | | | | | Total | | 7,043 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WB_CAR**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 8.22E-04 | 9 | 7.11% | 501 | 5.08E-03 | 17 | 7.39% | 521 | 5.28E-03 |
| 2 | 0.42% | 29 | 2.99E-04 | 10 | 4.39% | 309 | 3.14E-03 | 18 | 8.18% | 576 | 5.85E-03 |
| 3 | 0.40% | 29 | 2.89E-04 | 11 | 4.66% | 328 | 3.33E-03 | 19 | 5.70% | 401 | 4.07E-03 |
| 4 | 0.26% | 18 | 1.86E-04 | 12 | 5.89% | 415 | 4.21E-03 | 20 | 4.27% | 301 | 3.06E-03 |
| 5 | 0.49% | 35 | 3.52E-04 | 13 | 6.15% | 433 | 4.40E-03 | 21 | 3.25% | 229 | 2.33E-03 |
| 6 | 0.90% | 63 | 6.44E-04 | 14 | 6.04% | 425 | 4.31E-03 | 22 | 3.30% | 232 | 2.36E-03 |
| 7 | 3.79% | 267 | 2.71E-03 | 15 | 7.01% | 494 | 5.01E-03 | 23 | 2.46% | 173 | 1.76E-03 |
| 8 | 7.76% | 547 | 5.55E-03 | 16 | 7.14% | 503 | 5.11E-03 | 24 | 1.87% | 131 | 1.33E-03 |
| | | | | | | | | Total | | 7,043 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Caribbean Drive**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| FUG_EB_CAR | Caribbean Drive Eastbound | EB | 3 | 2511.2 | 1.56 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| FUG_WB_CAR | Caribbean Drive Westbound | WB | 3 | 2536.8 | 1.58 | 17.0 | 56 | 1.3 | 45 | 7,043 |
| | | | | | | | | | Total | 14,085 |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00211 | | | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01679 | | | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.01480 | | | |
| otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03370 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EB_CAR**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 1.18E-03 | 9 | 7.11% | 501 | 7.32E-03 | 17 | 7.39% | 521 | 7.60E-03 |
| 2 | 0.42% | 29 | 4.30E-04 | 10 | 4.39% | 309 | 4.51E-03 | 18 | 8.18% | 576 | 8.41E-03 |
| 3 | 0.40% | 29 | 4.16E-04 | 11 | 4.66% | 328 | 4.80E-03 | 19 | 5.70% | 401 | 5.86E-03 |
| 4 | 0.26% | 18 | 2.67E-04 | 12 | 5.89% | 415 | 6.06E-03 | 20 | 4.27% | 301 | 4.40E-03 |
| 5 | 0.49% | 35 | 5.06E-04 | 13 | 6.15% | 433 | 6.33E-03 | 21 | 3.25% | 229 | 3.35E-03 |
| 6 | 0.90% | 63 | 9.26E-04 | 14 | 6.04% | 425 | 6.21E-03 | 22 | 3.30% | 232 | 3.40E-03 |
| 7 | 3.79% | 267 | 3.90E-03 | 15 | 7.01% | 494 | 7.21E-03 | 23 | 2.46% | 173 | 2.53E-03 |
| 8 | 7.76% | 547 | 7.98E-03 | 16 | 7.14% | 503 | 7.35E-03 | 24 | 1.87% | 131 | 1.92E-03 |
| | | | | | | | | Total | | 7,043 | |

**2030 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_WB_CAR**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 81 | 1.19E-03 | 9 | 7.11% | 501 | 7.39E-03 | 17 | 7.39% | 521 | 7.68E-03 |
| 2 | 0.42% | 29 | 4.34E-04 | 10 | 4.39% | 309 | 4.56E-03 | 18 | 8.18% | 576 | 8.50E-03 |
| 3 | 0.40% | 29 | 4.21E-04 | 11 | 4.66% | 328 | 4.85E-03 | 19 | 5.70% | 401 | 5.92E-03 |
| 4 | 0.26% | 18 | 2.70E-04 | 12 | 5.89% | 415 | 6.12E-03 | 20 | 4.27% | 301 | 4.44E-03 |
| 5 | 0.49% | 35 | 5.11E-04 | 13 | 6.15% | 433 | 6.39E-03 | 21 | 3.25% | 229 | 3.38E-03 |
| 6 | 0.90% | 63 | 9.36E-04 | 14 | 6.04% | 425 | 6.27E-03 | 22 | 3.30% | 232 | 3.43E-03 |
| 7 | 3.79% | 267 | 3.94E-03 | 15 | 7.01% | 494 | 7.29E-03 | 23 | 2.46% | 173 | 2.56E-03 |
| 8 | 7.76% | 547 | 8.06E-03 | 16 | 7.14% | 503 | 7.42E-03 | 24 | 1.87% | 131 | 1.94E-03 |
| | | | | | | | | Total | | 7,043 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 101**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year =** **2030**

| 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 | 901.7 | 0.56 | 20.6 | 67.7 | 3.4 | 45 | 4,898 |
| DPM_SB_101 | Highway 101 Southbound | SB | 4 | 907.2 | 0.56 | 20.6 | 67.7 | 3.4 | 45 | 4,898 |
| | | | | | | | | | Total | 9,795 |

**Emission Factors**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 70 | | | |
| Emissions per Vehicle (g/VMT) | 0.00070 | | | |

Emisson Factors from CT-EMFAC2017

**2030 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 | 3.96% | 194 | 2.10E-05 | 9 | 6.46% | 316 | 0.00E+00 | 17 | 5.61% | 275 | 2.97E-05 |
| 2 | 2.66% | 130 | 1.41E-05 | 10 | 7.36% | 361 | 0.00E+00 | 18 | 3.24% | 159 | 1.72E-05 |
| 3 | 2.88% | 141 | 1.53E-05 | 11 | 6.40% | 313 | 0.00E+00 | 19 | 2.22% | 108 | 1.17E-05 |
| 4 | 3.28% | 161 | 1.74E-05 | 12 | 6.97% | 341 | 3.69E-05 | 20 | 0.86% | 42 | 4.54E-06 |
| 5 | 2.09% | 102 | 1.11E-05 | 13 | 6.23% | 305 | 3.30E-05 | 21 | 3.06% | 150 | 1.62E-05 |
| 6 | 3.34% | 163 | 1.77E-05 | 14 | 6.17% | 302 | 3.27E-05 | 22 | 4.25% | 208 | 2.25E-05 |
| 7 | 6.06% | 297 | 0.00E+00 | 15 | 5.10% | 250 | 2.70E-05 | 23 | 2.55% | 125 | 1.35E-05 |
| 8 | 4.54% | 223 | 0.00E+00 | 16 | 3.86% | 189 | 2.04E-05 | 24 | 0.85% | 42 | 4.49E-06 |
| | | | | | | | | Total | | 4,898 | |

**2030 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 | 3.96% | 194 | 2.11E-05 | 9 | 6.46% | 316 | 0.00E+00 | 17 | 5.61% | 275 | 0.00E+00 |
| 2 | 2.66% | 130 | 1.42E-05 | 10 | 7.36% | 361 | 0.00E+00 | 18 | 3.24% | 159 | 0.00E+00 |
| 3 | 2.88% | 141 | 1.54E-05 | 11 | 6.40% | 313 | 0.00E+00 | 19 | 2.22% | 108 | 1.18E-05 |
| 4 | 3.28% | 161 | 1.75E-05 | 12 | 6.97% | 341 | 0.00E+00 | 20 | 0.86% | 42 | 4.57E-06 |
| 5 | 2.09% | 102 | 1.12E-05 | 13 | 6.23% | 305 | 0.00E+00 | 21 | 3.06% | 150 | 1.63E-05 |
| 6 | 3.34% | 163 | 0.00E+00 | 14 | 6.17% | 302 | 0.00E+00 | 22 | 4.25% | 208 | 2.27E-05 |
| 7 | 6.06% | 297 | 0.00E+00 | 15 | 5.10% | 250 | 0.00E+00 | 23 | 2.55% | 125 | 1.36E-05 |
| 8 | 4.54% | 223 | 0.00E+00 | 16 | 3.86% | 189 | 0.00E+00 | 24 | 0.85% | 42 | 4.52E-06 |
| | | | | | | | | Total | | 4,898 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 101**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2030**

| 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 | 901.7 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| PM2.5_SB_101 | Highway 101 Southbound | SB | 4 | 907.2 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| | | | | | | | | | Total | 9,795 |

**Emission Factors - PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 70 | | | |
| Emissions per Vehicle (g/VMT) | 0.001521 | | | |

Emisson Factors from CT-EMFAC2017

**2030 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 | 1.15% | 56 | 1.33E-05 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 8.57E-05 |
| 2 | 0.42% | 20 | 4.84E-06 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 9.48E-05 |
| 3 | 0.40% | 20 | 4.69E-06 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 6.61E-05 |
| 4 | 0.26% | 13 | 3.01E-06 | 12 | 5.89% | 288 | 6.83E-05 | 20 | 4.27% | 209 | 4.96E-05 |
| 5 | 0.49% | 24 | 5.70E-06 | 13 | 6.15% | 301 | 7.13E-05 | 21 | 3.25% | 159 | 3.77E-05 |
| 6 | 0.90% | 44 | 1.04E-05 | 14 | 6.04% | 296 | 7.00E-05 | 22 | 3.30% | 162 | 3.83E-05 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 8.13E-05 | 23 | 2.46% | 121 | 2.85E-05 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 8.28E-05 | 24 | 1.87% | 91 | 2.16E-05 |
| | | | | | | | | Total | | 4,898 | |

**2030 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 | 1.15% | 56 | 1.34E-05 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 0.00E+00 |
| 2 | 0.42% | 20 | 4.87E-06 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 0.00E+00 |
| 3 | 0.40% | 20 | 4.72E-06 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 6.65E-05 |
| 4 | 0.26% | 13 | 3.03E-06 | 12 | 5.89% | 288 | 0.00E+00 | 20 | 4.27% | 209 | 4.99E-05 |
| 5 | 0.49% | 24 | 5.74E-06 | 13 | 6.15% | 301 | 0.00E+00 | 21 | 3.25% | 159 | 3.80E-05 |
| 6 | 0.90% | 44 | 0.00E+00 | 14 | 6.04% | 296 | 0.00E+00 | 22 | 3.30% | 162 | 3.85E-05 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 0.00E+00 | 23 | 2.46% | 121 | 2.87E-05 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 0.00E+00 | 24 | 1.87% | 91 | 2.18E-05 |
| | | | | | | | | Total | | 4,898 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 101**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year =** **2030**

| 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_101 | Highway 101 Northbound | NB | 4 | 901.7 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| TEXH_SB_101 | Highway 101 Southbound | SB | 4 | 907.2 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| | | | | | | | | | Total | 9,795 |

**Emission Factors - TOG Exhaust**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 70 | | | |
| Emissions per Vehicle (g/VMT) | 0.02316 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_101**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 56 | 2.03E-04 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 1.30E-03 |
| 2 | 0.42% | 20 | 7.37E-05 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 1.44E-03 |
| 3 | 0.40% | 20 | 7.14E-05 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 1.01E-03 |
| 4 | 0.26% | 13 | 4.59E-05 | 12 | 5.89% | 288 | 1.04E-03 | 20 | 4.27% | 209 | 7.54E-04 |
| 5 | 0.49% | 24 | 8.68E-05 | 13 | 6.15% | 301 | 1.09E-03 | 21 | 3.25% | 159 | 5.74E-04 |
| 6 | 0.90% | 44 | 1.59E-04 | 14 | 6.04% | 296 | 1.07E-03 | 22 | 3.30% | 162 | 5.83E-04 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 1.24E-03 | 23 | 2.46% | 121 | 4.35E-04 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 1.26E-03 | 24 | 1.87% | 91 | 3.29E-04 |
| | | | | | | | | Total | | 4,898 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_101**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 56 | 2.04E-04 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 0.00E+00 |
| 2 | 0.42% | 20 | 7.42E-05 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 0.00E+00 |
| 3 | 0.40% | 20 | 7.19E-05 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 1.01E-03 |
| 4 | 0.26% | 13 | 4.62E-05 | 12 | 5.89% | 288 | 0.00E+00 | 20 | 4.27% | 209 | 7.59E-04 |
| 5 | 0.49% | 24 | 8.74E-05 | 13 | 6.15% | 301 | 0.00E+00 | 21 | 3.25% | 159 | 5.78E-04 |
| 6 | 0.90% | 44 | 0.00E+00 | 14 | 6.04% | 296 | 0.00E+00 | 22 | 3.30% | 162 | 5.86E-04 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 0.00E+00 | 23 | 2.46% | 121 | 4.37E-04 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 0.00E+00 | 24 | 1.87% | 91 | 3.31E-04 |
| | | | | | | | | Total | | 4,898 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 101**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2030**

| 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_101 | Highway 101 Northbound | NB | 4 | 901.7 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| TEVAP_SB_101 | Highway 101 Southbound | SB | 4 | 907.2 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| | | | | | | | | | Total | 9,795 |

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

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 70 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.04316 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.01490 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_101**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 56 | 1.31E-04 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 8.40E-04 |
| 2 | 0.42% | 20 | 4.75E-05 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 9.29E-04 |
| 3 | 0.40% | 20 | 4.60E-05 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 6.47E-04 |
| 4 | 0.26% | 13 | 2.95E-05 | 12 | 5.89% | 288 | 6.69E-04 | 20 | 4.27% | 209 | 4.85E-04 |
| 5 | 0.49% | 24 | 5.59E-05 | 13 | 6.15% | 301 | 6.99E-04 | 21 | 3.25% | 159 | 3.70E-04 |
| 6 | 0.90% | 44 | 1.02E-04 | 14 | 6.04% | 296 | 6.86E-04 | 22 | 3.30% | 162 | 3.75E-04 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 7.97E-04 | 23 | 2.46% | 121 | 2.80E-04 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 8.11E-04 | 24 | 1.87% | 91 | 2.12E-04 |
| | | | | | | | | Total | | 4,898 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_101**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 56 | 1.31E-04 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 0.00E+00 |
| 2 | 0.42% | 20 | 4.77E-05 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 0.00E+00 |
| 3 | 0.40% | 20 | 4.63E-05 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 6.51E-04 |
| 4 | 0.26% | 13 | 2.97E-05 | 12 | 5.89% | 288 | 0.00E+00 | 20 | 4.27% | 209 | 4.88E-04 |
| 5 | 0.49% | 24 | 5.62E-05 | 13 | 6.15% | 301 | 0.00E+00 | 21 | 3.25% | 159 | 3.72E-04 |
| 6 | 0.90% | 44 | 0.00E+00 | 14 | 6.04% | 296 | 0.00E+00 | 22 | 3.30% | 162 | 3.77E-04 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 0.00E+00 | 23 | 2.46% | 121 | 2.81E-04 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 0.00E+00 | 24 | 1.87% | 91 | 2.13E-04 |
| | | | | | | | | Total | | 4,898 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 101**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year =** **2030**

| 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_101 | Highway 101 Northbound | NB | 4 | 901.7 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| FUG_SB_101 | Highway 101 Southbound | SB | 4 | 907.2 | 0.56 | 20.6 | 68 | 1.3 | 45 | 4,898 |
| | | | | | | | | | Total | 9,795 |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 70 | | | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00211 | | | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01679 | | | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.00743 | | | |
| otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.02632 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_101**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 56 | 2.31E-04 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 1.48E-03 |
| 2 | 0.42% | 20 | 8.38E-05 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 1.64E-03 |
| 3 | 0.40% | 20 | 8.12E-05 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 1.14E-03 |
| 4 | 0.26% | 13 | 5.22E-05 | 12 | 5.89% | 288 | 1.18E-03 | 20 | 4.27% | 209 | 8.58E-04 |
| 5 | 0.49% | 24 | 9.87E-05 | 13 | 6.15% | 301 | 1.23E-03 | 21 | 3.25% | 159 | 6.53E-04 |
| 6 | 0.90% | 44 | 1.81E-04 | 14 | 6.04% | 296 | 1.21E-03 | 22 | 3.30% | 162 | 6.62E-04 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 1.41E-03 | 23 | 2.46% | 121 | 4.94E-04 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 1.43E-03 | 24 | 1.87% | 91 | 3.74E-04 |
| | | | | | | | | Total | | 4,898 | |

**2030 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_101**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 56 | 2.32E-04 | 9 | 7.11% | 348 | 0.00E+00 | 17 | 7.39% | 362 | 0.00E+00 |
| 2 | 0.42% | 20 | 8.43E-05 | 10 | 4.39% | 215 | 0.00E+00 | 18 | 8.18% | 401 | 0.00E+00 |
| 3 | 0.40% | 20 | 8.17E-05 | 11 | 4.66% | 228 | 0.00E+00 | 19 | 5.70% | 279 | 1.15E-03 |
| 4 | 0.26% | 13 | 5.25E-05 | 12 | 5.89% | 288 | 0.00E+00 | 20 | 4.27% | 209 | 8.63E-04 |
| 5 | 0.49% | 24 | 9.93E-05 | 13 | 6.15% | 301 | 0.00E+00 | 21 | 3.25% | 159 | 6.57E-04 |
| 6 | 0.90% | 44 | 0.00E+00 | 14 | 6.04% | 296 | 0.00E+00 | 22 | 3.30% | 162 | 6.66E-04 |
| 7 | 3.79% | 186 | 0.00E+00 | 15 | 7.01% | 343 | 0.00E+00 | 23 | 2.46% | 121 | 4.97E-04 |
| 8 | 7.76% | 380 | 0.00E+00 | 16 | 7.14% | 350 | 0.00E+00 | 24 | 1.87% | 91 | 3.77E-04 |
| | | | | | | | | Total | | 4,898 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 237**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| DPM_EB_237 | Highway 237 Eastbound | NB | 3 | 3980.0 | 2.47 | 17.0 | 55.7 | 3.4 | 45 | 14,882 |
| DPM_WB_237 | Highway 237 Westbound | SB | 3 | 3983.3 | 2.48 | 17.0 | 55.7 | 3.4 | 45 | 14,882 |
| | | | | | | | | | Total | 29,763 |

**Emission Factors**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | | | |
| Emissions per Vehicle (g/VMT) | 0.00070 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and DPM Emissions - DPM_EB_237**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 589 | 2.81E-04 | 9 | 6.46% | 961 | 4.59E-04 | 17 | 5.61% | 835 | 3.99E-04 |
| 2 | 2.66% | 396 | 1.89E-04 | 10 | 7.36% | 1096 | 5.23E-04 | 18 | 3.24% | 483 | 2.30E-04 |
| 3 | 2.88% | 429 | 2.05E-04 | 11 | 6.40% | 953 | 4.55E-04 | 19 | 2.22% | 330 | 1.57E-04 |
| 4 | 3.28% | 488 | 2.33E-04 | 12 | 6.97% | 1037 | 4.95E-04 | 20 | 0.86% | 128 | 6.10E-05 |
| 5 | 2.09% | 311 | 1.49E-04 | 13 | 6.23% | 927 | 4.43E-04 | 21 | 3.06% | 456 | 2.18E-04 |
| 6 | 3.34% | 497 | 2.37E-04 | 14 | 6.17% | 919 | 4.39E-04 | 22 | 4.25% | 633 | 3.02E-04 |
| 7 | 6.06% | 902 | 4.31E-04 | 15 | 5.10% | 759 | 3.62E-04 | 23 | 2.55% | 379 | 1.81E-04 |
| 8 | 4.54% | 676 | 3.23E-04 | 16 | 3.86% | 574 | 2.74E-04 | 24 | 0.85% | 126 | 6.03E-05 |
| | | | | | | | | Total | | 14,882 | |

**2030 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WB_237**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 589 | 2.82E-04 | 9 | 6.46% | 961 | 4.59E-04 | 17 | 5.61% | 835 | 3.99E-04 |
| 2 | 2.66% | 396 | 1.89E-04 | 10 | 7.36% | 1096 | 5.24E-04 | 18 | 3.24% | 483 | 2.31E-04 |
| 3 | 2.88% | 429 | 2.05E-04 | 11 | 6.40% | 953 | 4.55E-04 | 19 | 2.22% | 330 | 1.58E-04 |
| 4 | 3.28% | 488 | 2.33E-04 | 12 | 6.97% | 1037 | 4.95E-04 | 20 | 0.86% | 128 | 6.10E-05 |
| 5 | 2.09% | 311 | 1.49E-04 | 13 | 6.23% | 927 | 4.43E-04 | 21 | 3.06% | 456 | 2.18E-04 |
| 6 | 3.34% | 497 | 2.37E-04 | 14 | 6.17% | 919 | 4.39E-04 | 22 | 4.25% | 633 | 3.02E-04 |
| 7 | 6.06% | 902 | 4.31E-04 | 15 | 5.10% | 759 | 3.63E-04 | 23 | 2.55% | 379 | 1.81E-04 |
| 8 | 4.54% | 676 | 3.23E-04 | 16 | 3.86% | 574 | 2.74E-04 | 24 | 0.85% | 126 | 6.03E-05 |
| | | | | | | | | Total | | 14,882 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 237**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| PM2.5_EB_237 | Highway 237 Eastbound | NB | 3 | 3980.0 | 2.47 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| PM2.5_WB_237 | Highway 237 Westbound | SB | 3 | 3983.3 | 2.48 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| | | | | | | | | | Total | 29,763 |

**Emission Factors - PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | | | |
| Emissions per Vehicle (g/VMT) | 0.001451 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_EB_237**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 1.70E-04 | 9 | 7.11% | 1059 | 1.06E-03 | 17 | 7.39% | 1100 | 1.10E-03 |
| 2 | 0.42% | 62 | 6.20E-05 | 10 | 4.39% | 653 | 6.51E-04 | 18 | 8.18% | 1217 | 1.21E-03 |
| 3 | 0.40% | 60 | 6.00E-05 | 11 | 4.66% | 694 | 6.92E-04 | 19 | 5.70% | 848 | 8.46E-04 |
| 4 | 0.26% | 39 | 3.86E-05 | 12 | 5.89% | 876 | 8.73E-04 | 20 | 4.27% | 636 | 6.34E-04 |
| 5 | 0.49% | 73 | 7.30E-05 | 13 | 6.15% | 916 | 9.13E-04 | 21 | 3.25% | 484 | 4.83E-04 |
| 6 | 0.90% | 134 | 1.34E-04 | 14 | 6.04% | 898 | 8.95E-04 | 22 | 3.30% | 491 | 4.90E-04 |
| 7 | 3.79% | 564 | 5.62E-04 | 15 | 7.01% | 1044 | 1.04E-03 | 23 | 2.46% | 366 | 3.65E-04 |
| 8 | 7.76% | 1155 | 1.15E-03 | 16 | 7.14% | 1063 | 1.06E-03 | 24 | 1.87% | 278 | 2.77E-04 |
| | | | | | | | | Total | | 14,882 | |

**2030 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_WB_237**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 1.71E-04 | 9 | 7.11% | 1059 | 1.06E-03 | 17 | 7.39% | 1100 | 1.10E-03 |
| 2 | 0.42% | 62 | 6.20E-05 | 10 | 4.39% | 653 | 6.51E-04 | 18 | 8.18% | 1217 | 1.21E-03 |
| 3 | 0.40% | 60 | 6.01E-05 | 11 | 4.66% | 694 | 6.92E-04 | 19 | 5.70% | 848 | 8.46E-04 |
| 4 | 0.26% | 39 | 3.86E-05 | 12 | 5.89% | 876 | 8.74E-04 | 20 | 4.27% | 636 | 6.35E-04 |
| 5 | 0.49% | 73 | 7.30E-05 | 13 | 6.15% | 916 | 9.13E-04 | 21 | 3.25% | 484 | 4.83E-04 |
| 6 | 0.90% | 134 | 1.34E-04 | 14 | 6.04% | 898 | 8.96E-04 | 22 | 3.30% | 491 | 4.90E-04 |
| 7 | 3.79% | 564 | 5.62E-04 | 15 | 7.01% | 1044 | 1.04E-03 | 23 | 2.46% | 366 | 3.66E-04 |
| 8 | 7.76% | 1155 | 1.15E-03 | 16 | 7.14% | 1063 | 1.06E-03 | 24 | 1.87% | 278 | 2.77E-04 |
| | | | | | | | | Total | | 14,882 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 237**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| TEXH_EB_237 | Highway 237 Eastbound | NB | 3 | 3980.0 | 2.47 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| TEXH_WB_237 | Highway 237 Westbound | SB | 3 | 3983.3 | 2.48 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| | | | | | | | | | Total | 29,763 |

**Emission Factors - TOG Exhaust**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | | | |
| Emissions per Vehicle (g/VMT) | 0.02147 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EB_237**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 2.52E-03 | 9 | 7.11% | 1059 | 1.56E-02 | 17 | 7.39% | 1100 | 1.62E-02 |
| 2 | 0.42% | 62 | 9.17E-04 | 10 | 4.39% | 653 | 9.63E-03 | 18 | 8.18% | 1217 | 1.80E-02 |
| 3 | 0.40% | 60 | 8.88E-04 | 11 | 4.66% | 694 | 1.02E-02 | 19 | 5.70% | 848 | 1.25E-02 |
| 4 | 0.26% | 39 | 5.70E-04 | 12 | 5.89% | 876 | 1.29E-02 | 20 | 4.27% | 636 | 9.38E-03 |
| 5 | 0.49% | 73 | 1.08E-03 | 13 | 6.15% | 916 | 1.35E-02 | 21 | 3.25% | 484 | 7.14E-03 |
| 6 | 0.90% | 134 | 1.98E-03 | 14 | 6.04% | 898 | 1.32E-02 | 22 | 3.30% | 491 | 7.24E-03 |
| 7 | 3.79% | 564 | 8.31E-03 | 15 | 7.01% | 1044 | 1.54E-02 | 23 | 2.46% | 366 | 5.40E-03 |
| 8 | 7.76% | 1155 | 1.70E-02 | 16 | 7.14% | 1063 | 1.57E-02 | 24 | 1.87% | 278 | 4.09E-03 |
| | | | | | | | | Total | | 14,882 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WB_237**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 2.52E-03 | 9 | 7.11% | 1059 | 1.56E-02 | 17 | 7.39% | 1100 | 1.62E-02 |
| 2 | 0.42% | 62 | 9.18E-04 | 10 | 4.39% | 653 | 9.64E-03 | 18 | 8.18% | 1217 | 1.80E-02 |
| 3 | 0.40% | 60 | 8.89E-04 | 11 | 4.66% | 694 | 1.02E-02 | 19 | 5.70% | 848 | 1.25E-02 |
| 4 | 0.26% | 39 | 5.71E-04 | 12 | 5.89% | 876 | 1.29E-02 | 20 | 4.27% | 636 | 9.39E-03 |
| 5 | 0.49% | 73 | 1.08E-03 | 13 | 6.15% | 916 | 1.35E-02 | 21 | 3.25% | 484 | 7.15E-03 |
| 6 | 0.90% | 134 | 1.98E-03 | 14 | 6.04% | 898 | 1.33E-02 | 22 | 3.30% | 491 | 7.25E-03 |
| 7 | 3.79% | 564 | 8.32E-03 | 15 | 7.01% | 1044 | 1.54E-02 | 23 | 2.46% | 366 | 5.41E-03 |
| 8 | 7.76% | 1155 | 1.70E-02 | 16 | 7.14% | 1063 | 1.57E-02 | 24 | 1.87% | 278 | 4.10E-03 |
| | | | | | | | | Total | | 14,882 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 237**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| TEVAP_EB_237 | Highway 237 Eastbound | NB | 3 | 3980.0 | 2.47 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| TEVAP_WB_237 | Highway 237 Westbound | SB | 3 | 3983.3 | 2.48 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| | | | | | | | | | Total | 29,763 |

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

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.04316 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.01605 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EB_237**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 1.89E-03 | 9 | 7.11% | 1059 | 1.17E-02 | 17 | 7.39% | 1100 | 1.21E-02 |
| 2 | 0.42% | 62 | 6.85E-04 | 10 | 4.39% | 653 | 7.20E-03 | 18 | 8.18% | 1217 | 1.34E-02 |
| 3 | 0.40% | 60 | 6.64E-04 | 11 | 4.66% | 694 | 7.65E-03 | 19 | 5.70% | 848 | 9.35E-03 |
| 4 | 0.26% | 39 | 4.26E-04 | 12 | 5.89% | 876 | 9.66E-03 | 20 | 4.27% | 636 | 7.01E-03 |
| 5 | 0.49% | 73 | 8.07E-04 | 13 | 6.15% | 916 | 1.01E-02 | 21 | 3.25% | 484 | 5.34E-03 |
| 6 | 0.90% | 134 | 1.48E-03 | 14 | 6.04% | 898 | 9.90E-03 | 22 | 3.30% | 491 | 5.42E-03 |
| 7 | 3.79% | 564 | 6.21E-03 | 15 | 7.01% | 1044 | 1.15E-02 | 23 | 2.46% | 366 | 4.04E-03 |
| 8 | 7.76% | 1155 | 1.27E-02 | 16 | 7.14% | 1063 | 1.17E-02 | 24 | 1.87% | 278 | 3.06E-03 |
| | | | | | | | | Total | | 14,882 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WB_237**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 1.89E-03 | 9 | 7.11% | 1059 | 1.17E-02 | 17 | 7.39% | 1100 | 1.21E-02 |
| 2 | 0.42% | 62 | 6.86E-04 | 10 | 4.39% | 653 | 7.20E-03 | 18 | 8.18% | 1217 | 1.34E-02 |
| 3 | 0.40% | 60 | 6.65E-04 | 11 | 4.66% | 694 | 7.66E-03 | 19 | 5.70% | 848 | 9.36E-03 |
| 4 | 0.26% | 39 | 4.27E-04 | 12 | 5.89% | 876 | 9.67E-03 | 20 | 4.27% | 636 | 7.02E-03 |
| 5 | 0.49% | 73 | 8.08E-04 | 13 | 6.15% | 916 | 1.01E-02 | 21 | 3.25% | 484 | 5.34E-03 |
| 6 | 0.90% | 134 | 1.48E-03 | 14 | 6.04% | 898 | 9.91E-03 | 22 | 3.30% | 491 | 5.42E-03 |
| 7 | 3.79% | 564 | 6.22E-03 | 15 | 7.01% | 1044 | 1.15E-02 | 23 | 2.46% | 366 | 4.04E-03 |
| 8 | 7.76% | 1155 | 1.27E-02 | 16 | 7.14% | 1063 | 1.17E-02 | 24 | 1.87% | 278 | 3.06E-03 |
| | | | | | | | | Total | | 14,882 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Highway 237**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| FUG_EB_237 | Highway 237 Eastbound | NB | 3 | 3980.0 | 2.47 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| FUG_WB_237 | Highway 237 Westbound | SB | 3 | 3983.3 | 2.48 | 17.0 | 56 | 1.3 | 45 | 14,882 |
| | | | | | | | | | Total | 29,763 |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 65 | | | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00211 | | | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01679 | | | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.00743 | | | |
| otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.02632 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EB_237**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 3.09E-03 | 9 | 7.11% | 1059 | 1.91E-02 | 17 | 7.39% | 1100 | 1.99E-02 |
| 2 | 0.42% | 62 | 1.12E-03 | 10 | 4.39% | 653 | 1.18E-02 | 18 | 8.18% | 1217 | 2.20E-02 |
| 3 | 0.40% | 60 | 1.09E-03 | 11 | 4.66% | 694 | 1.26E-02 | 19 | 5.70% | 848 | 1.53E-02 |
| 4 | 0.26% | 39 | 7.00E-04 | 12 | 5.89% | 876 | 1.58E-02 | 20 | 4.27% | 636 | 1.15E-02 |
| 5 | 0.49% | 73 | 1.32E-03 | 13 | 6.15% | 916 | 1.66E-02 | 21 | 3.25% | 484 | 8.76E-03 |
| 6 | 0.90% | 134 | 2.42E-03 | 14 | 6.04% | 898 | 1.62E-02 | 22 | 3.30% | 491 | 8.88E-03 |
| 7 | 3.79% | 564 | 1.02E-02 | 15 | 7.01% | 1044 | 1.89E-02 | 23 | 2.46% | 366 | 6.63E-03 |
| 8 | 7.76% | 1155 | 2.09E-02 | 16 | 7.14% | 1063 | 1.92E-02 | 24 | 1.87% | 278 | 5.02E-03 |
| | | | | | | | | Total | | 14,882 | |

**2030 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_WB_237**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 171 | 3.10E-03 | 9 | 7.11% | 1059 | 1.92E-02 | 17 | 7.39% | 1100 | 1.99E-02 |
| 2 | 0.42% | 62 | 1.13E-03 | 10 | 4.39% | 653 | 1.18E-02 | 18 | 8.18% | 1217 | 2.20E-02 |
| 3 | 0.40% | 60 | 1.09E-03 | 11 | 4.66% | 694 | 1.26E-02 | 19 | 5.70% | 848 | 1.54E-02 |
| 4 | 0.26% | 39 | 7.00E-04 | 12 | 5.89% | 876 | 1.59E-02 | 20 | 4.27% | 636 | 1.15E-02 |
| 5 | 0.49% | 73 | 1.33E-03 | 13 | 6.15% | 916 | 1.66E-02 | 21 | 3.25% | 484 | 8.77E-03 |
| 6 | 0.90% | 134 | 2.43E-03 | 14 | 6.04% | 898 | 1.63E-02 | 22 | 3.30% | 491 | 8.89E-03 |
| 7 | 3.79% | 564 | 1.02E-02 | 15 | 7.01% | 1044 | 1.89E-02 | 23 | 2.46% | 366 | 6.63E-03 |
| 8 | 7.76% | 1155 | 2.09E-02 | 16 | 7.14% | 1063 | 1.92E-02 | 24 | 1.87% | 278 | 5.03E-03 |
| | | | | | | | | Total | | 14,882 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Java Drive**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| DPM_EB_JAV | Java Drive Eastbound | EB | 2 | 1948.5 | 1.21 | 13.3 | 43.7 | 3.4 | 45 | 2,723 |
| DPM_WB_JAV | Java Drive Westbound | WB | 2 | 1980.2 | 1.23 | 13.3 | 43.7 | 3.4 | 45 | 2,723 |
| | | | | | | | | | Total | 5,445 |

**Emission Factors**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.00035 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and DPM Emissions - DPM_EB_JAV**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 108 | 1.27E-05 | 9 | 6.46% | 176 | 2.06E-05 | 17 | 5.61% | 153 | 1.79E-05 |
| 2 | 2.66% | 72 | 8.49E-06 | 10 | 7.36% | 200 | 2.35E-05 | 18 | 3.24% | 88 | 1.04E-05 |
| 3 | 2.88% | 79 | 9.22E-06 | 11 | 6.40% | 174 | 2.05E-05 | 19 | 2.22% | 60 | 7.08E-06 |
| 4 | 3.28% | 89 | 1.05E-05 | 12 | 6.97% | 190 | 2.23E-05 | 20 | 0.86% | 23 | 2.74E-06 |
| 5 | 2.09% | 57 | 6.69E-06 | 13 | 6.23% | 170 | 1.99E-05 | 21 | 3.06% | 83 | 9.79E-06 |
| 6 | 3.34% | 91 | 1.07E-05 | 14 | 6.17% | 168 | 1.97E-05 | 22 | 4.25% | 116 | 1.36E-05 |
| 7 | 6.06% | 165 | 1.94E-05 | 15 | 5.10% | 139 | 1.63E-05 | 23 | 2.55% | 69 | 8.13E-06 |
| 8 | 4.54% | 124 | 1.45E-05 | 16 | 3.86% | 105 | 1.23E-05 | 24 | 0.85% | 23 | 2.71E-06 |
| | | | | | | | | Total | | 2,723 | |

**2030 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WB_JAV**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 108 | 1.29E-05 | 9 | 6.46% | 176 | 2.10E-05 | 17 | 5.61% | 153 | 1.82E-05 |
| 2 | 2.66% | 72 | 8.63E-06 | 10 | 7.36% | 200 | 2.39E-05 | 18 | 3.24% | 88 | 1.05E-05 |
| 3 | 2.88% | 79 | 9.37E-06 | 11 | 6.40% | 174 | 2.08E-05 | 19 | 2.22% | 60 | 7.19E-06 |
| 4 | 3.28% | 89 | 1.07E-05 | 12 | 6.97% | 190 | 2.26E-05 | 20 | 0.86% | 23 | 2.79E-06 |
| 5 | 2.09% | 57 | 6.80E-06 | 13 | 6.23% | 170 | 2.02E-05 | 21 | 3.06% | 83 | 9.95E-06 |
| 6 | 3.34% | 91 | 1.08E-05 | 14 | 6.17% | 168 | 2.01E-05 | 22 | 4.25% | 116 | 1.38E-05 |
| 7 | 6.06% | 165 | 1.97E-05 | 15 | 5.10% | 139 | 1.66E-05 | 23 | 2.55% | 69 | 8.27E-06 |
| 8 | 4.54% | 124 | 1.48E-05 | 16 | 3.86% | 105 | 1.25E-05 | 24 | 0.85% | 23 | 2.76E-06 |
| | | | | | | | | Total | | 2,723 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Java Drive**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| PM2.5_EB_JAV | Java Drive Eastbound | EB | 2 | 1948.5 | 1.21 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| PM2.5_WB_JAV | Java Drive Westbound | WB | 2 | 1980.2 | 1.23 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| | | | | | | | | | Total | 5,445 |

**Emission Factors - PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.000985 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_EB_JAV**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 1.04E-05 | 9 | 7.11% | 194 | 6.42E-05 | 17 | 7.39% | 201 | 6.67E-05 |
| 2 | 0.42% | 11 | 3.77E-06 | 10 | 4.39% | 119 | 3.96E-05 | 18 | 8.18% | 223 | 7.38E-05 |
| 3 | 0.40% | 11 | 3.65E-06 | 11 | 4.66% | 127 | 4.21E-05 | 19 | 5.70% | 155 | 5.14E-05 |
| 4 | 0.26% | 7 | 2.34E-06 | 12 | 5.89% | 160 | 5.31E-05 | 20 | 4.27% | 116 | 3.85E-05 |
| 5 | 0.49% | 13 | 4.44E-06 | 13 | 6.15% | 168 | 5.55E-05 | 21 | 3.25% | 89 | 2.94E-05 |
| 6 | 0.90% | 25 | 8.12E-06 | 14 | 6.04% | 164 | 5.44E-05 | 22 | 3.30% | 90 | 2.98E-05 |
| 7 | 3.79% | 103 | 3.42E-05 | 15 | 7.01% | 191 | 6.32E-05 | 23 | 2.46% | 67 | 2.22E-05 |
| 8 | 7.76% | 211 | 7.00E-05 | 16 | 7.14% | 194 | 6.44E-05 | 24 | 1.87% | 51 | 1.68E-05 |
| | | | | | | | | Total | | 2,723 | |

**2030 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_WB_JAV**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 1.05E-05 | 9 | 7.11% | 194 | 6.52E-05 | 17 | 7.39% | 201 | 6.77E-05 |
| 2 | 0.42% | 11 | 3.83E-06 | 10 | 4.39% | 119 | 4.02E-05 | 18 | 8.18% | 223 | 7.50E-05 |
| 3 | 0.40% | 11 | 3.71E-06 | 11 | 4.66% | 127 | 4.27E-05 | 19 | 5.70% | 155 | 5.22E-05 |
| 4 | 0.26% | 7 | 2.38E-06 | 12 | 5.89% | 160 | 5.40E-05 | 20 | 4.27% | 116 | 3.92E-05 |
| 5 | 0.49% | 13 | 4.51E-06 | 13 | 6.15% | 168 | 5.64E-05 | 21 | 3.25% | 89 | 2.98E-05 |
| 6 | 0.90% | 25 | 8.25E-06 | 14 | 6.04% | 164 | 5.53E-05 | 22 | 3.30% | 90 | 3.03E-05 |
| 7 | 3.79% | 103 | 3.47E-05 | 15 | 7.01% | 191 | 6.43E-05 | 23 | 2.46% | 67 | 2.26E-05 |
| 8 | 7.76% | 211 | 7.11E-05 | 16 | 7.14% | 194 | 6.55E-05 | 24 | 1.87% | 51 | 1.71E-05 |
| | | | | | | | | Total | | 2,723 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Java Drive**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| TEXH_EB_JAV | Java Drive Eastbound | EB | 2 | 1948.5 | 1.21 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| TEXH_WB_JAV | Java Drive Westbound | WB | 2 | 1980.2 | 1.23 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| | | | | | | | | | Total | 5,445 |

**Emission Factors - TOG Exhaust**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.01826 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EB_JAV**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 1.92E-04 | 9 | 7.11% | 194 | 1.19E-03 | 17 | 7.39% | 201 | 1.24E-03 |
| 2 | 0.42% | 11 | 6.98E-05 | 10 | 4.39% | 119 | 7.33E-04 | 18 | 8.18% | 223 | 1.37E-03 |
| 3 | 0.40% | 11 | 6.77E-05 | 11 | 4.66% | 127 | 7.80E-04 | 19 | 5.70% | 155 | 9.53E-04 |
| 4 | 0.26% | 7 | 4.35E-05 | 12 | 5.89% | 160 | 9.84E-04 | 20 | 4.27% | 116 | 7.15E-04 |
| 5 | 0.49% | 13 | 8.23E-05 | 13 | 6.15% | 168 | 1.03E-03 | 21 | 3.25% | 89 | 5.44E-04 |
| 6 | 0.90% | 25 | 1.51E-04 | 14 | 6.04% | 164 | 1.01E-03 | 22 | 3.30% | 90 | 5.52E-04 |
| 7 | 3.79% | 103 | 6.33E-04 | 15 | 7.01% | 191 | 1.17E-03 | 23 | 2.46% | 67 | 4.12E-04 |
| 8 | 7.76% | 211 | 1.30E-03 | 16 | 7.14% | 194 | 1.19E-03 | 24 | 1.87% | 51 | 3.12E-04 |
| | | | | | | | | Total | | 2,723 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WB_JAV**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 1.95E-04 | 9 | 7.11% | 194 | 1.21E-03 | 17 | 7.39% | 201 | 1.26E-03 |
| 2 | 0.42% | 11 | 7.10E-05 | 10 | 4.39% | 119 | 7.45E-04 | 18 | 8.18% | 223 | 1.39E-03 |
| 3 | 0.40% | 11 | 6.88E-05 | 11 | 4.66% | 127 | 7.92E-04 | 19 | 5.70% | 155 | 9.68E-04 |
| 4 | 0.26% | 7 | 4.42E-05 | 12 | 5.89% | 160 | 1.00E-03 | 20 | 4.27% | 116 | 7.26E-04 |
| 5 | 0.49% | 13 | 8.36E-05 | 13 | 6.15% | 168 | 1.05E-03 | 21 | 3.25% | 89 | 5.53E-04 |
| 6 | 0.90% | 25 | 1.53E-04 | 14 | 6.04% | 164 | 1.03E-03 | 22 | 3.30% | 90 | 5.61E-04 |
| 7 | 3.79% | 103 | 6.44E-04 | 15 | 7.01% | 191 | 1.19E-03 | 23 | 2.46% | 67 | 4.18E-04 |
| 8 | 7.76% | 211 | 1.32E-03 | 16 | 7.14% | 194 | 1.21E-03 | 24 | 1.87% | 51 | 3.17E-04 |
| | | | | | | | | Total | | 2,723 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Java Drive**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| TEVAP_EB_JAV | Java Drive Eastbound | EB | 2 | 1948.5 | 1.21 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| TEVAP_WB_JAV | Java Drive Westbound | WB | 2 | 1980.2 | 1.23 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| | | | | | | | | | Total | 5,445 |

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

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.04316 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.02318 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EB_JAV**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 2.44E-04 | 9 | 7.11% | 194 | 1.51E-03 | 17 | 7.39% | 201 | 1.57E-03 |
| 2 | 0.42% | 11 | 8.87E-05 | 10 | 4.39% | 119 | 9.31E-04 | 18 | 8.18% | 223 | 1.74E-03 |
| 3 | 0.40% | 11 | 8.59E-05 | 11 | 4.66% | 127 | 9.90E-04 | 19 | 5.70% | 155 | 1.21E-03 |
| 4 | 0.26% | 7 | 5.52E-05 | 12 | 5.89% | 160 | 1.25E-03 | 20 | 4.27% | 116 | 9.07E-04 |
| 5 | 0.49% | 13 | 1.04E-04 | 13 | 6.15% | 168 | 1.31E-03 | 21 | 3.25% | 89 | 6.91E-04 |
| 6 | 0.90% | 25 | 1.91E-04 | 14 | 6.04% | 164 | 1.28E-03 | 22 | 3.30% | 90 | 7.01E-04 |
| 7 | 3.79% | 103 | 8.04E-04 | 15 | 7.01% | 191 | 1.49E-03 | 23 | 2.46% | 67 | 5.23E-04 |
| 8 | 7.76% | 211 | 1.65E-03 | 16 | 7.14% | 194 | 1.52E-03 | 24 | 1.87% | 51 | 3.96E-04 |
| | | | | | | | | Total | | 2,723 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WB_JAV**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 2.48E-04 | 9 | 7.11% | 194 | 1.53E-03 | 17 | 7.39% | 201 | 1.59E-03 |
| 2 | 0.42% | 11 | 9.01E-05 | 10 | 4.39% | 119 | 9.46E-04 | 18 | 8.18% | 223 | 1.76E-03 |
| 3 | 0.40% | 11 | 8.73E-05 | 11 | 4.66% | 127 | 1.01E-03 | 19 | 5.70% | 155 | 1.23E-03 |
| 4 | 0.26% | 7 | 5.61E-05 | 12 | 5.89% | 160 | 1.27E-03 | 20 | 4.27% | 116 | 9.22E-04 |
| 5 | 0.49% | 13 | 1.06E-04 | 13 | 6.15% | 168 | 1.33E-03 | 21 | 3.25% | 89 | 7.02E-04 |
| 6 | 0.90% | 25 | 1.94E-04 | 14 | 6.04% | 164 | 1.30E-03 | 22 | 3.30% | 90 | 7.12E-04 |
| 7 | 3.79% | 103 | 8.17E-04 | 15 | 7.01% | 191 | 1.51E-03 | 23 | 2.46% | 67 | 5.31E-04 |
| 8 | 7.76% | 211 | 1.67E-03 | 16 | 7.14% | 194 | 1.54E-03 | 24 | 1.87% | 51 | 4.03E-04 |
| | | | | | | | | Total | | 2,723 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - Java Drive**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year =** **2030**

| Road Link | Description | Direction | No. Lanes | Link Length (m) | Link Length (mi) | Link Width (m) | Link Width (ft) | Release Height ( m) | Average Speed (mph) | Average Vehicles per Day |
|---|---|---|---|---|---|---|---|---|---|---|
| FUG_EB_JAV | Java Drive Eastbound | EB | 2 | 1948.5 | 1.21 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| FUG_WB_JAV | Java Drive Westbound | WB | 2 | 1980.2 | 1.23 | 13.3 | 44 | 1.3 | 45 | 2,723 |
| | | | | | | | | | Total | 5,445 |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00211 | | | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01679 | | | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.01480 | | | |
| otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03370 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EB_JAV**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 3.55E-04 | 9 | 7.11% | 194 | 2.19E-03 | 17 | 7.39% | 201 | 2.28E-03 |
| 2 | 0.42% | 11 | 1.29E-04 | 10 | 4.39% | 119 | 1.35E-03 | 18 | 8.18% | 223 | 2.52E-03 |
| 3 | 0.40% | 11 | 1.25E-04 | 11 | 4.66% | 127 | 1.44E-03 | 19 | 5.70% | 155 | 1.76E-03 |
| 4 | 0.26% | 7 | 8.02E-05 | 12 | 5.89% | 160 | 1.82E-03 | 20 | 4.27% | 116 | 1.32E-03 |
| 5 | 0.49% | 13 | 1.52E-04 | 13 | 6.15% | 168 | 1.90E-03 | 21 | 3.25% | 89 | 1.00E-03 |
| 6 | 0.90% | 25 | 2.78E-04 | 14 | 6.04% | 164 | 1.86E-03 | 22 | 3.30% | 90 | 1.02E-03 |
| 7 | 3.79% | 103 | 1.17E-03 | 15 | 7.01% | 191 | 2.16E-03 | 23 | 2.46% | 67 | 7.60E-04 |
| 8 | 7.76% | 211 | 2.39E-03 | 16 | 7.14% | 194 | 2.20E-03 | 24 | 1.87% | 51 | 5.76E-04 |
| | | | | | | | | Total | | 2,723 | |

**2030 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_WB_JAV**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 31 | 3.60E-04 | 9 | 7.11% | 194 | 2.23E-03 | 17 | 7.39% | 201 | 2.32E-03 |
| 2 | 0.42% | 11 | 1.31E-04 | 10 | 4.39% | 119 | 1.38E-03 | 18 | 8.18% | 223 | 2.56E-03 |
| 3 | 0.40% | 11 | 1.27E-04 | 11 | 4.66% | 127 | 1.46E-03 | 19 | 5.70% | 155 | 1.79E-03 |
| 4 | 0.26% | 7 | 8.15E-05 | 12 | 5.89% | 160 | 1.85E-03 | 20 | 4.27% | 116 | 1.34E-03 |
| 5 | 0.49% | 13 | 1.54E-04 | 13 | 6.15% | 168 | 1.93E-03 | 21 | 3.25% | 89 | 1.02E-03 |
| 6 | 0.90% | 25 | 2.82E-04 | 14 | 6.04% | 164 | 1.89E-03 | 22 | 3.30% | 90 | 1.04E-03 |
| 7 | 3.79% | 103 | 1.19E-03 | 15 | 7.01% | 191 | 2.20E-03 | 23 | 2.46% | 67 | 7.72E-04 |
| 8 | 7.76% | 211 | 2.43E-03 | 16 | 7.14% | 194 | 2.24E-03 | 24 | 1.87% | 51 | 5.85E-04 |
| | | | | | | | | Total | | 2,723 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - N Mathilda Avenue**
**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**
**Year = 2030**

| 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_MAT | N Mathilda Avenue Northbound | NB | 3 | 2071.4 | 1.29 | 17.0 | 55.7 | 3.4 | 45 | 10,351 |
| DPM_SB_MAT | N Mathilda Avenue Southbound | SB | 3 | 2083.1 | 1.29 | 17.0 | 55.7 | 3.4 | 45 | 10,351 |
| | | | | | | | | | Total | 20,701 |

**Emission Factors**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.00035 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and DPM Emissions - DPM_NB_MAT**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 410 | 5.11E-05 | 9 | 6.46% | 668 | 8.34E-05 | 17 | 5.61% | 581 | 7.24E-05 |
| 2 | 2.66% | 275 | 3.43E-05 | 10 | 7.36% | 762 | 9.51E-05 | 18 | 3.24% | 336 | 4.19E-05 |
| 3 | 2.88% | 299 | 3.73E-05 | 11 | 6.40% | 663 | 8.27E-05 | 19 | 2.22% | 229 | 2.86E-05 |
| 4 | 3.28% | 340 | 4.24E-05 | 12 | 6.97% | 721 | 9.00E-05 | 20 | 0.86% | 89 | 1.11E-05 |
| 5 | 2.09% | 217 | 2.70E-05 | 13 | 6.23% | 645 | 8.05E-05 | 21 | 3.06% | 317 | 3.96E-05 |
| 6 | 3.34% | 345 | 4.31E-05 | 14 | 6.17% | 639 | 7.97E-05 | 22 | 4.25% | 440 | 5.49E-05 |
| 7 | 6.06% | 627 | 7.83E-05 | 15 | 5.10% | 528 | 6.59E-05 | 23 | 2.55% | 263 | 3.29E-05 |
| 8 | 4.54% | 470 | 5.87E-05 | 16 | 3.86% | 399 | 4.98E-05 | 24 | 0.85% | 88 | 1.10E-05 |
| | | | | | | | | Total | | 10,351 | |

**2030 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_SB_MAT**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.96% | 410 | 5.14E-05 | 9 | 6.46% | 668 | 8.39E-05 | 17 | 5.61% | 581 | 7.29E-05 |
| 2 | 2.66% | 275 | 3.45E-05 | 10 | 7.36% | 762 | 9.56E-05 | 18 | 3.24% | 336 | 4.21E-05 |
| 3 | 2.88% | 299 | 3.75E-05 | 11 | 6.40% | 663 | 8.31E-05 | 19 | 2.22% | 229 | 2.88E-05 |
| 4 | 3.28% | 340 | 4.26E-05 | 12 | 6.97% | 721 | 9.05E-05 | 20 | 0.86% | 89 | 1.11E-05 |
| 5 | 2.09% | 217 | 2.72E-05 | 13 | 6.23% | 645 | 8.09E-05 | 21 | 3.06% | 317 | 3.98E-05 |
| 6 | 3.34% | 345 | 4.33E-05 | 14 | 6.17% | 639 | 8.02E-05 | 22 | 4.25% | 440 | 5.52E-05 |
| 7 | 6.06% | 627 | 7.87E-05 | 15 | 5.10% | 528 | 6.62E-05 | 23 | 2.55% | 263 | 3.31E-05 |
| 8 | 4.54% | 470 | 5.90E-05 | 16 | 3.86% | 399 | 5.01E-05 | 24 | 0.85% | 88 | 1.10E-05 |
| | | | | | | | | Total | | 10,351 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - N Mathilda Avenue**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2030**

| 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_MAT | N Mathilda Avenue Northbound | NB | 3 | 2071.4 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| PM2.5_SB_MAT | N Mathilda Avenue Southbound | SB | 3 | 2083.1 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| | | | | | | | | | Total | 20,701 |

**Emission Factors - PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.000985 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_NB_MAT**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 4.19E-05 | 9 | 7.11% | 736 | 2.59E-04 | 17 | 7.39% | 765 | 2.69E-04 |
| 2 | 0.42% | 43 | 1.52E-05 | 10 | 4.39% | 454 | 1.60E-04 | 18 | 8.18% | 847 | 2.98E-04 |
| 3 | 0.40% | 42 | 1.48E-05 | 11 | 4.66% | 483 | 1.70E-04 | 19 | 5.70% | 590 | 2.08E-04 |
| 4 | 0.26% | 27 | 9.48E-06 | 12 | 5.89% | 609 | 2.15E-04 | 20 | 4.27% | 442 | 1.56E-04 |
| 5 | 0.49% | 51 | 1.79E-05 | 13 | 6.15% | 637 | 2.24E-04 | 21 | 3.25% | 337 | 1.19E-04 |
| 6 | 0.90% | 93 | 3.28E-05 | 14 | 6.04% | 625 | 2.20E-04 | 22 | 3.30% | 342 | 1.20E-04 |
| 7 | 3.79% | 392 | 1.38E-04 | 15 | 7.01% | 726 | 2.56E-04 | 23 | 2.46% | 255 | 8.97E-05 |
| 8 | 7.76% | 803 | 2.83E-04 | 16 | 7.14% | 739 | 2.60E-04 | 24 | 1.87% | 193 | 6.80E-05 |
| | | | | | | | | Total | | 10,351 | |

**2030 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_SB_MAT**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 4.21E-05 | 9 | 7.11% | 736 | 2.61E-04 | 17 | 7.39% | 765 | 2.71E-04 |
| 2 | 0.42% | 43 | 1.53E-05 | 10 | 4.39% | 454 | 1.61E-04 | 18 | 8.18% | 847 | 3.00E-04 |
| 3 | 0.40% | 42 | 1.48E-05 | 11 | 4.66% | 483 | 1.71E-04 | 19 | 5.70% | 590 | 2.09E-04 |
| 4 | 0.26% | 27 | 9.53E-06 | 12 | 5.89% | 609 | 2.16E-04 | 20 | 4.27% | 442 | 1.57E-04 |
| 5 | 0.49% | 51 | 1.80E-05 | 13 | 6.15% | 637 | 2.26E-04 | 21 | 3.25% | 337 | 1.19E-04 |
| 6 | 0.90% | 93 | 3.30E-05 | 14 | 6.04% | 625 | 2.21E-04 | 22 | 3.30% | 342 | 1.21E-04 |
| 7 | 3.79% | 392 | 1.39E-04 | 15 | 7.01% | 726 | 2.57E-04 | 23 | 2.46% | 255 | 9.03E-05 |
| 8 | 7.76% | 803 | 2.84E-04 | 16 | 7.14% | 739 | 2.62E-04 | 24 | 1.87% | 193 | 6.84E-05 |
| | | | | | | | | Total | | 10,351 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - N Mathilda Avenue**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2030**

| 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_MAT | N Mathilda Avenue Northbound | NB | 3 | 2071.4 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| TEXH_SB_MAT | N Mathilda Avenue Southbound | SB | 3 | 2083.1 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| | | | | | | | | | Total | 20,701 |

**Emission Factors - TOG Exhaust**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle (g/VMT) | 0.01826 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_NB_MAT**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 7.77E-04 | 9 | 7.11% | 736 | 4.81E-03 | 17 | 7.39% | 765 | 4.99E-03 |
| 2 | 0.42% | 43 | 2.82E-04 | 10 | 4.39% | 454 | 2.96E-03 | 18 | 8.18% | 847 | 5.53E-03 |
| 3 | 0.40% | 42 | 2.73E-04 | 11 | 4.66% | 483 | 3.15E-03 | 19 | 5.70% | 590 | 3.85E-03 |
| 4 | 0.26% | 27 | 1.76E-04 | 12 | 5.89% | 609 | 3.98E-03 | 20 | 4.27% | 442 | 2.89E-03 |
| 5 | 0.49% | 51 | 3.32E-04 | 13 | 6.15% | 637 | 4.16E-03 | 21 | 3.25% | 337 | 2.20E-03 |
| 6 | 0.90% | 93 | 6.08E-04 | 14 | 6.04% | 625 | 4.08E-03 | 22 | 3.30% | 342 | 2.23E-03 |
| 7 | 3.79% | 392 | 2.56E-03 | 15 | 7.01% | 726 | 4.74E-03 | 23 | 2.46% | 255 | 1.66E-03 |
| 8 | 7.76% | 803 | 5.24E-03 | 16 | 7.14% | 739 | 4.83E-03 | 24 | 1.87% | 193 | 1.26E-03 |
| | | | | | | | | Total | | 10,351 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_SB_MAT**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 7.81E-04 | 9 | 7.11% | 736 | 4.83E-03 | 17 | 7.39% | 765 | 5.02E-03 |
| 2 | 0.42% | 43 | 2.84E-04 | 10 | 4.39% | 454 | 2.98E-03 | 18 | 8.18% | 847 | 5.56E-03 |
| 3 | 0.40% | 42 | 2.75E-04 | 11 | 4.66% | 483 | 3.17E-03 | 19 | 5.70% | 590 | 3.87E-03 |
| 4 | 0.26% | 27 | 1.77E-04 | 12 | 5.89% | 609 | 4.00E-03 | 20 | 4.27% | 442 | 2.90E-03 |
| 5 | 0.49% | 51 | 3.34E-04 | 13 | 6.15% | 637 | 4.18E-03 | 21 | 3.25% | 337 | 2.21E-03 |
| 6 | 0.90% | 93 | 6.12E-04 | 14 | 6.04% | 625 | 4.10E-03 | 22 | 3.30% | 342 | 2.24E-03 |
| 7 | 3.79% | 392 | 2.57E-03 | 15 | 7.01% | 726 | 4.77E-03 | 23 | 2.46% | 255 | 1.67E-03 |
| 8 | 7.76% | 803 | 5.27E-03 | 16 | 7.14% | 739 | 4.85E-03 | 24 | 1.87% | 193 | 1.27E-03 |
| | | | | | | | | Total | | 10,351 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - N Mathilda Avenue**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2030**

| 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_MAT | N Mathilda Avenue Northbound | NB | 3 | 2071.4 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| TEVAP_SB_MAT | N Mathilda Avenue Southbound | SB | 3 | 2083.1 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| | | | | | | | | | Total | 20,701 |

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

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.04316 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.02318 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_NB_MAT**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 9.86E-04 | 9 | 7.11% | 736 | 6.10E-03 | 17 | 7.39% | 765 | 6.34E-03 |
| 2 | 0.42% | 43 | 3.58E-04 | 10 | 4.39% | 454 | 3.76E-03 | 18 | 8.18% | 847 | 7.02E-03 |
| 3 | 0.40% | 42 | 3.47E-04 | 11 | 4.66% | 483 | 4.00E-03 | 19 | 5.70% | 590 | 4.89E-03 |
| 4 | 0.26% | 27 | 2.23E-04 | 12 | 5.89% | 609 | 5.05E-03 | 20 | 4.27% | 442 | 3.67E-03 |
| 5 | 0.49% | 51 | 4.22E-04 | 13 | 6.15% | 637 | 5.28E-03 | 21 | 3.25% | 337 | 2.79E-03 |
| 6 | 0.90% | 93 | 7.73E-04 | 14 | 6.04% | 625 | 5.18E-03 | 22 | 3.30% | 342 | 2.83E-03 |
| 7 | 3.79% | 392 | 3.25E-03 | 15 | 7.01% | 726 | 6.02E-03 | 23 | 2.46% | 255 | 2.11E-03 |
| 8 | 7.76% | 803 | 6.66E-03 | 16 | 7.14% | 739 | 6.13E-03 | 24 | 1.87% | 193 | 1.60E-03 |
| | | | | | | | | Total | | 10,351 | |

**2030 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_SB_MAT**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 9.92E-04 | 9 | 7.11% | 736 | 6.14E-03 | 17 | 7.39% | 765 | 6.38E-03 |
| 2 | 0.42% | 43 | 3.60E-04 | 10 | 4.39% | 454 | 3.79E-03 | 18 | 8.18% | 847 | 7.06E-03 |
| 3 | 0.40% | 42 | 3.49E-04 | 11 | 4.66% | 483 | 4.02E-03 | 19 | 5.70% | 590 | 4.92E-03 |
| 4 | 0.26% | 27 | 2.24E-04 | 12 | 5.89% | 609 | 5.08E-03 | 20 | 4.27% | 442 | 3.69E-03 |
| 5 | 0.49% | 51 | 4.24E-04 | 13 | 6.15% | 637 | 5.31E-03 | 21 | 3.25% | 337 | 2.81E-03 |
| 6 | 0.90% | 93 | 7.77E-04 | 14 | 6.04% | 625 | 5.21E-03 | 22 | 3.30% | 342 | 2.85E-03 |
| 7 | 3.79% | 392 | 3.27E-03 | 15 | 7.01% | 726 | 6.05E-03 | 23 | 2.46% | 255 | 2.12E-03 |
| 8 | 7.76% | 803 | 6.70E-03 | 16 | 7.14% | 739 | 6.16E-03 | 24 | 1.87% | 193 | 1.61E-03 |
| | | | | | | | | Total | | 10,351 | |

**Moffett Park Specific Plan, Sunnyvale, CA - Off-Site Residential**
**Project Trips - N Mathilda Avenue**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year =** **2030**

| 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_MAT | N Mathilda Avenue Northbound | NB | 3 | 2071.4 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| FUG_SB_MAT | N Mathilda Avenue Southbound | SB | 3 | 2083.1 | 1.29 | 17.0 | 56 | 1.3 | 45 | 10,351 |
| | | | | | | | | | Total | 20,701 |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 45 | | | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00211 | | | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01679 | | | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.01480 | | | |
| otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03370 | | | |

Emisson Factors from CT-EMFAC2017

**2030 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_NB_MAT**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 1.43E-03 | 9 | 7.11% | 736 | 8.87E-03 | 17 | 7.39% | 765 | 9.22E-03 |
| 2 | 0.42% | 43 | 5.21E-04 | 10 | 4.39% | 454 | 5.47E-03 | 18 | 8.18% | 847 | 1.02E-02 |
| 3 | 0.40% | 42 | 5.05E-04 | 11 | 4.66% | 483 | 5.82E-03 | 19 | 5.70% | 590 | 7.11E-03 |
| 4 | 0.26% | 27 | 3.24E-04 | 12 | 5.89% | 609 | 7.34E-03 | 20 | 4.27% | 442 | 5.33E-03 |
| 5 | 0.49% | 51 | 6.14E-04 | 13 | 6.15% | 637 | 7.67E-03 | 21 | 3.25% | 337 | 4.06E-03 |
| 6 | 0.90% | 93 | 1.12E-03 | 14 | 6.04% | 625 | 7.53E-03 | 22 | 3.30% | 342 | 4.12E-03 |
| 7 | 3.79% | 392 | 4.72E-03 | 15 | 7.01% | 726 | 8.74E-03 | 23 | 2.46% | 255 | 3.07E-03 |
| 8 | 7.76% | 803 | 9.68E-03 | 16 | 7.14% | 739 | 8.91E-03 | 24 | 1.87% | 193 | 2.33E-03 |
| | | | | | | | | Total | | 10,351 | |

**2030 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_SB_MAT**

| Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile | Hour | % Per Hour | VPH | g/mile |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.15% | 119 | 1.44E-03 | 9 | 7.11% | 736 | 8.92E-03 | 17 | 7.39% | 765 | 9.27E-03 |
| 2 | 0.42% | 43 | 5.24E-04 | 10 | 4.39% | 454 | 5.50E-03 | 18 | 8.18% | 847 | 1.03E-02 |
| 3 | 0.40% | 42 | 5.08E-04 | 11 | 4.66% | 483 | 5.85E-03 | 19 | 5.70% | 590 | 7.15E-03 |
| 4 | 0.26% | 27 | 3.26E-04 | 12 | 5.89% | 609 | 7.38E-03 | 20 | 4.27% | 442 | 5.36E-03 |
| 5 | 0.49% | 51 | 6.17E-04 | 13 | 6.15% | 637 | 7.72E-03 | 21 | 3.25% | 337 | 4.08E-03 |
| 6 | 0.90% | 93 | 1.13E-03 | 14 | 6.04% | 625 | 7.57E-03 | 22 | 3.30% | 342 | 4.14E-03 |
| 7 | 3.79% | 392 | 4.75E-03 | 15 | 7.01% | 726 | 8.79E-03 | 23 | 2.46% | 255 | 3.09E-03 |
| 8 | 7.76% | 803 | 9.73E-03 | 16 | 7.14% | 739 | 8.96E-03 | 24 | 1.87% | 193 | 2.34E-03 |
| | | | | | | | | Total | | 10,351 | |

**Moffett Specific Plan, Sunnyvale, CA - N Mathilda Avenue Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (1.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 1.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

## Construction Residential MEI Cancer Risk Maximum Concentrations

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0000 | 0.0006 | 0.0482 |

## Construction Residential MEI PM2.5 Maximum Concentrations

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0008 | 0.0008 | 0.0000 |

**Moffett Specific Plan, Sunnyvale, CA - N Mathilda Avenue Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (4.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 4.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

## Construction Residential MEI Cancer Risk Maximum Concentrations

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0001 | 0.0040 | 0.0051 |

## Construction Residential MEI PM2.5 Maximum Concentrations

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0077 | 0.0075 | 0.0002 |

**Moffett Specific Plan, Sunnyvale, CA - N Mathilda Avenue Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (7.6 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 7.6 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0001 | 0.0040 | 0.0051 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0076 | 0.0074 | 0.0002 |

**Moffett Specific Plan, Sunnyvale, CA - N Mathilda Avenue Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 1.5 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* | 2030 | 10 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0002 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0000 | 0.0006 | 0.0482 | 0.002 | 0.001 | 0.0027 | 0.00 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0000 | 0.0006 | 0.0482 | 0.002 | 0.001 | 0.0027 | 0.00 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0004 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0000 | 0.0006 | 0.0482 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.01 | 0.002 | 0.012 | **0.02** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Maximum Total PM2.5 |
|---|---|---|
| 0.00000 | 0.00 | 0.00 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - N Mathilda Avenue Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 4.5 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* | 2030 | 10 | 0.0001 | 0.0040 | 0.0051 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0001 | 0.0040 | 0.0051 | 0.013 | 0.004 | 0.0003 | 0.02 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0001 | 0.0040 | 0.0051 | 0.013 | 0.004 | 0.0003 | 0.02 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.06 | 0.017 | 0.001 | **0.08** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00002 | 0.01 | 0.01 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - N Mathilda Avenue Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 7.6 meter receptor height**
**30 Year Residential Exposure**

### Cancer Risk Calculation Method

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

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

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

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

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

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

**Values**

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

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

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

| Maximum - Exposure Information | | | | | Concentration (ug/m3) | | | Cancer Risk (per million) | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Year | Exposure Duration (years) | Age | Year | Age Sensitivity Factor | DPM | Exhaust TOG | Evaporative TOG | DPM | Exhaust TOG | Evaporative TOG | |
| 0 | 0.25 | -0.25 - 0* | 2030 | 10 | 0.0001 | 0.0040 | 0.0051 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0001 | 0.0040 | 0.0051 | 0.013 | 0.004 | 0.0003 | 0.02 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0001 | 0.0040 | 0.0051 | 0.013 | 0.004 | 0.0003 | 0.02 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0001 | 0.0040 | 0.0051 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0001 | 0.0040 | 0.0051 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.06 | 0.017 | 0.001 | **0.08** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00002 | 0.01 | 0.01 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Caribbean Drive Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (1.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 1.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0000 | 0.0014 | 0.0018 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0027 | 0.0027 | 0.0001 |

**Moffett Specific Plan, Sunnyvale, CA - Caribbean Drive Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (4.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 4.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0000 | 0.0012 | 0.0015 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0023 | 0.0022 | 0.0001 |

**Moffett Specific Plan, Sunnyvale, CA - Caribbean Drive Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (7.6 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 7.6 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0000 | 0.0012 | 0.0015 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0022 | 0.0022 | 0.0001 |

**Moffett Specific Plan, Sunnyvale, CA - Caribbean Drive Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 1.5 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* | 2030 | 10 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0000 | 0.0014 | 0.0018 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0000 | 0.0014 | 0.0018 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0000 | 0.0014 | 0.0018 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0000 | 0.0014 | 0.0018 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.02 | 0.006 | 0.000 | **0.03** |

| Maximum Hazard Index | Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00001 | 0.00 | 0.00 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Caribbean Drive Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 4.5 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* | 2030 | 10 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0000 | 0.0012 | 0.0015 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0000 | 0.0012 | 0.0015 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.01 | 0.005 | 0.000 | **0.02** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00000 | 0.00 | 0.00 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Caribbean Drive Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 7.6 meter receptor height**
**30 Year Residential Exposure**

### Cancer Risk Calculation Method

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

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

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

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

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

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

**Values**

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

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

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

| Maximum - Exposure Information | | | | | Concentration (ug/m3) | | | Cancer Risk (per million) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Year | Exposure Duration (years) | Age | Year | Age Sensitivity Factor | DPM | Exhaust TOG | Evaporative TOG | DPM | Exhaust TOG | Evaporative TOG | TOTAL |
| 0 | 0.25 | -0.25 - 0* | 2030 | 10 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0000 | 0.0012 | 0.0015 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0000 | 0.0012 | 0.0015 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0000 | 0.0012 | 0.0015 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0000 | 0.0012 | 0.0015 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.01 | 0.005 | 0.000 | **0.02** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00000 | 0.00 | 0.00 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Java Drive Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (1.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 1.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0001 | 0.0073 | 0.0092 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0138 | 0.0134 | 0.0004 |

**Moffett Specific Plan, Sunnyvale, CA - Java Drive Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (4.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 4.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0002 | 0.0134 | 0.0170 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0255 | 0.0247 | 0.0007 |

**Moffett Specific Plan, Sunnyvale, CA - Java Drive Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (7.6 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 7.6 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0002 | 0.0093 | 0.0118 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0177 | 0.0172 | 0.0005 |

**Moffett Specific Plan, Sunnyvale, CA - Java Drive Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 1.5 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* | 2030 | 10 | 0.0001 | 0.0073 | 0.0092 | 0.002 | 0.001 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0001 | 0.0073 | 0.0092 | 0.021 | 0.007 | 0.0005 | 0.03 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0001 | 0.0073 | 0.0092 | 0.021 | 0.007 | 0.0005 | 0.03 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0001 | 0.0073 | 0.0092 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0001 | 0.0073 | 0.0092 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.10 | 0.031 | 0.002 | **0.13** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00003 | 0.01 | 0.01 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Java Drive Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 4.5 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* | 2030 | 10 | 0.0002 | 0.0134 | 0.0170 | 0.003 | 0.001 | 0.0001 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0002 | 0.0134 | 0.0170 | 0.038 | 0.013 | 0.0009 | 0.05 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0002 | 0.0134 | 0.0170 | 0.038 | 0.013 | 0.0009 | 0.05 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0002 | 0.0134 | 0.0170 | 0.006 | 0.002 | 0.0001 | 0.01 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0002 | 0.0134 | 0.0170 | 0.001 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.17 | 0.057 | 0.004 | **0.23** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00005 | 0.02 | 0.03 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Java Drive Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 7.6 meter receptor height**
**30 Year Residential Exposure**

### Cancer Risk Calculation Method

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

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

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

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

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

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

**Values**

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

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

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

| Maximum - Exposure Information | | | | | Concentration (ug/m3) | | | Cancer Risk (per million) | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Year | Exposure Duration (years) | Age | Year | Age Sensitivity Factor | DPM | Exhaust TOG | Evaporative TOG | DPM | Exhaust TOG | Evaporative TOG | |
| 0 | 0.25 | -0.25 - 0* | 2030 | 10 | 0.0002 | 0.0093 | 0.0118 | 0.002 | 0.001 | 0.0001 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0002 | 0.0093 | 0.0118 | 0.030 | 0.009 | 0.0007 | 0.04 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0002 | 0.0093 | 0.0118 | 0.030 | 0.009 | 0.0007 | 0.04 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0002 | 0.0093 | 0.0118 | 0.005 | 0.001 | 0.0001 | 0.01 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0002 | 0.0093 | 0.0118 | 0.001 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.13 | 0.039 | 0.003 | **0.18** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Maximum Total PM2.5 |
|---|---|---|
| 0.00004 | 0.02 | 0.02 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Highway 237 Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (1.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 1.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0023 | 0.0834 | 0.0624 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.1077 | 0.1021 | 0.0056 |

**Moffett Specific Plan, Sunnyvale, CA - Highway 237 Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (4.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 4.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0019 | 0.0652 | 0.0488 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0843 | 0.0799 | 0.0044 |

**Moffett Specific Plan, Sunnyvale, CA - Highway 237 Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (7.6 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 7.6 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0013 | 0.0403 | 0.0301 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0521 | 0.0493 | 0.0027 |

**Moffett Specific Plan, Sunnyvale, CA - Highway 237 Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 1.5 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* | 2030 | 10 | 0.0023 | 0.0834 | 0.0624 | 0.031 | 0.006 | 0.0003 | 0.04 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0023 | 0.0834 | 0.0624 | 0.374 | 0.078 | 0.0034 | 0.46 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0023 | 0.0834 | 0.0624 | 0.374 | 0.078 | 0.0034 | 0.46 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0023 | 0.0834 | 0.0624 | 0.059 | 0.012 | 0.0005 | 0.07 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0023 | 0.0834 | 0.0624 | 0.007 | 0.001 | 0.0001 | 0.01 |
| **Total Increased Cancer Risk** | | | | | | | | 1.70 | 0.354 | 0.016 | **2.07** |

| Maximum Hazard Index | Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00046 | 0.10 | 0.11 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Highway 237 Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 4.5 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* | 2030 | 10 | 0.0019 | 0.0652 | 0.0488 | 0.026 | 0.005 | 0.0002 | 0.03 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0019 | 0.0652 | 0.0488 | 0.310 | 0.061 | 0.0027 | 0.37 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0019 | 0.0652 | 0.0488 | 0.310 | 0.061 | 0.0027 | 0.37 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0019 | 0.0652 | 0.0488 | 0.049 | 0.010 | 0.0004 | 0.06 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0019 | 0.0652 | 0.0488 | 0.005 | 0.001 | 0.0000 | 0.01 |
| **Total Increased Cancer Risk** | | | | | | | | 1.41 | 0.277 | 0.012 | **1.70** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00038 | 0.08 | 0.08 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Highway 237 Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 7.6 meter receptor height**
**30 Year Residential Exposure**

### Cancer Risk Calculation Method

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

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

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

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

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

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

**Values**

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

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

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

| Maximum - Exposure Information | | | | | Concentration (ug/m3) | | | Cancer Risk (per million) | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Year | Exposure Duration (years) | Age | Year | Age Sensitivity Factor | DPM | Exhaust TOG | Evaporative TOG | DPM | Exhaust TOG | Evaporative TOG | |
| 0 | 0.25 | -0.25 - 0* | 2030 | 10 | 0.0013 | 0.0403 | 0.0301 | 0.018 | 0.003 | 0.0001 | 0.02 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0013 | 0.0403 | 0.0301 | 0.220 | 0.038 | 0.0017 | 0.26 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0013 | 0.0403 | 0.0301 | 0.220 | 0.038 | 0.0017 | 0.26 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0013 | 0.0403 | 0.0301 | 0.035 | 0.006 | 0.0003 | 0.04 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0013 | 0.0403 | 0.0301 | 0.004 | 0.001 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 1.00 | 0.171 | 0.008 | **1.18** |

| Maximum Hazard Index | Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00027 | 0.05 | 0.05 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Highway 101 Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (1.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 1.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

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

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0001 | 0.0000 | 0.0000 |

**Moffett Specific Plan, Sunnyvale, CA - Highway 101 Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (4.5 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 4.5 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0000 | 0.0001 | 0.0001 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0002 | 0.0001 | 0.0000 |

**Moffett Specific Plan, Sunnyvale, CA - Highway 101 Project Trips - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**at Construction Residential MEI Receptor (7.6 meter receptor height)**

| | |
|---|---|
| **Emission Year** | 2030 |
| **Receptor Information** | Construction Residential MEI receptor |
| Number of Receptors | 418 |
| Receptor Height | 7.6 meters |
| Receptor Distances | At Construction Residential MEI location |
| | |
| **Meteorological Conditions** | |
| BAAQMD Moffett Field Met Data | 2013-2017 |
| Land Use Classification | Urban |
| Wind Speed | Variable |
| Wind Direction | Variable |

**Construction Residential MEI Cancer Risk Maximum Concentrations**

| Meteorological Data Years | Concentration (µg/m3)* | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2013-2017 | 0.0000 | 0.0001 | 0.0001 |

**Construction Residential MEI PM2.5 Maximum Concentrations**

| Meteorological Data Years | PM2.5 Concentration (µg/m3)* | | |
|---|---|---|---|
| | Total PM2.5 | Fugitive PM2.5 | Vehicle PM2.5 |
| 2013-2017 | 0.0002 | 0.0001 | 0.0000 |

**Moffett Specific Plan, Sunnyvale, CA - Highway 101 Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 1.5 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* | 2030 | 10 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0000 | 0.0000 | 0.0000 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.00 | 0.000 | 0.000 | **0.00** |

| Maximum Hazard Index | Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00000 | 0.00 | 0.00 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Highway 101 Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 4.5 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* | 2030 | 10 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.00 | 0.001 | 0.000 | **0.00** |

| Maximum Hazard Index | Fugitive PM2.5 | Total PM2.5 |
|---|---|---|
| 0.00000 | 0.00 | 0.00 |

* Third trimester of pregnancy

**Moffett Specific Plan, Sunnyvale, CA - Highway 101 Project Trips Cancer Risk**
**Impacts at Construction Residential MEI - 7.6 meter receptor height**
**30 Year Residential Exposure**

### Cancer Risk Calculation Method

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

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

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

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

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

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

**Values**

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

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

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

| Maximum - Exposure Information | | | | | Concentration (ug/m3) | | | Cancer Risk (per million) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Year | Exposure Duration (years) | Age | Year | Age Sensitivity Factor | DPM | Exhaust TOG | Evaporative TOG | DPM | Exhaust TOG | Evaporative TOG | TOTAL |
| 0 | 0.25 | -0.25 - 0* | 2030 | 10 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 1 | 1 | 0 - 1 | 2030 | 10 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 2 | 1 | 1 - 2 | 2031 | 10 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 3 | 1 | 2 - 3 | 2032 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 4 | 1 | 3 - 4 | 2033 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 5 | 1 | 4 - 5 | 2034 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 6 | 1 | 5 - 6 | 2035 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 7 | 1 | 6 - 7 | 2036 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 8 | 1 | 7 - 8 | 2037 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 9 | 1 | 8 - 9 | 2038 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 10 | 1 | 9 - 10 | 2039 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 11 | 1 | 10 - 11 | 2040 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 12 | 1 | 11 - 12 | 2041 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 13 | 1 | 12 - 13 | 2042 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 14 | 1 | 13 - 14 | 2043 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 15 | 1 | 14 - 15 | 2044 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 16 | 1 | 15 - 16 | 2045 | 3 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 17 | 1 | 16-17 | 2046 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 18 | 1 | 17-18 | 2047 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 19 | 1 | 18-19 | 2048 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 20 | 1 | 19-20 | 2049 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 21 | 1 | 20-21 | 2050 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 22 | 1 | 21-22 | 2051 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 23 | 1 | 22-23 | 2052 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 24 | 1 | 23-24 | 2053 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 25 | 1 | 24-25 | 2054 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 26 | 1 | 25-26 | 2055 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 27 | 1 | 26-27 | 2056 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 28 | 1 | 27-28 | 2057 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 29 | 1 | 28-29 | 2058 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| 30 | 1 | 29-30 | 2059 | 1 | 0.0000 | 0.0001 | 0.0001 | 0.000 | 0.000 | 0.0000 | 0.00 |
| **Total Increased Cancer Risk** | | | | | | | | 0.00 | 0.001 | 0.000 | **0.00** |

| Maximum Hazard Index | Maximum Fugitive PM2.5 | Maximum Total PM2.5 |
|---|---|---|
| 0.00000 | 0.00 | 0.00 |

* Third trimester of pregnancy