APPENDIX A

Air Quality and

Greenhouse Gas Study

This page intentionally left blank

752 Chestnut Street
Radio Service Facility Project

Air Quality and Greenhouse Gas Study

prepared for

Circlepoint
46 South 1st Street
San José, California 95113
Contact: Andrew Metzger, Project Manager

prepared by

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

December 2020

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

This page intentionally left blank

752 Chestnut Street Radio Service Facility Project

Air Quality and Greenhouse Gas Study

prepared for

Circlepoint
46 South 1st Street
San José, California 95113
Contact: Andrew Metzger, Project Manager

prepared by

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

December 2020

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

This report prepared on 50 percent recycled paper with 50 percent post-consumer content.

Table of Contents

Tables

Figures

Appendices

1 Project Description

1.1 Introduction

This study analyzes the potential air quality and greenhouse gas (GHG) impacts of the proposed 752 Chestnut Street Radio Facility Project (herein referred to as "project" or" proposed project") located in the City of Redwood City, San Mateo County, California. Rincon Consultants, Inc. (Rincon) prepared this study for Circlepoint for use in support of environmental documentation being prepared for the County of San Mateo for the project pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the project's air quality and GHG impacts related to both temporary construction activity and long-term operation of the project. The conclusions of this study are summarized in Table 1.

Table 1 Summary of Impacts

Impact Statement	Proposed Project's Level of Significance	Applicable Recommendations
Air Quality		
Would the Project conflict with or obstruct implementation of the applicable air quality plan?	Less than significant impact	None
Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?	Less than significant impact	None
Would the Project expose sensitive receptors to substantial pollutant concentrations?	Less than significant impact	None
Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less than significant impact	None
Greenhouse Gas Emissions		
Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than significant impact	None
Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less than significant impact	None

1.2 Project Summary

1.2.1 Project Location

The project site is located at 752 Chestnut Street in the eastern portion of the City of Redwood City in San Mateo County. The project would be located on the southwestern corner of the Grant Corporation parcel (Assessor's Parcel Number 054-063-180), which is an approximately 5.71-acre public works facility on the southeastern corner of Chestnut Street and Spring Street owned by San Mateo County. Adjacent land uses include multi-family and single-family residential development to the south and the other portions of the Grant Corporation Yard to the north and east. Chestnut

Street borders the project site to the west. Figure 1 shows the project site's regional location and Figure 2 shows an aerial view of the project site and surrounding area.

1.2.2 Project Description

The proposed project would involve construction and operation of a radio service facility with a parking lot on the existing Grant Yard Corporation site. The project would include demolition of the existing general light industrial buildings onsite (approximately 3,095 square feet square feet)[1] and development of a two-story, 13,000 square feet radio service facility that would include a radio shop, conference rooms, and office space on the first floor. Parking would also be provided in an enclosed structure on the first floor with nine vehicle spaces. Three additional spaces would be provided in a surface parking lot, with two of those spaces being electric vehicle (EV) charging spaces and one being an ADA space. The radio service facility would be accessible via an existing driveway off of Chestnut Street.

1.2.3 Construction

Project construction is expected to commence in February 2021 with full buildout completed by January 2023. Site preparation and demolition would occur in February 2021, followed by grading in April 2021. Building construction would begin in April 2021 and last approximately 13 months. Asphalt paving and architectural coating would occur in April 2022. The project would require export of approximately 450 cubic yards of materials and import of approximately 400 cubic yards of material during grading.

1.2.4 Sustainability Features

The project would include several green building features, namely the achievement of at minimum a Silver level certification by the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) v4 program. Specific green building features to be implemented include placing parking under cover to reduce urban heat island effect and low flow plumping. All landscaping would be watered with a controlled and metered irrigation system. There would be a total of two electric vehicle (EV) parking spaces and seven bicycle parking spaces.

[1] The building footprint of both existing buildings was estimated using Google Earth.

Figure 1 Regional Location

Basemap provided by Esri and its licensors © 2020.

Project Location

N

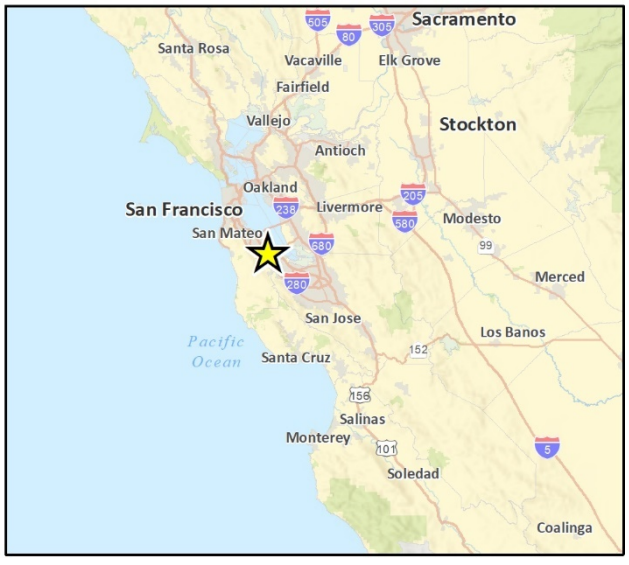

Figure 2 Project Site

Imagery provided by Microsoft Bing and its licensors © 2020.

FigX Project Location

2 Air Quality

2.1 Environmental and Regulatory Setting

2.1.1 Local Climate and Meteorology

The project site is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). As the local air quality management agency, the BAAQMD is required to monitor air pollutant levels to ensure that state and federal air quality standards are met and, if they are not met, to develop strategies to meet the standards.

Regional Climate and Air Pollution in the SFBAAB

The City of Redwood City is located in the along the central eastern side of the Peninsula of the SFBAAB and its proximity to the Pacific Ocean and San Francisco Bay influence the climate in the city and surrounding region. The Santa Cruz Mountains travel up the middle of the Peninsula and create a blocking effect that that leads to higher air pollution potential on the eastern side. The average daily maximum and minimum summer temperatures (i.e., July) in Redwood City 82.2 degrees Fahrenheit (°F) and 54.6°F, respectively, and the average daily maximum and minimum winter (i.e., December) temperatures are 58.7F and 39.9°F, respectively. Average annual precipitation is 19.2 inches (Western Regional Climate Center [WRCC] 2020). Winds play a large role in controlling climate in the area, and the prevailing winds come from the west with annual average speeds ranging between five and ten miles per hour in this region (BAAQMD 2017a).

Air pollutant emissions in the SFBAAB are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are distributed widely and include those such as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be operated legally on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment such as when high winds suspend fine dust particles (BAAQMD 2017a).

2.1.2 Air Pollutants of Primary Concern

Primary criteria pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere. Primary criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with diameters of up to ten microns (PM_{10}) and up to 2.5 microns ($PM_{2.5}$), and lead (Pb). Ozone (O_3) is considered a secondary criteria pollutant because it is created by atmospheric chemical and photochemical reactions between volatile organic compounds (VOC) and nitrogen oxides (NO_X). The following subsections describe the characteristics, sources, and health and atmospheric effects of critical air contaminants.

Ozone

O_3 is produced by a photochemical reaction (triggered by sunlight) between NO_X and VOC.[2] NO_X are formed during the combustion of fuels, while VOC are formed during combustion and evaporation of organic solvents. Because O_3 requires sunlight to form, it usually occurs in substantial concentrations between the months of April and October. O_3 is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to O_3 include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide

CO is a local pollutant that is found in high concentrations only near fuel combustion equipment and other sources of CO. The primary source of CO, a colorless, odorless, poisonous gas, is automobile traffic. Therefore, elevated concentrations are usually only found near areas of high traffic volumes. CO's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulty in people with chronic diseases, reduced lung capacity, and impaired mental abilities.

Nitrogen Dioxide

NO_2 is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. NO_2 absorbs blue light, gives a reddish-brown cast to the atmosphere, and reduces visibility. It can also contribute to the formation of ozone/smog and acid rain.

Suspended Particulates

Atmospheric particulate matter is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes, and mists. The particulates that are of particular concern are PM_{10} (small particulate matter which measures no more than 10 microns in diameter) and $PM_{2.5}$ (fine particulate matter which measures no more than 2.5 microns in diameter). The characteristics, sources, and potential health effects associated with PM_{10} and $PM_{2.5}$ can be different. Major man-made sources of PM_{10} are agricultural operations, industrial processes, combustion of fossil fuels, construction, demolition operations, and entrainment of road dust into the atmosphere. Natural sources include windblown dust, wildfire smoke, and sea spray salt. The finer $PM_{2.5}$ particulates are generally associated with combustion processes as well as formation in the atmosphere as a secondary pollutant through chemical reactions. $PM_{2.5}$ is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health

[2] CARB defines VOC and ROG similarly as, "any compound of carbon excluding CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions (CARB 2009). For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions and the term ROG is used in this report. The BAAQMD uses the term VOC to denote organic precursors.

by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Lead

Pb is a metal found naturally in the environment, as well as in manufacturing products. Pb occurs in the atmosphere as particulate matter. The major sources of Pb emissions historically have been mobile and industrial sources. In the early 1970s, the United States Environmental Protection Agency (U.S. EPA) set national regulations to gradually reduce the Pb content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The U.S. EPA completed the ban prohibiting the use of leaded gasoline in highway vehicles in December 1995. As a result of the U.S. EPA's regulatory efforts to remove lead from gasoline, atmospheric lead concentrations have declined substantially over the past several decades. The most dramatic reductions in Pb emissions occurred prior to 1990 due to the removal of Pb from gasoline sold for most highway vehicles. Pb emissions were further reduced substantially between 1990 and 2008, with reductions occurring in the metals industries in part due to national emissions standards for hazardous air pollutants. As a result of phasing out leaded gasoline, metal processing is currently the primary source of Pb emissions. The highest levels of Pb in the air are generally found near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. Lead may cause a range of health effects, including anemia, kidney disease, and neuromuscular and neurological dysfunction (in severe cases).

Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or serious illness or that may pose a present or potential hazard to human health. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. One of the main sources of TACs in California is diesel engines that emit exhaust containing solid material known as diesel particulate matter (DPM; California Air Resources Board [CARB] 2011). TACs are different than the criteria pollutants previously discussed because ambient air quality standards have not been established for TACs. TACs occurring at extremely low levels may still cause health effects, and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic risk and by chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health.

2.1.3 Air Quality Regulation

The federal and state governments have established ambient air quality standards for the protection of public health. The U.S. EPA is the federal agency designated to administer air quality regulation, while the CARB is the state equivalent within the California EPA. County-level Air Quality Management Districts (AQMDs) provide local management of air quality. CARB has established air quality standards and is responsible for the control of mobile emission sources, while the local AQMDs are responsible for enforcing standards and regulating stationary sources. CARB has established 15 air basins statewide, including the SFBAAB.

The U.S. EPA has set primary national ambient air quality standards (NAAQS) for O_3, CO, NO_2, PM_{10}, $PM_{2.5}$, SO_2, and Pb. Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, California has established health-

based ambient air quality standards (known as the California ambient air quality standards [CAAQS]) for these and other pollutants, some of which are more stringent than the federal standards. Table 2 lists the current federal and state standards for regulated pollutants.

Table 2 Federal and State Ambient Air Quality Standards

Pollutant	Federal Standard	California Standard
Ozone	0.070 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.070 ppm (8-hr avg)
Carbon Monoxide	35.0 ppm (1-hr avg) 9.0 ppm (8-hr avg)	20.0 ppm (1-hr avg) 9.0 ppm (8-hr avg)
Nitrogen Dioxide	0.100 ppm (1-hr avg) 0.053 ppm (annual avg)	0.18 ppm (1-hr avg) 0.030 ppm (annual avg)
Sulfur Dioxide	0.075 ppm (1-hr avg) 0.5 ppm (3-hr avg) 0.14 ppm (24-hr avg) 0.030 ppm (annual avg)	0.25 ppm (1-hr avg) 0.04 ppm (24-hr avg)
Lead	0.15 μg/m^3 (rolling 3-month avg) 1.5 μg/m^3 (calendar quarter)	1.5 μg/m^3 (30-day avg)
Particulate Matter (PM_{10})	150 μg/m^3 (24-hr avg)	50 μg/m^3 (24-hr avg) 20 μg/m^3 (annual avg)
Particulate Matter ($PM_{2.5}$)	35 μg/m^3 (24-hr avg) 12 μg/m^3 (annual avg)	12 μg/m^3 (annual avg)
Visibility-Reducing Particles	No Federal Standards	Extinction coefficient of 0.23 per kilometer – visibility of ten miles or more (0.07 - 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape. (8-hr avg)
Sulfates	No Federal Standards	25 μg/m^3 (24-hr avg)
Hydrogen Sulfide	No Federal Standards	0.03 ppm (1-hr avg)
Vinyl Chloride	No Federal Standards	0.01 ppm (24-hr avg)

ppm= parts per million; μg/m^3 = micrograms per cubic meter

Source: CARB 2016

The BAAQMD is the designated air quality control agency in the SFBAAB. The SFBAAB is in nonattainment for the federal standards for O_3 and $PM_{2.5}$ and in nonattainment for the state standard for O_3, $PM_{2.5}$, and PM_{10}. The SFBAAB is designated unclassifiable or in attainment for all other federal and state standards.

2.1.4 Current Air Quality

The BAAQMD operates a network of air quality monitoring stations throughout the SFBAAB. The purpose of the monitoring stations is to measure ambient concentrations of pollutants and to determine whether ambient air quality meets the California and federal standards. The SFBAAB monitoring station closest to the project site is the Redwood City station at 897 Barron Avenue, which is located at approximately 1.2 miles east of the project site. This station measures O_3, NO_x, CO, $PM_{2.5}$, toxics, and ultra-fine particulate matter. Data from this station was used to determine O_3,

NO_x, and $PM_{2.5}$ concentrations in the project vicinity (CARB 2020a; BAAQMD 2020). Note that this monitoring station does not measure PM_{10} and no other nearby monitoring stations measure PM_{10}

Table 3 indicates the number of days that each of the federal and state standards has been exceeded at this station in each year from 2017 to 2019 (CARB 2020a; BAAQMD 2020). The data indicates that the federal and state eight-hour O_3 standards were exceeded two times in 2017 and 2019. In addition, the state and federal $PM_{2.5}$ standard was exceeded was exceeded in 2017 and 2018. As shown in Table 3, no other state or federal standards were exceeded at this monitoring station (CARB 2020a).

Table 3 Ambient Air Quality – Redwood City Station (2017-2019)

Pollutant	2017	2018	2019
Ozone (ppm), Eight-Hour Average[1]	0.087	0.050	0.077
Number of days of state exceedances (>0.070 ppm)	2	0	2
Number of days of federal exceedances (>0.070 ppm)	2	0	2
Ozone (ppm), Worst Hour[1]	0.115	0.067	0.083
Number of days of state exceedances (>0.09 ppm)	2	0	0
Nitrogen Dioxide (ppm), Worst Hour[1]	0.067	0.077	0.055
Number of days of state exceedances (>0.18 ppm)	0	0	0
Particulate Matter <10 microns ($\mu g/m^3$), Worst 24 Hours[2]	N/A	N/A	N/A
Number of days of state exceedances (>50 $\mu g/m^3$)	N/A	N/A	N/A
Number of days of federal exceedances (>150 $\mu g/m^3$)	N/A	N/A	N/A
Particulate Matter <2.5 microns ($\mu g/m^3$), Worst 24 Hours[1]	60.8	120.9	29.5
Number of days of state exceedances (>35 $\mu g/m^3$)	6	14	0

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter, N/A = Information Not Available
Source: CARB 2020, BAAQMD 2020 for NO_2

Bay Area Air Quality Management Plan

The BAAQMD is the agency primarily responsible for assuring national and state ambient air quality standards are attained and maintained in the SFBAAB. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, and conducting public education campaigns, as well as many other activities. The BAAQMD has jurisdiction over much of the nine-county Bay Area, including the southern portion of Sonoma County and western portion of Solano County.

The BAAQMD adopted the 2017 Clean Air Plan (2017 Plan) as an update to the 2010 Clean Air Plan. The 2017 Plan provides a regional strategy to protect public health and protect the climate. To fulfill state O_3 planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of O_3 precursors—ROG and NO_X—and reduce transport of O_3 and its precursors to

neighboring air basins. In addition, the 2017 Plan builds upon and enhances the BAAQMD's efforts to reduce emissions of fine particulate matter and TACs (BAAQMD 2017a).

Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect people most susceptible to respiratory distress, such as children under 14; persons over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are therefore residences, schools, and hospitals. The sensitive receptors nearest to the project site are single family and multi-family residences adjacent to the southern project site boundary.

2.2 Impact Analysis

2.2.1 Methodology

The project's construction and operational emissions were estimated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod uses project-specific information, including the project's land uses, square footages for different uses, and location, to estimate a project's construction and operational emissions.

Construction emissions modeled include emissions generated by construction equipment used on the site and emissions generated by vehicle trips associated with construction, such as worker and vendor trips. The construction schedule was based on applicant-provided data, while the construction equipment list was generated by CalEEMod using default values. In addition, according to applicant-provided data, approximately 450 cy of soil would be exported from the project site and 400 cy of soil would be imported from off-site sources. It was assumed that project construction would comply with applicable regulatory standards, including BAAQMD Regulation 8, Rule 3 (Architectural Coatings) and Rule 1113 (Architectural Coatings). Project construction is expected to commence in February 2021 with the project fully built out and operating in January 2023 CalEEMod defaults for acreages graded were used to provide a conservative estimate of emissions from site preparation and grading activities.

Operational emissions modeled include mobile source emissions (i.e., vehicle emissions), energy emissions, area source emissions, and stationary source emissions. Although the site currently operates as a general light industrial development, existing emissions were not accounted for in this analysis in order to provide a conservative project emissions estimate. Emissions attributed to energy use include emissions from natural gas consumption for space and water heating. Area source emissions are generated by landscape maintenance equipment, consumer products, and architectural coatings. Mobile source emissions consist of emissions generated by vehicle trips to and from the project site. The project would result in decreased daily trips per the County of San Mateo. However, it was conservatively assumed that project generated trips would be the same as under existing conditions. The project would include a 200-kilowatt (kW) emergency generator, which would be powered by an approximately 268 horsepower (HP) diesel engine. The emergency generator would be located on the southeastern corner of the project site and is considered a new stationary source as defined by BAAQMD.

2.2.2 Significance Thresholds

To determine whether a project would result in a significant impact to air quality, Appendix G of the *CEQA Guidelines* requires consideration of whether a project would:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard;
3. Expose sensitive receptors to substantial pollutant concentrations; or
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The BAAQMD has adopted guidelines for quantifying and determining the significance of air quality emissions in its May 2017 *CEQA Air Quality Guidelines*.

BAAQMD Significance Thresholds

The BAAQMD recommends that lead agencies determine appropriate air quality emissions thresholds of significance based on substantial evidence in the record. The BAAQMD developed screening criteria in the May 2017 *CEQA Air Quality Guidelines* to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant air quality impacts. Table 4 shows the significance thresholds for construction and operational-related criteria air pollutant and precursor emissions being used for the purposes of this analysis. These thresholds represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. For the purposes of this analysis, the project would result in a significant impact if construction or operational emissions would exceed thresholds as shown below.

Table 4 BAAQMD Air Quality Significance Thresholds

Pollutant/Precursor	Construction Emissions (average lbs./day)[1]	Operational Emissions (average lbs./day)
ROG	54	54
NO_X	54	54
PM_{10}	82 (exhaust)	82
$PM_{2.5}$	54 (exhaust)	54

[1] Note the thresholds for PM_{10} and $PM_{2.5}$ apply to construction exhaust emissions only.

Notes: lbs./day = pounds per day; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ROG = reactive organic gases

Source: BAAQMD 2017a

The BAAQMD recommends that specific construction measures (as listed in Table 8-2 of the BAAQMD *CEQA Air Quality Guidelines*) be implemented to control emissions, whether or not significance thresholds are exceeded. The following construction measures would be implemented by the project applicant and were included in the emissions modeling for the project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day;
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour
- 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 12, Section 2485 of California Code Regulations). Clear signage shall be provided for construction workers at all access points.

BAAQMD provides a preliminary screening methodology to conservatively determine whether a proposed project would exceed CO thresholds. If the following criteria are met, a project would result in a less than significant impact related to local CO concentrations:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

In the absence of a qualified Community Risk Reduction Plan, BAAQMD has established the following *Thresholds of Significance* for local community risks and hazards associated with TACs and $PM_{2.5}$ for assessing individual source impacts at a local level. Impacts would be significant if

- The Project would result in an increased cancer risk of > 10 in one-millions
- The Project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 1.0 Hazard Index
- The Project would result in an ambient $PM_{2.5}$ concentration increase of > 0.3 $\mu g/m^3$ annual average

A project would be considered to have a cumulatively considerable impact if the aggregate total of current and proposed TAC sources within a 1,000 feet radius of the project fence-line in addition to the project would exceed the *Cumulative Thresholds of Significance*. Impacts would be significant if:

- The Project would result in an increased cancer risk of > 100 in one million
- The Project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 10 Hazard Index
- The Project would result in an ambient $PM_{2.5}$ concentration increase of > 0.8 $\mu g/m^3$ annual average

Excess cancer risks are defined as those occurring in excess of or above and beyond those risks that would normally be associated with a location or activity if toxic pollutants were not present. Non-

carcinogenic health effects are expressed as a hazard index, which is the ratio of expected exposure levels to an acceptable reference exposure level.

The BAAQMD provides minimum distances for siting of new odor sources shown in Table 5. A significant impact would occur if the project would result in other emissions (such as odors) affecting substantial numbers of people or would site a new odor source as shown in Table 5 within the specified distances of existing receptors.

Table 5 BAAQMD Odor Source Thresholds

Odor Source	Minimum Distance for Less than Significant Odor Impacts (in miles)
Wastewater treatment plant	2
Wastewater pumping facilities	1
Sanitary Landfill	2
Transfer Station	1
Composting Facility	1
Petroleum Refinery	2
Asphalt Batch Plant	2
Chemical Manufacturing	2
Fiberglass Manufacturing	1
Painting/Coating Operations	1
Rendering Plant	2

Source: BAAQMD 2017a

2.2.3 Impact Analysis

Threshold 1:	Would the project conflict with or obstruct implementation of the applicable air quality plan?

Impact AQ-1 THE PROJECT WOULD NOT CONFLICT WITH OR OBSTRUCT IMPLEMENTATION OF THE 2017 PLAN. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The California Clean Air Act requires air districts to create a Clean Air Plan that describes how the jurisdiction will meet air quality standards. These plans must be updated every three years. The most recently adopted air quality plan for the SFBAAB is the 2017 Plan. To fulfill State O_3 planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of O_3 precursors (ROG and NO_X) and reduce the transport of O_3 and its precursors to neighboring air basins. In addition, the 2017 Plan builds upon and enhances BAAQMD's efforts to reduce emissions of $PM_{2.5}$ and TACs. The 2017 Plan does not include control measures that apply directly to individual development projects. Instead, the control strategy includes measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-greenhouse gas pollutants (BAAQMD 2017b).

The 2017 Plan focuses on two paramount goals (BAAQMD 2017b):

- Protect air quality and health at the regional and local scale by attaining all state and national air quality standards and eliminating disparities among Bay Area communities in cancer health risk from TACs; and
- Protect the climate by reducing Bay Area GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050

Under BAAQMD's methodology, a determination of consistency with the 2017 Plan should demonstrate that a project:

- Supports the primary goals of the 2017 Plan;
- Includes applicable control measures from the 2017 Plan; and
- Would not disrupt or hinder implementation of any control measures in the 2017 Plan.

A project that would not support the 2017 Plan's goals would not be considered consistent with the 2017 Plan. On an individual project basis, consistency with BAAQMD's quantitative thresholds is interpreted as demonstrating support for the 2017 Plan's goals. As shown in the discussion under Thresholds 2 and 3 (see below), the project would not result in exceedances of BAAQMD's thresholds for criteria air pollutants and thus would not conflict with the 2017 Plan's goal to attain air quality standards. In addition, the project includes features that are consistent with these goals and measures, including being an infill, redevelopment project; meeting California Green Building Standards; meeting LEED Silver-level certification; and providing seven bicycle parking spaces. Therefore, the project would not conflict with or obstruct the implementation of an applicable air quality plan and the project would have a less than significant impact.

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

Impact AQ-2 PROJECT CONSTRUCTION AND OPERATION WOULD NOT RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE OF A CRITERIA POLLUTANT FOR WHICH THE PROJECT REGION IS IN NON-ATTAINMENT UNDER AN APPLICABLE FEDERAL OR STATE AMBIENT AIR QUALITY STANDARD. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction Emissions

Project construction would involve demolition, site preparation, grading, building construction, paving, and architectural coating activities that have the potential to generate air pollutant emissions. Table 6 summarizes the estimated maximum daily emissions of ROG, NO_X, PM_{10} and $PM_{2.5}$ during project construction. As shown in Table 6, project construction emissions for all criteria pollutants would be below the BAAQMD average daily thresholds of significance; therefore, impacts would be less than significant.

Table 6 Project Construction Emissions

	Average Daily Emissions (lbs./day)					
	ROG	NO_X	CO	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	SO_X
Maximum Daily Emissions	2.6	14.7	16.6	0.8	0.7	<0.1
BAAQMD Thresholds (average daily emissions)	54	54	N/A	82	54	N/A
Threshold Exceeded?	**No**	**No**	**N/A**	**No**	**No**	**N/A**

N/A = not applicable; no BAAQMD threshold for CO or SO_X

Source: Table 2.1 "Overall Construction-mitigated" emissions. Winter emissions results are shown for all emissions. See CalEEMod worksheets in Appendix A.

Fugitive Dust

Site preparation and grading may cause wind-blown dust that could contribute particulate matter into the local atmosphere. The BAAQMD has not established a quantitative threshold for fugitive dust emissions but rather states that projects that incorporate best management practices (BMPs) for fugitive dust control during construction would have a less than significant impact related to fugitive dust emissions. The project includes implementation of these BMPs, such as watering twice per day, as discussed under *BAAQMD Significance Thresholds in Section 2.2.2;* therefore, construction-related fugitive dust emissions would be less than significant.

Operational Emissions

Long-term emissions associated with project operation are shown in Table 7. Emissions would not exceed BAAQMD daily thresholds for any criteria pollutant. Since project emissions would not exceed BAAQMD thresholds for construction or operation, the project would not violate an air quality standard or result in a cumulatively considerable net increase in criteria pollutants, and impacts would be less than significant.

Table 7 Project Operational Average Daily Emissions

	Average Daily Emissions (lbs./day)					
Sources	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_X**
Area	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
Energy	<0.1	0.1	0.1	<0.1	<0.1	<0.1
Mobile[1]	0.0	0.0	0.0	0.0	0.0	0.0
Total Project Emissions	**0.3**	**0.1**	**0.1**	**<0.1**	**<0.1**	**<0.1**
BAAQMD Thresholds	54	54	N/A	82	54	N/A
Threshold Exceeded?	No	No	N/A	No	No	N/A

[1] Project would reduce vehicle trips compared to existing conditions. There would be no mobile emissions

N/A = not applicable; no BAAQMD threshold for CO or SO_X

Source: See Table 2.2 "Overall operational-mitigated" Summer emissions for ROG, CO, PM_{10}, $PM_{2.5}$, and SO_x. See Table 2.2 "Overall operational-mitigated" Winter emissions for NO_x. See CalEEMod worksheets in Appendix A. Numbers may not add up due to rounding.

Threshold 3	Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact AQ-3 **THE PROJECT WOULD NOT INCREASE CARBON MONOXIDE CONCENTRATIONS SUCH THAT IT WOULD CREATE CARBON MONOXIDE HOTSPOTS, AND CONSTRUCTION OF THE PROJECT WOULD NOT RESULT IN EMISSIONS OF TACS SUFFICIENT TO EXCEED APPLICABLE HEALTH RISK CRITERIA. IMPACTS WOULD BE LESS THAN SIGNIFICANT.**

As discussed above, the sensitive receptors nearest to the project site are single and multi-family residences adjacent to the southern project site boundary.

Carbon Monoxide Hotspots

A CO hotspot is a localized concentration of CO that is above a CO ambient air quality standard. Localized CO hotspots can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local CO concentration exceeds the federal one-hour standard of 35.0 ppm or the federal and state eight-hour standard of 9.0 ppm (CARB 2016).

The project would include a 13,000-square feet radio service facility. Compared to the existing land use, the number of daily trips is expected to decrease with the proposed project per the County of San Mateo. Therefore, the screening thresholds listed in Section 2.2.2, *Significance Thresholds*, would not be exceeded and the impact of localized CO emissions would be less than significant.

Toxic Air Contaminants

Construction Impacts

Construction-related activities would result in temporary project-generated emissions of DPM exhaust emissions from off-road, heavy-duty diesel equipment for site preparation, grading, building construction, and other construction activities. DPM was identified as a TAC by CARB in 1998 (CARB 2017).

Generation of DPM from construction projects typically occurs in a single area for a short period. Construction of the proposed project would occur over approximately 15 months. The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of proposed construction activities (i.e., 15 months) is approximately 2 percent of the total exposure period used for health risk calculation. Current models and methodologies for conducting health-risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities, resulting in difficulties in producing accurate estimates of health risk (BAAQMD 2017a). Therefore, this analysis qualitatively discusses potential health risks associated with construction-related emissions

of TACs, focusing on construction activities most likely to generate substantial TAC emissions and the duration of such activities relative to established, longer-term health risk exposure periods.

The maximum PM_{10} and $PM_{2.5}$ emissions would occur during site preparation and grading activities. These activities would last for approximately two months. PM emissions would decrease for the remaining construction period because construction activities such as building construction and architectural coating would require less construction equipment. While the maximum DPM emissions associated with site preparation and grading activities would only occur for a portion of the overall construction period, these activities represent the maximum exposure condition for the total construction period. The duration of site preparation and grading activities would represent less than one percent of the total exposure period for a 70-year health risk calculation.[3] Therefore, DPM generated by project construction would not create conditions where the probability is greater than 10 in one million of contracting cancer for the Maximally Exposed Individual or to generate ground-level concentrations of non-carcinogenic TACs that exceed a Hazard Index greater than one for the Maximally Exposed Individual. This impact would be less than significant.

Operational Impacts

The project would include a new permitted stationary source in the form of an emergency generator with a diesel engine. The generator would be approximately 200 kW and powered by a diesel engine. The backup generator was modeled in CalEEMod assuming it would be operational for a maximum of 50 hours per year for testing and maintenance purposes, consistent with BAAQMED guidelines (BAAQMD 2019). The predicted PM_{10} exhaust and $PM_{2.5}$ emissions from CalEEMod were then screened using the BAAQMD *Risk and Hazards Emission Screening Calculator (Beta Version 4.0)*. Based the screening analysis, the predicted risks and hazards from the backup generator would be below the BAAQMD single-source thresholds as shown in Table 8. Therefore, project operational impacts would be less than significant.

Table 8 Project Backup Generator Screened Health Risks and Hazards

Description	Cancer Risk (per million)	$PM_{2.5}$ Concentration (µg/m3)	Increased Non-Cancer Risk (Chronic Hazard Index)
200 kW (268 HP) Backup Diesel Generator[1]	2.3	<0.01	<0.01
BAAQMD Individual Source Screening Threshold	10	0.3	1
Individual Source Threshold Exceeded?	No	No	No

[1]Risk and hazard values from the backup generator are not adjusted for distance

Source: Appendix B, Bay Area Air Quality Management District Health Risk Report

TAC sources within 1,000 feet of the project property line were also identified. The information is included in the analyses for informational purposes only since the project would not introduce new sensitive receptors to the project site. Common, local TAC sources include permitted stationary sources (e.g., emergency generators and gas dispensing facilities) and mobile sources (e.g., roadways).

Four permitted emission sources were identified within 1,000 feet of the project's fence line using BAAQMD's *Permitted Stationary Source Risk and Hazards* mapping tool (BAAQMD 2018). Based on

[3] (2 months / [12 months x 70 years]) x 100 = 0.24 percent

this tool, the screening risks from the source at the Bristol-Myers Squibb facility exceeds the BAAQMD single-source cancer risk and $PM_{2.5}$ concentration thresholds. The screening cancer risk from the ARCO gas dispensing facility also exceeds the BAAQMD single-source threshold. The screening risk and hazards from the other two facilities' risks and hazards would be below the single-source thresholds.

Other TAC sources within 1,000 feet of the project parcel boundary includes nearby roadways, such as Middlefield Road, which is a high-trafficked three-to-four-land east-west arterial roadway located approximately 620 feet south of the project site. Woodside Road (State Route 84), a four-to-six-lane north-south arterial is also approximately 590 feet east of the project site. Based on 2017 traffic counts from the California Department of Transportation, annual average daily traffic (AADT) on Woodside Road would be 47,800 vehicles (California Department of Transportation 2017).[4] Therefore, these roadways with average daily traffic that exceeds 10,000 vehicles could be potential significant sources of local risk and hazards (BAAQMD 2012).

Despite the project's proximity to two major roadways and permitted stationary sources, the proposed project would not expose sensitive populations to substantial pollutant concentrations from either TAC source. The proposed radio service facility project is not defined by CARB as a sensitive land use, which includes residences, schools and school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities (BAAQMD 2017a). Therefore, there would be no potential cumulative impact on future receptors, and cumulative impacts would be less than significant. The BAAQMD stationary source risk & hazards screening report and the project generator screening risks are in Appendix B.

Threshold 4	Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Impact AQ-4 THE PROJECT WOULD NOT GENERATE ODORS ADVERSELY AFFECTING A SUBSTANTIAL NUMBER OF PEOPLE DURING CONSTRUCTION OR OPERATION. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The project would generate oil and diesel fuel odors during construction from equipment use as well as odors related to asphalt paving. The odors would be limited to the construction period and would be temporary. With respect to operation, the BAAQMD's *CEQA Air Quality Guidelines* (2017) identifies land uses associated with odor complaints (see Table 5). A radio service facility is not identified on this list. Therefore, the proposed project would not generate objectionable odors affecting a substantial number of people, and impacts would be less than significant.

[4] Ahead AADT for postmile 25.058 (intersection of State Route 84 and Middlefield Road) was used.

3 Greenhouse Gas Emissions

3.1 Environmental and Regulatory Setting

3.1.1 Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period. The term "climate change" is often used interchangeably with the term "global warming," but climate change is preferred because it conveys that other changes are happening in addition to rising temperatures. The baseline against which these changes are measured originates in historical records that identify temperature changes that occurred in the past, such as during previous ice ages. The global climate is changing continuously, as evidenced in the geologic record which indicates repeated episodes of substantial warming and cooling. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming over the past 150 years. The United Nations Intergovernmental Panel on Climate Change (IPCC) expressed a high degree of confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-twentieth century (IPCC 2014).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere, and natural processes, such as oceanic evaporation, largely determine its atmospheric concentrations.

GHGs are emitted by natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are usually by-products of fossil fuel combustion, and CH_4 results from off-gassing associated with agricultural practices and landfills. Human-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (United States Environmental Protection Agency [U.S. EPA] 2019). Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 28, meaning its global warming effect is 28 times greater than carbon dioxide on a molecule per molecule basis (IPCC 2014).[5]

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat-trapping effect of GHGs, the earth's surface would be about 33° Celsius (°C) cooler

[5] The IPCC's (2015) *Fifth Assessment Report* determined that methane has a GWP of 28. However, modeling of GHG emissions was completed using the California Emissions Estimator Model version 2016.3.2, which uses a GWP of 25 for methane, consistent with the IPCC's (2007) *Fourth Assessment Report*.

(World Meteorological Organization 2020). However, emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, are believed to have elevated the concentration of these gases in the atmosphere beyond the level of concentrations that occur naturally.

3.1.2 Greenhouse Gas Emissions Inventory

Worldwide anthropogenic emissions of GHGs were approximately 46,000 million metric tons (MMT or gigaton) of CO_2e in 2010 (IPCC 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, CO_2 was the most abundant, accounting for 76 percent of total 2010 emissions. CH_4 emissions accounted for 16 percent of the 2010 total, while N_2O and fluorinated gases account for six and two percent respectively (IPCC 2014).

Total United States (U.S.) GHG emissions were 6,456.7 MMT of CO_2e in 2017. Since 1990, total U.S. emissions have increased by an average annual rate of 0.04 percent for a total increase of 1.3 percent since 1990. However, emissions decreased by 0.5 percent from 2016 to 2017. The decrease from 2016 to 2017 was a result of multiple factors, including: (1) a continued shift from coal to natural gas and other non-fossil fuel energy sources in the electric power sector, and (2) milder weather in 2017 resulting in overall decreased electricity usage. In 2017, the industrial and transportation end-use sectors accounted for 30 percent and 29 percent, respectively, of GHG emissions while, the residential and commercial end-use sectors accounted for 15 percent and 16 percent of GHG emissions, respectively, with electricity emissions distributed among the various sectors (U.S. EPA 2019).

Based on the California Air Resource Board's (CARB) California Greenhouse Gas Inventory for 2000-2017, California produced 424.1 MMT of CO_2e in 2017. The major source of GHG emissions in California is transportation, contributing 41 percent of the state's total GHG emissions. The industrial sector is the second largest source, contributing 24 percent of the state's GHG emissions, and electric power accounts for approximately 15 percent (CARB 2019). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. In 2016, the State of California achieved its 2020 GHG emission reduction targets as emissions fell below 431 MMT of CO_2e (CARB 2019). The annual 2030 statewide target emissions level is 260 MMT of CO_2e (CARB 2017).

In 2005, the County of San Mateo emitted 905,090 metric tons (MT) of CO_2e with the largest source being transportation (53 percent). Energy (includes residential, commercial, and industrial sources) accounted for 28 percent, while one percent came from solid waste, water and wastewater (County of San Mateo 2013a).

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources though potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The observed global mean surface temperature (GMST) from 2015 to 2017 was approximately 1.0°C (1.8°F) higher than the average GMST over the period from 1880 to 1900 (National Oceanic and Atmospheric

Administration 2020). Furthermore, several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations jointly indicate that LSAT and sea surface temperatures have increased. Due to past and current activities, anthropogenic GHG emissions are increasing global mean surface temperature at a rate of 0.2°C per decade. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC 2014 and 2018).

According to *California's Fourth Climate Change Assessment*, statewide temperatures from 1986 to 2016 were approximately 0.6 to 1.1°C higher than those recorded from 1901 to 1960. Potential impacts of climate change in California may include reduced water supply from snow pack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years (State of California 2019). While there is growing scientific consensus about the possible effects of climate change at a global and statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. In addition to statewide projections, *California's Fourth Climate Change Assessment* includes regional reports that summarize climate impacts and adaptation solutions for nine regions of the state as well as regionally-specific climate change case studies (State of California 2018), including for the greater San Francisco Bay Area region that includes where the project is located. Below is a summary of some of the potential effects that could be experienced in California and the San Francisco Bay Area region as a result of climate change.

Air Quality

Higher temperatures are conducive to air pollution formation and could worsen air quality in California as they rise. Climate change may increase the concentration of ground-level O_3, but the magnitude of the effect, and therefore its indirect effects, are uncertain. As temperatures have increased in recent years, the area burned by wildfires throughout the state has increased, and wildfires have occurred at higher elevations in the Sierra Nevada Mountains (State of California 2019). If higher temperatures continue to be accompanied by an increase in the incidence and extent of large wildfires, air quality would worsen, but if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution. This would effectively reduce the number of large wildfires, thereby ameliorating the pollution associated with them. Severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Natural Resources Agency 2009).

In the San Francisco Bay Area region, changes in meteorological conditions under climate change will affect future air quality. Hotter future temperatures will act to increase surface O_3 concentrations (State of California 2018). In addition, increased wildfires from higher temperatures and more extreme droughts will lead to further air quality degradation during such fires.

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future precipitation trends and water supplies in California. Year-to-year variability in statewide precipitation levels has increased since 1980, meaning that wet and dry precipitation extremes have become more common (California Department of Water

Resources 2018). This uncertainty regarding future precipitation trends complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The average early spring snowpack in the western U.S., including the Sierra Nevada Mountains, decreased by about 10 percent during the last century. During the same period, sea level rose over 0.15 meter along the central and southern California coasts (State of California 2019). The Sierra snowpack provides the majority of California's water supply, as snow that accumulates during wet winters is released slowly during the dry months of spring and summer. A warmer climate is predicted to reduce the fraction of precipitation that falls as snow and result in less snowfall at lower elevations, thereby reducing the total snowpack (State of California 2019). Projections indicate that average spring snowpack in the Sierra Nevada and other mountain catchments in central and northern California will decline by approximately 66 percent from its historical average by 2050 (State of California 2019).

Like the rest of the State, the San Francisco Bay Area region is expected to face a challenging combination of decreased water supply and increased water demand (State of California 2018). Melting of snowpack, increased seawater intrusion into groundwater, increased rates of evapotranspiration, and levee failures or subsidence that contaminate Delta supplies will affect both the quantity of water available and the quality of supplies. Future increases in temperature, regardless of whether total precipitation goes up or down, will likely cause longer and deeper droughts, posing major problems for water supplies, natural ecosystems, and agriculture.

Hydrology and Sea Level Rise

Climate change could affect the intensity and frequency of storms and flooding (State of California 2019). Furthermore, climate change could induce substantial sea level rise in the coming century. Rising sea level increases the likelihood of and risk from flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, observed by satellites, ocean buoys, and land gauges, was approximately 3.2 millimeters per year, double the twentieth century trend of 1.6 millimeters per year. Global mean sea levels averaged over the last decade were about 0.20 meter higher than those of 1880 (World Meteorological Organization 2013). Sea levels are rising faster now than in the previous two millennia, and the rise will probably accelerate, even with robust GHG emission control measures. The most recent IPCC report predicts a mean sea-level rise of 0.25 to 0.94 meter by 2100 (IPCC 2018). A rise in sea levels could erode 31 to 67 percent of southern California beaches and cause flooding of approximately 370 miles of coastal highways during 100-year storm events. This would also jeopardize California’s water supply due to saltwater intrusion and induce groundwater flooding and/or exposure of buried infrastructure (State of California 2019). Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

In the San Francisco Bay Area region, much of the Bay Area’s transportation system — airports, roads, and railways — is concentrated along the bay where flooding from sea level rise and storm surge is a major vulnerability (State of California 2018). The effects of climate change will further exacerbate impacts from sea level rise and storm surge in the region.

Agriculture

California has a nearly $50 billion annual agricultural industry that produces over a third of the country’s vegetables and two-thirds of the country’s fruits and nuts (California Department of Food and Agriculture 2019). Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency, but if temperatures rise and drier conditions prevail, certain regions of agricultural

production could experience water shortages of up to 16 percent. This would increase water demand as hotter conditions lead to the loss of soil moisture; crop-yield could be threatened by water-induced stress and extreme heat waves; and plants may be susceptible to new and changing pest and disease outbreaks (State of California 2019). Temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (California Climate Change Center 2006).

In the San Francisco Bay Area region more frequent droughts and extreme temperatures could affect wine production, where 70 percent of California's grapes are grown (State of California 2018). This and other climate effects can contribute to higher food prices and shortages.

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on the global and local scales. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the annual average maximum daily temperatures in California could rise by 2.4 to 3.2°C in the next 50 years and by 3.1 to 4.9°C in the next century (State of California 2019). Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: timing of ecological events; geographic distribution and range of species; species composition and the incidence of nonnative species within communities; and ecosystem processes, such as carbon cycling and storage (Parmesan 2006; State of California 2019).

Many of the impacts identified above would impact ecosystems and wildlife in the San Francisco Bay Area region. Increases in wildfire would further remove sensitive habitat; increased severity in droughts would potentially starve plants and animals of water; and sea level rise will affect sensitive coastal ecosystems, especially wetlands.

3.1.3 Regulatory Setting

The following regulations address both climate change and GHG emissions.

Federal Regulations

The U.S. Supreme Court determined in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) that the U.S. EPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act. The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines and requires annual reporting of emissions. In 2012, the U.S. EPA issued a Final Rule that established the GHG permitting thresholds that determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

In *Utility Air Regulatory Group v. Environmental Protection Agency* (134 S. Ct. 2427 [2014]), the U.S. Supreme Court held U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source can be considered a major source and be required to obtain a PSD or Title V permit. The Court also held that PSD permits otherwise required based on emissions of other pollutants, may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

State Regulations

The State of California considers GHG emissions and the impacts of climate change to be a serious threat to the public health, environment, economic well-being, and natural resources of California and has taken an aggressive stance to mitigate the State's impact on climate change through the adoption of policies and legislation. CARB is responsible for the coordination and oversight of state and local air pollution control programs in California. California has a numerous regulation aimed at reducing the state's GHG emissions. Some of the major initiatives are summarized below.

Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in Assembly Bill (AB) 32, the "California Global Warming Solutions Act of 2006," which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. The Scoping Plan was approved by CARB on December 11, 2008 and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car Standards, and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the State's longer-term GHG reduction strategies with other State policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

Senate Bill 375

Senate Bill (SB) 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities' strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

Senate Bill 97

SB 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Natural Resources Agency adopted amendments to the *CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 1383

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

The bill also requires the California Department of Resources Recycling and Recovery, in consultation with CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

Senate Bill 32

On September 8, 2016, the governor signed SB 32 into law, extending AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies, such as SB 1383. The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six metric tons (MT) of CO_2e by 2030 and two MT of CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, sub-regional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

Senate Bill 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard (RPS) Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 44 percent by 2024, 60 percent by 2030, and 100 percent by 2045.

Executive Order B-55-18

On September 10, 2018, the governor issued Executive Order B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100. EO B-55-18 also tasks CARB with including a pathway toward the EO B-55-18 carbon neutrality goal in the next Scoping Plan update.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the California Natural Resources Agency has adopted amendments to the *CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of

GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

Regional/Local Regulations

Plan Bay Area

Plan Bay Area 2040 is a state-mandated, integrated long-range transportation, land-use, and housing plan that would support a growing economy, provide more housing and transportation choices and reduce transportation-related pollution in the nine-county San Francisco Bay Area (Association of Bay Area Governments [ABAG] 2019). The Sustainable Community Strategy (SCS) builds on earlier efforts to develop an efficient transportation network and grow in a financially and environmentally responsible way. Plan Bay Area 2040 would be updated every four years to reflect new priorities. A goal of the SCS is to "reduce vehicles miles traveled (VMT) per capita by 10 percent" (ABAG 2019).

County of San Mateo Energy Efficiency Climate Action Plan

The County of San Mateo has two Climate Action Plans (CAP). The 2012 *Government Operations Climate Action Plan* focuses specifically on the County's facilities and operations, while the 2013 *Energy Efficiency Climate Action Plan* focuses on all community wide GHG emissions. Both CAPs are Qualified GHG Reduction Strategies per Section 4.3 of the BAAQMD 2017 *CEQA Air Quality Guidelines*. For this analysis, only the 2013 *Energy Efficiency CAP* would be applicable since it relates to land use and development decisions.

The *Energy Efficiency CAP* was adopted in June 2013 and only address GHG emissions through 2020. The County's goal in this CAP was to reduce GHG emissions 17 percent below the baseline emissions from 2005 by 2020 (a 49,600 MT of CO_2e reduction). To meet the reduction goal, the County developed GHG reduction measures from 11 different topic areas including Residential Energy Efficiency, Commercial Energy Efficiency, Green Building Ordinance, Renewable Energy, Transportation, Alternative Fuels, Waste Diversion, Water Efficiency, Sustainable Agriculture Practices, Off-Road Technology, and Sequestration. The CAP also includes a project level checklist for new development projects in the County to showcase compliance and consistency with the CAP.

County of San Mateo General Plan

The County of San Mateo General Plan was adopted in November 1986. General Plan polices were last updated in January 2013 (County of San Mateo 1986 & 2013b). The General Plan identifies goals, objectives, and program responsibilities for planning purposes. The General Plan also includes an "Energy & Climate Change" element. The following policies related to global climate change and GHGs are applicable to the project (County of San Mateo 2013):

- Policy 1.2 Evaluate the greenhouse gas emissions impacts of development projects as apart of plan review
- Policy 2.3: Develop a program for unincorporated communities to reduce heat gain in buildings and sequester greenhouse gases through tree planting and other "cooling" strategies.

- Policy 2.5: Continue implementation of green building standards that exceed state energy efficiency standards.
- Policy 3.1: Identify opportunities for new and existing development to incorporate on-site distributed energy resource into project design and construction.
- Policy 3.2: Promote the production of appropriate off-site renewable energy for use int eh unincorporated county.
- Policy 4.2: Promote non-motorized and alternative travel.
- Policy: Facility the expansion of infrastructure for alternative fuel vehicles.
- Policy 6.1: Continue to expand recycling and reduce landfilled waste.
- Policy 8.1: Expand infrastructure for monitoring and reusing water.

Peninsula Clean Energy

The County of San Mateo, as well as all 20 cities in the County (Atherton, Belmont, Brisbane, Burlingame, Colma, Daly City, East Palo Alto, Foster City, Half Moon Bay, Hillsborough, Menlo Park, Millbrae, Pacifica, Portola Valley, Redwood City, San Bruno, San Carlos, San Mateo, Woodside, South San Francisco, and unincorporated San Mateo County) are members of PCE which serves as the Community Choice Aggregation (CCA) for its member jurisdictions. PCE was established in February 2016 with support from all the cities in San Mateo County and the County itself. This CCA works in partnership with Pacific Gas and Electric (PG&E) to deliver GHG-efficient electricity to customers within its member jurisdictions. Consistent with state law, all electricity customers in the County of San Mateo are automatically enrolled in PCE; however, customers can choose to opt out and be served by PG&E. PCE goals include providing 100 percent GHG free electricity by 2021, 100 percent renewable electricity by 2025, and create a minimum of 20 megawatts of new local power by 2025. (Peninsula Clean Energy 2020).

3.2 Impact Analysis

3.2.1 Methodology

Calculations of CO_2, CH_4, and N_2O are provided to identify the magnitude and nature of the project's potential GHG emissions and environmental effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC 2014) and are the GHG emissions that the project would emit in the largest quantities. Emissions of all GHGs are converted into their equivalent GWP in MT of CO_2e. Small amounts of other GHGs (such as chlorofluorocarbons [CFCs]) would also be emitted; however, these other GHGs would not substantially add to the total GHG emissions. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (2008) and include the use of the California Climate Action Registry (CCAR) *General Reporting Protocol* (CCAR 2009).

The project's construction and operational emissions were estimated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2, consistent with the methods for air quality analysis described in Section 2.2, *Methodology*. CalEEMod results are included in Appendix A. In order to provide an accurate comparison to GHG emissions thresholds established in accordance with the statewide 2030 emissions reduction target, annual GHG emissions were modeled for a 2030 project operation year.

Construction Emissions

Construction activities emit GHGs primarily though combustion of fuels (mostly diesel) in the engines of off-road construction equipment and in on-road construction vehicles and in the commute vehicles of the construction workers. Smaller amounts of GHGs are emitted indirectly through the energy required for water used for fugitive dust control and lighting for the construction activity. Every phase of the construction process, including demolition, grading, paving, and building, emits GHG emissions in volumes proportional to the quantity and type of construction equipment used. Heavier equipment typically emits more GHGs per hour than does lighter equipment because of its engine design and greater fuel consumption.

Operational Emissions

Area Source Emissions

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating, were calculated in CalEEMod and utilize standard emission rates from CARB, U.S. EPA, and emission factor values provided by the local air district.

Water and Wastewater Emissions

Water used and wastewater generated by a project generate indirect GHG emissions. These emissions are a result of the energy used to supply, convey, and treat water and wastewater. In addition to the indirect GHG emissions associated with energy use, the wastewater treatment process itself can directly emit both CH_4 and N_2O.

The indoor and outdoor water use consumption data for each land use subtype comes from the Pacific Institute's *Waste Not, Want Not: The Potential for Urban Water Conservation in California* (2003).[6] Based on that report, a percentage of total water consumption was dedicated to landscape irrigation, which is used to determine outdoor water use. Wastewater generation was similarly based on a reported percentage of total indoor water use.

New development would be subject to CALGreen, which requires a 20 percent increase in indoor water use efficiency. Thus, in order to account for compliance with CALGreen, a 20 percent reduction in indoor water use was included in the water consumption calculations for new development. In addition to water reductions associated with building code compliance the GHG emissions from the energy used to transport the water for both existing and new development account for compliance with the RPS as discussed under "Energy Emissions."

Solid Waste Emissions

The disposal of solid waste produces GHG emissions from the transportation of waste, anaerobic decomposition in landfills, and incineration. According to a CalRecycle report to the Legislature, as of 2013 California had achieved a statewide 50 percent diversion of solid waste from landfills through "reduce/recycle/compost" programs (CalRecycle 2015). The methods for quantifying GHG emissions from solid waste are based on the IPCC method, using the degradable organic content of waste. GHG emissions associated with the project's waste disposal were calculated using these parameters.

[6] California Emissions Estimator Model, User Guide, Appendix D http://www.caleemod.com/

Energy Use Emissions

GHGs are emitted on-site during the combustion of natural gas for space and water heating and off-site during the generation of electricity from fossil fuels in power plants. CalEEMod estimates GHG emissions from energy use by multiplying average rates of residential and non-residential energy consumption by the quantities of residential units and non-residential square footage entered in the land use module to obtain total projected energy use. This value is then multiplied by electricity and natural gas GHG emission factors applicable to the project location and utility provider.

Building energy use is typically divided into energy consumed by the built environment and energy consumed by uses that are independent of the building, such as plug-in appliances. Non-building energy use, or "plug-in energy use," can be further subdivided by specific end-use (refrigeration, cooking, office equipment, etc.). In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting.

In CalEEMod, electricity emissions are calculated by multiplying the energy use times the carbon intensity of the utility district per kilowatt hour (CAPCOA 2017). The default provider for the County of San Mateo would be PG&E; however, since PCE is the main electricity provider in the City the defaults were changed to account for this difference. PCE's specific energy intensity factors (i.e., the amount of CO_2, CH_4, and N_2O per kilowatt-hour) are used in the calculations of GHG emissions. The energy intensity factors included in CalEEMod are based on 2012 data by default. Per SB 100, the statewide Renewable Portfolio Standard (RPS) Program requires electricity providers to increase procurement from eligible renewable energy sources to 60 percent by 2030. To account for the continuing effects of the RPS, the energy intensity factors included in CalEEMod were reduced based on the percentage of renewables reported by PCE. PCE energy intensity factors that include this reduction are shown in Appendix A.

Mobile

Mobile sources, CO_2, and CH_4 emissions are generally quantified in CalEEMod using CalEEMod defaults. However, since the project would not generate new daily trips compared to the existing land use, the mobile emissions from the project were considered negligible. Default CalEEMod trip generation rates were zeroed out in the model. Therefore, there would be no net new mobile GHG emissions.

Stationary Sources

Please refer to "Operational Impacts" under Impact AQ-3 for more details on how the proposed backup generator was modeled in CalEEMod.

3.2.2 Significance Thresholds

To determine whether a project would result in a significant impact related to GHG emissions, Appendix G of the *CEQA Guidelines* requires consideration of whether a project would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment;
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The majority of individual projects do not generate sufficient GHG emissions to create significant project-specific environment effects. However, the environmental effects of a project's GHG

emissions can contribute incrementally to cumulative environmental effects that are significant, contributing to climate change, even if an individual project's environmental effects are limited (CEQA Guidelines Section 15064[h][1]). The issue of a project's environmental effects and contribution towards climate change typically involves an analysis of whether or not a project's contribution towards climate change is cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, §15064[h][1]).

According to *CEQA Guidelines* Section 15183.5, projects can tier off of a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. This approach is considered by the Association of Environmental Professionals (AEP) in their white paper, *Beyond Newhall and 2020*, to be the most defensible approach presently available under CEQA to determine the significance of a project's GHG emissions (AEP 2016). However, although the County's CAP provides emission reduction measures to reduce GHG emissions through year 2020, it does not include goals or emission reduction measures to meet the State's SB 32 target by 2030.

According to the BAAQMD *CEQA Air Quality Guidelines* (2017a), an efficiency threshold of 1,100 MT CO_2e per year is appropriate for commercial projects. Therefore, this approach is appropriate for the project, which includes 13,000 square feet of commercial space. Although the BAAQMD has not yet quantified a threshold for 2030, reducing the 1,100 MT CO_2e per year threshold by 40 percent to 660 MT CO_2e per year would be consistent with the State reduction target established in SB 32. As such, the adjusted bright-line threshold of 660 MT CO_2e per year is the most appropriate threshold for the project. Emissions form the project's backup generator were compared to the BAAQMD stationary source threshold of 10,000 MT per year. Additionally, this analysis qualitatively assesses consistency with local and statewide GHG reduction regulations.

Construction Emissions Thresholds

Construction of the project would generate temporary GHG emissions from the operation of construction equipment on-site, from vehicles transporting construction workers to and from the project site, and from the use of heavy trucks to export earth materials offsite. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling equipment. CalEEMod provides an estimate of emissions associated with the construction period, based on parameters such as duration of construction activity, area of disturbance, and types of equipment used during construction.

Neither the County nor BAAQMD have an adopted threshold of significance for construction related GHG emissions, although the BAAQMD recommends quantifying emissions and disclosing GHG construction emissions. This analysis presents total construction-related GHG emissions for informational purposes.

3.2.3 Project Impacts

Threshold 1:	Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact GHG-1 THE PROPOSED PROJECT WOULD GENERATE TEMPORARY AND LONG-TERM INCREASES IN GHG EMISSIONS, BUT SUCH EMISSIONS WOULD REMAIN BELOW THE ADJUSTED BAAQMD EFFICIENCY THRESHOLD INTENDED TO DEMONSTRATE CONSISTENCY WITH THE 2030 STATEWIDE GHG REDUCTION TARGET. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Construction Emissions

Project-related construction emissions are confined to a relatively short period in relation to the overall life of the project. As described under section 3.2.2, *Significance Thresholds*, neither the County nor BAAQMD have adopted a threshold of significance for construction-related GHG emissions. However, the BAAQMD recommends quantifying and disclosing GHG construction emissions. Therefore, construction-related GHG emissions were quantified for informational purposes. Table 9 shows that project construction would result in a total of approximately 211 MT CO_2e.

Table 9 Estimated Construction GHG Emissions

Construction	Project Emissions MT CO_2e
2021	145
2022	66
Total	**211**

Source: Appendix A CalEEMod worksheets

Operational Emissions

Table 10 shows GHG emissions associated with operation of the proposed project. As shown therein, the project would generate approximately 29 MT of CO_2e per year, which would not exceed the adjusted BAAQMD efficiency threshold of 660 MT CO2e per year. The project's stationary source emissions would also be below the BAAQMD threshold of 10,000 MT CO2e per year. Therefore, impacts would be less than significant.

Table 10 2030 Annual GHG Emissions for Proposed Project

Emission Source	Annual Emissions (MT CO_2e)
Operational	
Area	<1
Energy	20
Solid Waste	6
Water	3
Mobile	*
CO_2 and CH_4	*
N_2O	*
Total Project Emissions	**29**
Adjusted BAAQMD Efficiency Threshold (per MT CO_2e)	660
Exceeds Threshold?	No
Stationary Source (Backup Generator)	**5**
BAAQMD Stationary Source Threshold (per MT CO_2e)	10,000
Exceeds Threshold?	No

* The project would not generate net new mobile trips.

MT of CO_2e = metric tons of carbon dioxide equivalent. Numbers may not add up due to rounding.

Source: Appendix A CalEEMod worksheets

Threshold 2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact GHG-2 THE PROPOSED PROJECT WOULD BE CONSISTENT WITH APPLICABLE PLANS AND POLICIES, INCLUDING PLAN BAY AREA 2040 AND THE COUNTY'S ENERGY EFFICIENCY CLIMATE ACTION PLAN APPENDIX F DEVELOPMENT CHECKLIST. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Consistency with GHG Reduction Plans and Policies

San Mateo County adopted their Energy Efficiency CAP in June 2013. The CAP includes a development checklist to ensure that developments in San Mateo County comply with the County's GHG reduction measures. In order to meet their emission targets, the checklist includes mandatory measures for all projects and voluntary measures that could be incorporated as mitigation measures for proposed projects, at the discretion of the County. Project consistency with the CAP is demonstrated through multiple project features, namely the achievement of at least a Silver level certification by the USGBC LEED V4 program and use of carbon free electricity from PCE. Table 11 provides a summary of the project's consistency with applicable goals, targets, and policies of Plan Bay Area 2040 and the Energy Efficiency CAP. As shown in Table 10, the project would be consistent

with applicable regional and local plans and policies to reduce GHG emissions and impacts would be less than significant.

Table 11 Project Consistency with the Appendix F Energy Efficiency CAP Development Checklist

Goals and Strategies	Project Consistency
Plan Bay Area 2040	
Preserve agriculture and open space by planning direct development within urban footprint	**Consistent** The project is a compact infill development located within a dense urban area of Redwood City and is not on or adjacent to agricultural land.
Appendix F Energy Efficiency CAP Development Checklist	
3.1 Green Building Ordinance **3.2 Green Building Incentives**	**Consistent** The proposed project would comply with the Green Building Ordinance and achieve CALGreen Tier 1 energy efficiency standards. In addition, the project proposed to meet LEED Silver-level certification.
3.3 Urban Heat Island	**Consistent** The project would include placement of 75 percent of its parking spaces under an enclosed cover, which would reduce the urban heat island effect.
10.1 Low Carbon Fuel Infrastructure	**Consistent** The project would provide one clean air parking space and two EV parking spaces. In addition, the project would include seven bicycle parking spaces.
14.1 Smart Water Meters **14.2 Water Reuse**	**Consistent** The project would include controlled and metered irrigation systems for outdoor landscaping.
15.1 Construction Idling	**Consistent** The construction equipment for new development would comply with the best management practices from the BAAQMD guidance including limiting idling time by shutting equipment off when not in use or by reducing maximum idling time to 5 minutes. See Table 8-2 in the BAAQMD CEQA Guidelines for the Basic Construction Mitigation Measures.

Source: Association of Bay Area Governments 2017, County of San Mateo 2013a

4 References

Association of Bay Area Governments (ABAG). 2017. *Plan Bay Area 2040.* June 26. http://2040.planbayarea.org/files/2020-02/Final_Plan_Bay_Area_2040.pdf (accessed December 2020).

Bay Area Air Quality Management District (BAAQMD). 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards. May. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf (accessed December 2020).

_____.2017a. California Environmental Quality Act: Air Quality Guidelines. San Francisco, CA. May 2017. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

_____. 2017b. Final 2017 Clean Air Plan. San Francisco, CA. April 19, 2017. http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

_____. 2018. Permitted Stationary Source Risk and Hazards. https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65.

_____. Revised 2019. "Section 9-8-330 Emergency Standby Engines, Hours of Operation", *Regulation 9, Rule 8 Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines.* San Francisco, CA. October 15, 2019. https://www.baaqmd.gov/rules-and-compliance/current-rules (accessed December 2020).

_____. 2020. Annual Bay Area Air Quality Summaries. https://www.baaqmd.gov/about-air-quality/air-quality-summaries (accessed November 2020).

California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. January 2008.

_____. 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

_____. 2019. EMFAC2017 Web Database. https://www.arb.ca.gov/emfac/2017/ (accessed March 2020).

California Air Resources Board (CARB). 2009. Definitions of VOC and ROG. January. Available at: https://ww3.arb.ca.gov/ei/speciate/voc_rog_dfn_1_09.pdf

_____. 2011. *Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider the "LEV III" Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards and Test Procedures and to the On-Board Diagnostic System Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and to the Evaporative Emission Requirements for Heavy-Duty Vehicles.* Sacramento, CA. December 7, 2011. https://www.arb.ca.gov/regact/2012/leviiighg2012/levisor.pdf.

_____. 2014. AB 32 Scoping Plan Website. Updated June 2014. http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm (accessed March 2020).

_____. 2016. Ambient Air Quality Standards. Last modified: May 4, 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf (accessed April 2020).

_____. 2017. "AB 32 Scoping Plan." California Environmental Protection Agency. Last modified: January 23, 2017. https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.

_____. 2019. California Greenhouse Gas Emissions for 2000 to 2017. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf (accessed 2019).

_____. 2020a. *Top 8 Summary: Select Pollutant, Years, & Area.* https://www.arb.ca.gov/adam/select8/sc8start.php (accessed November 2020).

_____. 2020b. *EMFAC Emissions Inventory.* https://arb.ca.gov/emfac/emissions-inventory (accessed December 2020).

California Climate Action Registry. 2009. General Reporting Protocol. Version 3.1, January 2009.

California Climate Change Center (CCCC). 2006. Climate Scenarios for California.

California Department of Food and Agriculture. 2019. "California Agricultural Production Statistics." https://www.cdfa.ca.gov/statistics/ (accessed March 2020).

California Department of Transportation. 2017. "2017 Traffic Volumes: Route 82-86" https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017/route-82-86 (accessed December 2020).

California Department of Water Resources. 2018. Indicators of Climate Change in California. May 2018. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf (accessed March 2020).

California Natural Resources Agency. 2009. 2009 California Climate Adaptation Strategy. March 2009. http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf (accessed March 2020).

County of San Mateo. 1986. County of San Mateo General Plan. September 2012. https://planning.smcgov.org/sites/planning.smcgov.org/files/SMC-GP%201986.pdf (accessed December 2020).

_____. 2012. County of San Mateo Government Operations Climate Action Plan. September 2012. https://www.smcsustainability.org/download/climate-change/Government-Ops-Climate-Action-Plan.pdf (accessed December 2020).

_____. 2013a. San Mateo County Energy Efficiency Climate Action Plan. June 2013. https://planning.smcgov.org/sites/planning.smcgov.org/files/documents/files/SanMateoCounty_EECAP_FINAL_06-04-2013.pdf (accessed December 2020).

_____. 2013b. County of San Mateo General Plan Policies. January. https://planning.smcgov.org/sites/planning.smcgov.org/files/documents/files/SMC-GP%20Policies%202013.pdf (accessed December 2020)

Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change 2014: Mitigation of Climate Change. Summary for Policymakers - Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

_____. 2018. Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. https://www.ipcc.ch/sr15/ (accessed March 2020).

National Oceanic and Atmospheric Administration. 2020. "Global Climate Report for Annual 2019." State of the Climate. January 2020. https://www.ncdc.noaa.gov/sotc/global/201813 (accessed April 2020).

Parmesan, C. 2006. Ecological and Evolutionary Responses to Recent Climate Change. August 2006.

Peninsula Clean Energy. *Background*. https://www.peninsulacleanenergy.com/background/. (accessed November 2020).

State of California. 2018. California's Fourth Climate Change Assessment San Francisco Bay Area Region Report.

_____. 2019. California's Fourth Climate Change Assessment Statewide Summary Report. January 16. Available at: http://www.climateassessment.ca.gov/state/ (accessed July 2020

United States Environmental Protection Agency (U.S. EPA). 2019. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017. U. S. EPA #430-R-19-001. April 2019. https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf (accessed March 2020).

Western Regional Climate Center (WRCC). 2020. Period of Record Monthly Climate Summary (04/01/1906 to 06/10/2016) for Redwood City Station, California (047339). https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257. (accessed November 2020).

World Meteorological Organization (WMO). 2020. "Greenhouse Gases." https://public.wmo.int/en/our-mandate/focus-areas/environment/greenhouse%20gases (accessed February 2020).