

# **Greenhouse Gas Emissions Assessment South B Street Mixed-Use Project**

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## **San Mateo, California**

### **Prepared For:**

David J. Powers & Associates, Inc.  
1736 Franklin Street, Suite 300  
Oakland, CA 94612

### **Prepared By:**



**ECORP Consulting, Inc.**  
ENVIRONMENTAL CONSULTANTS

55 Hanover Lane, Suite A  
Chico, CA 95973

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**LIST OF ACRONYMS AND ABBREVIATIONS**

<b>Term</b>	<b>Description</b>
AB	Assembly Bill
ABAG	Association of Bay Area Governments
APN	Assessor’s Parcel Number
BAAQMD	Bay Area Air Quality Management District
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act

**LIST OF ACRONYMS AND ABBREVIATIONS**

CH <sub>4</sub>	methane
City	City of San Mateo
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
County	San Mateo County
EO	Executive Order
GHG	greenhouse gas
HVAC	Heating, ventilation, and air conditioning systems
IPCC	Intergovernmental Panel on Climate Change
MTCO <sub>2</sub> e	Metric Tons of Carbon Dioxide Equivalents
N <sub>2</sub> O	nitrous oxide
PRC	Public Resources Code
Project	South B Street Mixed Use Project
RTP	Regional Transportation Plan
SB	Senate Bill
sf	Square foot
SCS	Sustainable Communities Strategy
TAC	toxic air contaminant
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled

## **1.0 INTRODUCTION**

This report documents the results of a Greenhouse Gas (GHG) Emissions Assessment completed for the South B Street Mixed-Use Project (Project), which includes the demolition of two existing commercial building structures and the construction of a new four-story restaurant/office mixed use building in the City of San Mateo (City), California. This assessment is based on the methodology recommended by the City of San Mateo and the Bay Area Air Quality Management District (BAAQMD) for project-level review and was prepared with consideration of the emissions reduction actions proposed by the Project. The purpose of this assessment is to estimate Project-generated GHG emissions attributable to the Project and to determine the level of impact the Project would have on the environment.

### **1.1 Project Location & Description**

The Project Site is located at 57 South B Street in the City of San Mateo on Assessor's Parcel Number (APN) 034-054-030. The Project Area is surrounded mainly by commercial and retail land uses. The Proposed Project proposes the demolition of two existing commercial building structures totaling 9,336 square feet (sf) and proposes the construction of a new four-story restaurant/office mixed use building totaling 41,190 sf. The building would include 5,302 sf of restaurant space and 35,888 sf of office space. The Proposed Project Site plans indicate that the first floor will primarily be used for restaurant purposes, while the other floors would be used for business office space. Additionally, the Project includes on and offsite improvements such as ground level and terrace landscaping, a corner plaza, and a public right of way improvements.

## 2.0 GREENHOUSE GAS EMISSIONS

### 2.1 Greenhouse Gas Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead trapped, resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are CO<sub>2</sub>, methane (CH<sub>4</sub>), and N<sub>2</sub>O. Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Fluorinated gases include chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride; however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. More specifically, experts agree that human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 in 2011–2020. (Intergovernmental Panel on Climate Change [IPCC] 2023).

Table 3-1 describes the primary GHGs attributed to global climate change, including their physical properties, primary sources, and contributions to the greenhouse effect.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH<sub>4</sub> traps over 25 times more heat per molecule than CO<sub>2</sub>, and N<sub>2</sub>O absorbs 298 times more heat per molecule than CO<sub>2</sub>. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO<sub>2</sub>e), which weigh each gas by its global warming potential. Expressing GHG emissions in CO<sub>2</sub>e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO<sub>2</sub> were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO<sub>2</sub> is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Despite the sequestration of CO<sub>2</sub>, human-caused climate

change is already causing damaging effects, including weather and climate extremes in every region across the globe (IPCC 2023).

<b>Table 2-1. Greenhouse Gases</b>	
<b>Greenhouse Gas</b>	<b>Description</b>
CO <sub>2</sub>	Carbon dioxide is a colorless, odorless gas. CO <sub>2</sub> is emitted in a number of ways, both naturally and through human activities. The largest source of CO <sub>2</sub> emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO <sub>2</sub> emissions. The atmospheric lifetime of CO <sub>2</sub> is variable because it is so readily exchanged in the atmosphere. <sup>1</sup>
CH <sub>4</sub>	Methane is a colorless, odorless gas and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of CH <sub>4</sub> to the atmosphere. Natural sources of CH <sub>4</sub> include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH <sub>4</sub> is about 12 years. <sup>2</sup>
N <sub>2</sub> O	Nitrous oxide is a clear, colorless gas with a slightly sweet odor. Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources of N <sub>2</sub> O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N <sub>2</sub> O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N <sub>2</sub> O is approximately 120 years. <sup>3</sup>

Sources: <sup>1</sup>U.S. Environmental Protection Agency (USEPA) 2016a, <sup>2</sup>USEPA 2016b, <sup>3</sup>USEPA 2016c

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; it is sufficient to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of the California Environmental Quality Act (CEQA), GHG impacts on global climate change are inherently cumulative.

### 2.1.1 Sources of Greenhouse Gas Emissions

In 2022, the California Air Resources Board (CARB) released the 2022 edition of the California GHG inventory covering calendar year 2020 emissions. In 2020, California emitted 369.2 million gross metric tons of CO<sub>2</sub>e (MTCO<sub>2</sub>e) including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California’s GHG emissions in 2020, accounting for approximately 38 percent of total GHG emissions in the state. Continuing the downward trend from previous years, transportation emissions decreased 27 million metric tons of CO<sub>2</sub>e in 2020, though the intensity of this decrease was most likely from light duty vehicles after shelter-in-place orders were enacted in response to the COVID-19 pandemic. Emissions from the electricity sector account for 16 percent of the inventory and have remained

at a similar level as in 2019 despite a 44 percent decrease in in-state hydropower generation (due to below average precipitation levels), which was more than compensated for by a 10 percent growth in in-state solar generation and cleaner imported electricity incentivized by California's clean energy policies. California's industrial sector accounts for the second largest source of the state's GHG emissions in 2020, accounting for 23 percent (CARB 2022).

## **2.2 Regulatory Framework**

### **2.2.1 State**

#### **2.2.1.1 Executive Orders S-3-05 and B-30-15**

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the State. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

On April 20, 2015, Governor Brown signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments such as the European Union, which adopted the same target in October 2014. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

#### **2.2.1.2 Assembly Bill 32 Climate Change Scoping Plan and Updates**

In 2006, the California legislature passed Assembly Bill (AB) 32 (Health and Safety Code § 38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 required CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which outlined measures to meet the 2020 GHG reduction goals. California exceeded the target of reducing GHG emissions to 1990 levels by the year 2017.

The Scoping Plan is required by AB 32 to be updated at least every five years. The latest update, the 2022 Scoping Plan Update, outlines strategies and actions to reduce greenhouse gas emissions in California. The plan focuses on achieving the state's goal of reaching carbon neutrality by 2045 and reducing greenhouse gas emissions to 40% below 1990 levels by 2030. The plan includes a range of strategies across various sectors, including transportation, industry, energy, and agriculture. Some of the key strategies include transitioning to zero-emission vehicles, expanding renewable energy sources, promoting sustainable land use practices, implementing a low-carbon fuel standard, and reducing emissions from buildings.

Additionally, the plan addresses equity and environmental justice by prioritizing investments in communities most impacted by pollution and climate change. The plan also aims to promote economic growth and job creation through the transition to a low-carbon economy.

### **2.2.1.3 Senate Bill 32 and Assembly Bill 197 of 2016**

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include §38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

### **2.2.1.4 Senate Bill 100 of 2018**

In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 Renewables Portfolio Standard.

### **2.2.1.5 2022 Building Energy Efficiency Standards for Residential and Nonresidential Buildings**

The Building and Efficiency Standards (Energy Standards) were first adopted and put into effect in 1978 and have been updated periodically in the intervening years. These standards are a unique California asset that have placed the State on the forefront of energy efficiency, sustainability, energy independence and climate change issues. The 2022 California Building Codes include provisions related to energy efficiency to reduce energy consumption and greenhouse gas emissions from buildings. Some of the key energy efficiency components of the codes are:

1. Energy Performance Requirements: The codes specify minimum energy performance standards for the building envelope, lighting, heating and cooling systems, and other components.
2. Lighting Efficiency: The codes require that lighting systems meet minimum efficiency standards, such as the use of energy-efficient light bulbs and fixtures.
3. Heating, ventilation, and air conditioning (HVAC) Systems: The codes establish requirements for HVAC systems, including the use of high-efficiency equipment, duct sealing, and controls.
4. Building Envelope: The codes include provisions for insulation, air sealing, glazing, and other building envelope components to reduce energy loss and improve indoor comfort.
5. Renewable Energy: The codes encourage the use of renewable energy systems, such as photovoltaic panels and wind turbines, to reduce dependence on non-renewable energy sources.
6. Commissioning: The codes require the commissioning of building energy systems to ensure that they are installed and operate correctly and efficiently.



Overall, the energy efficiency provisions of the 2022 California Building Codes aim to reduce the energy consumption of buildings, lower energy costs for building owners and occupants, and reduce the environmental impact of the built environment. The 2022 Building Energy Efficiency Standards improve upon the 2019 Energy Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The exact amount by which the 2022 Building Codes are more efficient compared to the 2019 Building Codes would depend on the specific provisions that have been updated and the specific building being considered. However, in general, the 2022 Building Codes have been updated to include increased requirements for energy efficiency, such as higher insulation and air sealing standards, which are intended to result in more efficient buildings. The 2022 standards are a major step toward meeting Zero Net Energy.

## **2.2.2 Local**

### **2.2.2.1 Bay Area Air Quality Management District**

To provide guidance to local lead agencies on determining significance for GHG emissions in CEQA documents, BAAQMD CEQA Guidelines include guidance on assessing GHGs and climate change impacts as required under CEQA Section 15183.5(b). In April 2023, the BAAQMD 20223 CEQA Guidelines were adopted. This guidance document presents a project-level operational threshold of significance for GHG emissions based on compliance with a Qualified GHG Reduction Strategy or adherence to a suite of BAAQMD performance standards for land uses projects directly related to building design, transportation, and consistency with the CEQA Guidelines Section 15183.5(b). The guidelines also promote the development sustainable land use projects that offer climate reduction measures and policies for consideration. These policies help ensure smart growth, transit-oriented, and sustainable practices for land use projects and plans.

### **2.2.2.2 Association of Bay Area Governments Final Plan Bay Area 2050**

The Association of Bay Area Governments (ABAG) Plan Bay Area 2050 is the Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS) for the San Francisco Bay Area. Plan Bay Area 2050 estimates a 22 percent reduction of automotive GHG emissions by 2035 compared to 2005. The region's applicable GHG per capita emissions target, mandated by CARB, is a 19 percent reduction for 2035, compared to 2005. Plan Bay Area 2050 establishes means of establishing GHG reduction goals through transportation improvements, including a clean vehicle feebate and targeted transportation alternatives. According to ABAG, the San Francisco Bay Area will exceed the mandated GHG reduction target of 19 percent for 2035 by implementing Plan Bay Area (ABAG 2021).

### **2.2.2.3 BAAQMD 2017 Clean Air Plan**

The 2017 Clean Air Plan provides a regional strategy with the goal of protecting public health and protecting the climate. The 2017 Clean Air Plan is consistent with the California GHG reduction goals. To protect the climate, the 2017 Clean Air Plan defines a vision for transitioning the region to a "post-carbon economy" without fossil fuel combustion, as needed to achieve ambitious greenhouse gas reduction targets for 2030

and 2050 and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets (BAAQMD 2017).

The 2017 Clean Air Plan includes numerous control measures designed to reduce GHG emissions from stationary and transportation sources. The plan lays the framework for reducing Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050 (BAAQMD 2017).

#### **2.2.2.4 The City of San Mateo Climate Action Plan**

The City adopted an updated community-wide Climate Action Plan (CAP) in April 2020, which updates and consolidates the various City's GHG reduction efforts based on the vision of San Mateo residents, businesses, and local government. The CAP provides the framework for San Mateo to reduce its community wide GHG emissions in a manner consistent with state reduction targets and goals for 2030 and 2050. The CAP was prepared consistent with CEQA Guidelines for Plans for the Reduction of Greenhouse Gas Emissions (California Code of Regulations [CCR] 15183.5). This facilitates the capacity of the 2020 CAP to facilitate and potentially streamline the environmental assessment of GHGs associated with future developmental initiatives within the City. The 2020 CAP is a direct revision of the 2015 CAP. The 2020 CAP evaluates San Mateo's advancements thus far in the City's GHG targets and provides new insights to achieve more substantial and long-term reductions of GHGs.

A CAP is a comprehensive strategy for a community to reduce emissions of GHGs, which, according to scientific consensus, are primarily responsible for causing climate change. The CAP identifies a strategy, reduction measures, and implementation actions the City will use to achieve targets consistent with state recommendations of 4.3 MTCO<sub>2</sub>e per person by 2030 and 1.2 MTCO<sub>2</sub>e per person by 2050. The City CAP includes five key pieces:

1. An inventory of the annual GHG emissions attributable to San Mateo based on the types of activities occurring within the community and guidance from various protocols and agencies.
2. A forecast of what GHG emissions are likely to look like in 2030 and 2050 based on expected population and economic growth as predicted in the City's General Plan; with the consideration of major CO<sub>2</sub>e emission reduction policies.
3. A reduction target, which identifies goals for reducing GHG emissions by 2030 and 2050.
4. Reduction strategies, which describe the actions the community intends to take to achieve the reduction target. Each strategy identifies the amount of GHGs that will be reduced once the strategy is implemented. The CAP also estimates the benefits of existing programs.
5. An implementation and monitoring program to track progress toward the reduction target and the status of the reduction strategies. A CAP consistency checklist for future development projects is included in the implementation program.

As part of the CAP, the City developed a consistency checklist for land use projects. The CAP checklist is a streamlined tool that identifies mandatory GHG reduction strategies and provides an opportunity for project applicants to demonstrate project consistency with measures and actions described in the CAP. The

checklist is also an opportunity to identify additional Project characteristics that support the GHG reduction targets and programs in the CAP. If a project does not comply with the applicable mandatory GHG reduction measures, mitigation measures must be implemented to require compliance.

## **2.3 Greenhouse Gas Emissions Impact Assessment**

### **2.3.1 Thresholds of Significance**

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to GHG emissions if it would:

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

The Appendix G thresholds for GHG emissions do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA. With respect to GHG emissions, the CEQA Guidelines Section 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or other performance-based standards." (14 CCR 15064.4(b)). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change." (14 CCR 15064.4(c)). Section 15064.4(b) provides that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). The CEQA Guidelines also clarify

that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see CEQA Guidelines Section 15130). As a note, the CEQA Guidelines were amended in response to Senate Bill 97. In particular, the CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction plan renders a cumulative impact insignificant.

Per CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions." Put another way, CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

The local air quality agency regulating the San Francisco Bay Area Air Basin is the BAAQMD, the regional air pollution control officer for the basin. As previously stated, BAAQMD CEQA Guidelines include guidance on assessing GHGs and climate change impacts as required under CEQA Section 15183.5(b) and establish thresholds of significance for impacts related to GHG emissions. The City has determined, in its discretion, that the BAAQMD recommended GHG significance thresholds are based on substantial evidence to attribute a fair share of GHG reductions necessary to reach statewide reduction goals to new land use development projects in the BAAQMD's jurisdiction that are evaluated pursuant to CEQA. Therefore, the City uses the BAAQMD CEQA Guidelines to determine the level of impact from the project contributions of GHG emissions.

As previously described, BAAQMD's 2022 CEQA Guidelines presents a project-level operational threshold of significance for GHG emissions based on compliance with a Qualified GHG Reduction Strategy or adherence to a suite of BAAQMD performance standards for land uses projects directly related to building design, transportation and consistency with the CEQA Guidelines Section 15183.5(b). The City CAP is a Qualified GHG Reduction Strategy. The 2020 City CAP is the most recent update after the 2015 CAP and is written to align with the goals of SB 32. The CAP addresses estimate emissions beyond 2020, as informed by the post-2020 GHG reduction targets of SB 32 and EO S-3-05. Specifically, the City set emission reduction goals of 15 percent below 2005 emissions levels by 2020, 4.3 MTCO<sub>2</sub>e per person by 2030, and 1.2 MTCO<sub>2</sub>e per person by 2050. Therefore, Project compliance with the CAP adequately establishes Project compliance with statewide GHG reduction goals for the year 2030 associated with SB 32, and with statewide GHG reduction goals for the years beyond 2030.

Additionally, the Project is compared to ABAG's Plan Bay Area, the RTP/SCS for the San Francisco Bay Area, which establishes an overall GHG target for the Project region consistent with the GHG reduction goals of SB 32. The Project is also compared to the BAAQMD 2017 Clean Air Plan, which defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious GHG reduction targets for

2030 and 2050 and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG emissions reduction targets.

### 2.3.2 Methodology

GHG emissions-related impacts were assessed in accordance with methodologies recommended by the BAAQMD and the City of San Mateo. Where GHG emission quantification was required, emissions were modeled using the California Air Pollution Control Officers Association (CAPCOA) California Emissions Estimator Model (CalEEMod), version 2022.1.1.14 (CAPCOA 2022). CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Project construction generated GHG emissions were calculated using CalEEMod model defaults for San Mateo County (County). Operational GHG emissions were based on CalEEMod model defaults for the County, the site and building square footage identified in the Project Site plans, and design features outlined by the Project’s development plans. For the purposes of this analysis, projected operational emissions associated with proposed operations are compared to the existing baseline, which includes two existing commercial building structures totaling 9,336 sf.

### 2.3.3 Generation of GHG Emissions

#### 2.3.3.1 Construction of Proposed Project

Construction-related activities that would generate GHG emissions include worker commute trips, haul trucks carrying supplies and materials to and from the Project Site, and off-road construction equipment (e.g., dozers, loaders, excavators). Table 2-2 illustrates the specific construction generated GHG emissions that would result from construction of the Project. Once construction is complete, the generation of these GHG emissions would cease.

<b>Table 2-2. Construction-Related Greenhouse Gas Emissions</b>	
<b>Emissions Source</b>	<b>CO<sub>2</sub>e (Metric Tons/ Year)</b>
Construction Calander Year 1	156
Construction Calander Year 2	293
<b>Total Construction Emissions</b>	<b>449</b>

Source: CalEEMod version 2022.1.1.14. Refer to Attachment A for Model Data Outputs.

As shown in Table 2-2, Project construction would result in the generation of approximately 449 MTCO<sub>2</sub>e over the course of construction. Once construction is complete, the generation of these GHG emissions would cease. As previously stated, there are no adopted thresholds of significance for construction related GHG emissions. GHG emissions generated by the construction sector have been declining in recent years. For instance, construction equipment engine efficiency has continued to improve year after year. The first federal standards (Tier 1) for new off-road diesel engines were adopted in 1994 for engines over 50 horsepower and were phased in from 1996 to 2000. In 1996, a Statement of Principles pertaining to off-

road diesel engines was signed between the USEPA, CARB, and engine makers (including Caterpillar, Cummins, Deere, Detroit Diesel, Deutz, Isuzu, Komatsu, Kubota, Mitsubishi, Navistar, New Holland, Wis-Con, and Yanmar). On August 27, 1998, the USEPA signed the final rule reflecting the provisions of the Statement of Principles. The 1998 regulation introduced Tier 1 standards for equipment under 50 horsepower and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. As a result, all off-road, diesel-fueled construction equipment manufactured in 2006 or later has been manufactured to Tier 3 standards. Tier 3 engine standards reduce precursor and subset GHG emissions such as nitrogen oxide by as much as 60 percent. On May 11, 2004, the USEPA signed the final rule introducing Tier 4 emission standards, which were phased in over the period of 2008-2015. The Tier 4 standards require that emissions of nitrogen oxide be further reduced by about 90 percent. All off-road, diesel-fueled construction equipment manufactured in 2015 or later will be manufactured to Tier 4 standards.

### **2.3.3.2 Operation of Proposed Project**

Operation of the Project would result in GHG emissions. Projected GHG emissions associated with proposed operations are quantified and compared to the existing baseline, which, as previously stated, includes two existing commercial building structures totaling 9,336 sf. Table 2-3 summarizes all the direct and indirect annual GHG emissions associated with the Project.

<b>Table 2-3. Operational-Related Greenhouse Gas Emissions</b>	
<b>Emission Source</b>	<b>CO<sub>2</sub>e (Metric Tons/ Year)</b>
<b>Proposed Project (Mixed-Use Restaurant/Office Space)</b>	
Mobile	360
Area	1
Energy	177
Water	16
Waste	30
Refrigerants	1
<b>Total</b>	<b>585</b>
<b>Existing Onsite Land Uses (Commercial)</b>	
Mobile	103
Area	0
Energy	11
Water	1
Waste	3
Refrigerants	0
<b>Total</b>	<b>118</b>
<b>Difference</b>	
Mobile	+257
Area	+1
Energy	+166
Water	+15
Waste	+27
Refrigerants	+1
<b>Total</b>	<b>+467</b>

Source: CalEEMod version 2022.1.1.14. Refer to Attachments A and B for Model Data Outputs.

Notes: Emission projections predominately based on CalEEMod model defaults for San Mateo County. Several GHG-reducing Project components related to building design features and site location efficiency are applied to the Proposed Project emission projections.

As shown in Table 2-3, the Project would generate 585 MTCO<sub>2</sub>e annually. The increase in operational GHG emissions over the existing baseline would be 467 MTCO<sub>2</sub>e per year as a result of the Project.

## **2.3.4 Impact Analysis**

### **2.3.4.1 Generation of Greenhouse Gas Emissions Resulting in Conflicts with any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases**

#### **City of San Mateo Climate Action Plan**

The City CAP (2020) is the most recent update to the prior 2015 City CAP. The CAP is a strategic planning document that identifies sources of GHG emissions within the City's boundaries, presents current and future emissions estimates, identifies a GHG reduction target for future years, and presents strategic programs, policies, and projects to reduce emissions from the energy, transportation, land use, water use, and waste sectors. The CAP includes GHG reduction measures in the form of GHG reduction programs, policies, projects, and strategies. The BAAQMD Qualified Greenhouse Gas Emissions Reduction Program criteria, in conjunction with the BAAQMD's CEQA Guidelines, guided the development of the emissions reduction program developed by the City. All three guidelines comply with the requirements of statewide GHG-reduction targets and achieve the goals of the Scoping Plan.

The 2020 City CAP is written to align with the goals of SB 32, which codified the statewide GHG emission reduction goal established by EO B-30-15 of at least 40 percent below 1990 levels no later than December 31, 2030. Specifically, the City has set a per capita emission rate of 4.3 MTCO<sub>2e</sub> per person by 2030. Therefore, to show consistency with the CAP the Project is compared to the threshold of 4.3 metric tons of CO<sub>2e</sub> per Project service population (Project Population) per year by 2030. This approach is used to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions. An advantage of the service population approach is its application to both residential land uses and employment-oriented land uses. The per capita or per service population metrics represent the rates of emissions needed to achieve a fair share of the state's emission reduction mandate. The use of "fair share" in this instance indicates the GHG efficiency level that, if applied statewide or to a defined geographic area, would meet the 2030 emissions targets. The intent of SB 32 is to accommodate population and economic growth in California but to do so in a way that achieves a lower rate of GHG emissions, as evidenced in the statement from CARB's Scoping Plan. If projects can achieve targeted rates of emissions per the sum of residents plus jobs (i.e., service population), California can accommodate expected population growth and achieve economic development objectives, while also abiding by SB 32's emissions target.

The Project is proposing the construction of a restaurant/ office mixed use building. With no residential land uses on the Project Site the entire service population (Project Population) would be employees. Per default occupancy counts provided by the U.S. Green Building Council (2021), the Project is anticipated to accommodate a total of 156 employees. Therefore, the Project service population is 156. The U.S. Green Building Council's default occupancy counts provide standard estimates of how many employees are expected to staff a business based on the total amount of building square footage. As shown in Table 3-4, dividing the GHG emissions by the Project service population yields a metric ton per service population ratio of 3.75.



<b>Table 2-4. Greenhouse Gas Emissions per Service Population</b>				
<b>Project Emissions</b>	<b>Service Population (Residents + Employees)</b>	<b>Metric Tons of CO<sub>2</sub>e/SP/Year</b>	<b>CAP Threshold</b>	<b>Exceed Threshold?</b>
585	156	3.75	4.3	<b>No</b>

Source: CalEEMod version 2022.1.1.14. Refer to Attachment A for Model Data Outputs.

As shown in Table 2-4, the Proposed Project would not surpass the CAP's efficiency-based significance thresholds. As such, the Project would be consistent with the City's CAP.

**BAAQMD Plan 2017 Clean Air Plan**

The 2017 Clean Air Plan (BAAQMD 2017) provides a regional strategy to protect public health and the climate. The 2017 Clean Air Plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious GHG reduction targets for 2030 and 2050 and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG emissions reduction targets. The 2017 Clean Air Plan includes a wide range of control measures designed to reduce emissions of CH<sub>4</sub> and other 'super GHGs' in the near term, and to decrease emissions of CO<sub>2</sub> by reducing fossil-fuel combustion.

The 2017 Clean Air Plan includes a diverse range of control measures designed to decrease GHG emissions. Consistency of the Proposed Project with 2017 Clean Air Plan is demonstrated by assessing whether the Project supports all of the Project-applicable Clean Air Plan control measures for GHG emissions. The GHG-related control strategies of the Clean Air Plan include *Mobile Source Measures*, *Transportation Control Measures* and *Energy and Climate Measures*.

Note, the *Land Use and Local Impact Measures* of the 2017 Clean Air Plan address the exposure of sensitive receptors to toxic air contaminants and is thereby not applicable to this impact discussion of GHG emissions. Additionally, the *Stationary Source Measures* in the Clean Air Plan such as those implemented to control emissions from metal melting facilities, cement kilns, refineries, and glass furnaces are not applicable to the Proposed Project.

***Transportation and Mobile Source Control Measures***

The BAAQMD identifies transportation and mobile source control measures as part of the Clean Air Plan to reduce emissions from these sources. The transportation control measures are designed to reduce emissions from motor vehicles by reducing vehicle trips and vehicle miles traveled (VMT) in addition to vehicle idling and traffic congestion. The Proposed Project is consistent with the Clean Air Plan's transportation and mobile source control measures because it is a redevelopment of an existing urban environment, and it is located in direct proximity to the Downtown San Mateo Caltrain Station. The Project is considered "infill development" as it proposes to redevelop a built-out property and enhance the physical design of the urban environment. Under Public Resources Code (PRC) section 21061.3, an "infill site" is

defined as a site that “has been previously developed for qualified urban uses.” In turn, a “qualified urban use” is defined, pursuant to PRC section 21072, as “a residential, commercial, or public institutional, transit or transportation passenger facility, or retail use, or any combination of those uses.” Additionally, the Project Site is located in an “urbanized area,” which is defined under PRC section 21071 as “an incorporated city” that meets the criteria of having a population of at least 100,000 persons.

According to the USEPA, infill development can reduce development pressure on outlying areas and when it occurs near existing transit infrastructure, employment centers, and other destinations, it can help reduce the amount that people drive, thus improving air quality and reducing GHG emissions (USEPA 2014). Furthermore, the Caltrain Downtown San Mateo Station is less than 100 feet from the Project Site. The Proposed Project’s proximity to the Caltrain station may also help to reduce GHG emissions. According to a report by the Bay Area Council Economic Institute (2022), in areas of high job density there are positive influences on the utilization of transit ridership. This indicates that the greater availability of jobs available around transit stations encourages individuals to opt for those modes of commuting, rather than driving. Even further, the report notes that mixed-use developments oriented around public transit have been found to reduce household GHG emissions by 2.5 to 3.7 tons per year and lower annual household rates of driving 20-40 percent for those living, working, and/or shopping within transit station areas. As the Proposed Project would provide accessibility to restaurants, office businesses, and employment opportunities in close proximity to the Downtown San Mateo Caltrain Station, this may have a positive impact on the reduction of GHG emissions. The Proposed Project’s plans for introducing an improved place of commerce and employment are located in such a way so that access for employees and shoppers may be achieved via walking, biking, or Caltrain, which will further reduce VMT.

These aspects of the Project would result in the generation of a reduced amount of GHG emissions. As a result, the Proposed Project would not conflict with the identified transportation and mobile source control measures of the Clean Air Plan.

### ***Land Use and Local Impact Measures***

The BAAQMD Clean Air Plan includes *Land Use and Local Impact Measures* to ensure that planned growth is focused on a way that protects the people and environment from exposure of emissions associated with stationary and mobile sources and to promote mixed-use, compact development to reduce motor vehicle travel. The *Land Use and Local Impact Measures* identified by the BAAQMD are not specifically applicable to the Proposed Project as they relate to actions the BAAQMD will take to reduce impacts from goods movement and health risks in affected communities at the plan level. The measures also detail new regulatory actions the BAAQMD will undertake related to land use, including updates to the CEQA Air Quality Guidelines, and indirect source review.

However, the Proposed Project would be a redevelopment infill Project in support of these measures. For instance, the Project can be identified for its “location efficiency.” Location efficiency describes the location of the Project relative to the type of urban landscape its proposed to fit within, such as an “urban area,” “compact infill,” or “suburban center.” The Project Area represents an urban/compact infill location within an area of the City developed with residential and commercial uses. The Project Area is within an active urban center surrounded by many existing retail, commercial, and restaurant developments. The Project

would locate additional restaurant and business office land uses in close proximity to the Caltrain Downtown San Mateo station. Therefore, the Project would provide community members with greater work opportunities and commercial service options in close proximity to transit and in an urban developed area. Additionally, the Project would locate potential employment opportunities for residents already living in the vicinity. The location efficiency of the Project Area would result in synergistic benefits that would reduce vehicle trips and VMT compared to the statewide average and would result in corresponding reduction of transportation related GHG emissions.

### ***Energy and Climate Control Measures***

The Clean Air Plan also includes Energy and Climate Control Measures, which are designed to reduce ambient concentrations of emissions of CO<sub>2</sub>. Implementation of these measures is intended to promote energy conservation and efficiency in buildings throughout the community, promote renewable forms of energy production, reduce the “urban heat island” effect by increasing reflectivity of roofs and parking lots, promote the planting of (low volatile organic compound-emitting) trees to reduce biogenic emissions, lower air temperatures, provide shade, and absorb air pollutants. The measures include voluntary approaches to reduce the heat-island effect by increasing shade in urban and suburban areas through the planting of trees. The Proposed Project would increase landscaping throughout the Project Area which would help reduce the urban heat-island effect. Additionally, the Project would be constructed consistent with the standards of the 2022 Building and Efficiency Standards, which include provisions related to energy efficiency to reduce energy consumption and GHG emissions from buildings.

The Project is consistent with the 2017 Clean Air Plan. The Proposed Project would conform to the Project-applicable control measures in the Clean Air Plan and would not disrupt or hinder the implementation of any other control measures.

### **ABAG Final Plan Bay Area 2050**

ABAG’s Plan Bay Area is the RTP/SCS for the San Francisco Bay Area. Plan Bay Area establishes GHG emissions goals for automobiles and light-duty trucks, a potent source of GHG emissions attributable to land use development. As previously described, ABAG was tasked by CARB to achieve a 19 percent reduction of passenger car and light truck automotive GHG emissions by 2035 compared to 2005. Plan Bay Area 2050 establishes an overall mechanism to achieve these GHG targets for the Project region consistent with the target date of SB 32. According to ABAG, the San Francisco Bay Area will exceed the mandated GHG reduction target of 19 percent for 2035 by implementing Plan Bay Area (ABAG 2020).

The RTP/SCS contains thousands of individual transportation projects, including highway improvements, railway electrification, bicycle lanes, new transit hubs, and replacement bridges. These future investments seek to reduce traffic bottlenecks, improve the efficiency of the region’s network, and expand mobility choices. The RTP/SCS is an important planning document for the region, allowing project sponsors to qualify for federal funding. In addition, the RTP/SCS is supported by a combination of transportation and land use strategies that help the region achieve state GHG emission reduction goals and federal Clean Air Act requirements, preserve open space areas, improve public health and roadway safety, support the vital goods movement industry, and use resources more efficiently.

Plan Bay Area 2050's core strategy is "focused growth" in existing communities along the existing transportation network. This strategy allows the best efficiency in achieving key regional economic, environmental, and equity goals: it builds upon existing community characteristics, efficiently leverages existing infrastructure, and mitigates impacts on areas with less development. Plan Bay Area 2050's Growth Geographies identify a mix of locally identified Priority Development Areas, areas near high quality transit and areas of high opportunity as communities poised to accommodate additional growth. Priority Development Areas are defined as areas generally near existing job centers or frequent transit that are locally identified (i.e., identified by towns, cities, or counties) for housing and job growth. Meanwhile, Plan Bay Area 2050 identifies areas outside of the existing urban footprint or in areas that are at a very high risk of wildfire as areas where additional construction should be deprioritized.

Plan Bay Area 2050 considers development locations within close proximity to high-quality transit, such as the Proposed Project, and locations that are able to accommodate additional growth as ideal places to encourage urban growth. Furthermore, the Project is proposed within a built environment (infill development). The Project will increase employment density and land use diversity in the vicinity over current conditions. Increased employment density, measured in terms of persons, jobs, or building square footage, as well as increased land use diversity, potentially reduces emissions associated with transportation as it reduces the distance people travel for work or services and provides a foundation for the implementation of other strategies such as enhanced transit services. The Project would increase the Project Area density from two existing single-story commercial buildings to a multiple story mixed-use restaurant and office building space.

For these reasons, the Project is consistent with Plan Bay Area. Based on the Project's proximity to public transportation, availability of bike storage space and redevelopment of existing areas, it can be assumed that regional mobile emissions will decrease in line with the goals of Plan Bay Area with implementation of the Proposed Project. Implementing ABAG's RTP/SCS will greatly reduce the regional GHG emissions from transportation, and the Proposed Project will not obstruct the achievement of Plan Bay Area's emission reduction targets.

### 3.0 REFERENCES

- ABAG (Association of Bay Area Governments). 2023. Priority Development Areas (Plan Bay Area 2050) GIS Data Catalog. <https://opendata.mtc.ca.gov/datasets/MTC::priority-development-areas-plan-bay-area-2050/about>.
- \_\_\_\_\_. 2021. Final Plan Bay Area 2050.
- BAAQMD (Bay Area Air Quality Management District). 2022. Bay Area Air Quality Management District CEQA Air Quality Guidelines.
- \_\_\_\_\_. 2017. Bay Area Final 2017 Clean Air Plan.
- Bay Area Council Economic Institute. 2022. Optimizing Land Uses at Transit Stations. <http://www.bayareaeconomy.org/files/pdf/OptimizingLandUsesNearTransitStations1.pdf>
- CAPCOA (California Air Pollution Control Officers Association). 2022. California Emissions Estimator Model (CalEEMod), version 2022.1.1.14.
- CARB (California Air Resources Board). 2022. California Greenhouse Gas Emission Inventory 2022 Edition. <https://ww2.arb.ca.gov/ghg-inventory-data>.
- \_\_\_\_\_. 2008. Climate Change Scoping Plan Appendices (Appendix F).
- California Department of Finance. 2023. E-5 Population and Housing Estimates for Cities, Counties, and the State, 2021-2023 with 2020 Census Benchmark.
- IPCC (Intergovernmental Panel on Climate Change). 2023. Climate Change 2023 Synthesis Report – Summary for Policymakers. [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf)
- USEPA (U.S. Environmental Protection Agency). 2016a. Climate Change – Greenhouse Gas Emissions: Carbon Dioxide. <http://www.epa.gov/climatechange/emissions/co2.html>.
- \_\_\_\_\_. 2016b. Methane. <https://www3.epa.gov/climatechange/ghgemissions/gases/ch4.html>.
- \_\_\_\_\_. 2016c. Nitrous Oxide. <https://www3.epa.gov/climatechange/ghgemissions/gases/n2o.html>.
- \_\_\_\_\_. 2014. Smart Growth and Economic Success: Investing in Infill Development. <https://www.epa.gov/sites/default/files/2014-06/documents/developer-infill-paper-508b.pdf>.
- U.S. Green Building Council. 2021. LEED v4 Appendix 2. Default occupancy counts. <https://www.usgbc.org/credits/new-construction-existing-buildings-commercial-interiors-core-and-shell-schools-new-constr-3?view=language>

## **LIST OF ATTACHMENTS**

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Attachment A – CalEEMod Output File for Greenhouse Gas Emissions – Proposed Project

Attachment B – CalEEMod Output File for Greenhouse Gas Emissions – Existing Conditions

CalEEMod Output Files – Greenhouse Gas Emissions – Proposed Project

CalEEMod Output Files – Greenhouse Gas Emissions – Existing Conditions