

**180 East 3<sup>rd</sup> Avenue**

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**Greenhouse Gas Emissions Assessment**

San Mateo, California

Prepared For:  
**The City of San Mateo**  
**Planning Division**  
**330 West 20<sup>th</sup> Avenue**  
**San Mateo, CA**

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**ECORP Consulting, Inc.**  
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Attachment A – CalEEMod Output File for Greenhouse Gas Emissions

**LIST OF ACRONYMS AND ABBREVIATIONS**

AB	Assembly Bill
ABAG	Association of Bay Area Governments
BAAQMD	Bay Area Air Quality Management District
CAP	Climate Action Plan
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CH <sub>4</sub>	methane
City	City of San Mateo
CO <sub>2</sub>	carbon monoxide
CO <sub>2</sub> e	carbon dioxide equivalents

**LIST OF ACRONYMS AND ABBREVIATIONS**

EO	Executive Order
General Plan	City of San Mateo General Plan
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
N <sub>2</sub> O	nitrous oxide
PRC	Public Resources Code
Project	180 East 3 <sup>rd</sup> Avenue Project
RTP	Regional Transportation Plan
SB	Senate Bill
SCS	Sustainable Communities Strategy
TDM	Transport Demand Management
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled

## **1.0 INTRODUCTION**

This report documents the results of an assessment of greenhouse gas (GHG) emissions completed for the 180 East 3<sup>rd</sup> Avenue Project (Project), which includes the demolition of an existing 11,289-square-foot retail store and 1,550 square feet of office space that currently occupies the site, to allow for the construction of a 17,187-square-foot, four-story, mixed-use building located in San Mateo. This assessment was prepared using methodologies and assumptions recommended by the Bay Area Air Quality Management District (BAAQMD) for project-level review, as well as City of San Mateo (City) protocols. Existing conditions are presented, along with pertinent emissions standards and regulations. 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 and Description**

The Project site is an approximate 7,038-square-foot lot located at the southwest corner of South Ellsworth Avenue and East 3<sup>rd</sup> Avenue in the city of San Mateo, located in north San Mateo County. The rectangular shaped site is generally bound by South Ellsworth Avenue and retail uses to the northeast, street parking and retail uses to the southeast, retail uses to the southwest, and East 3<sup>rd</sup> Avenue and retail uses to the northwest. The Project is proposing a 17,187-square-foot, four-story building with an occupiable rooftop deck. The building would consist of 3,380 square feet of retail space located on the ground floor and 19,608 square feet of office space located in the basement, second floor, and third floor. The Project proposes no onsite parking. Guests and employees are encouraged to use other forms of public transportation. The site is currently occupied by a 11,289-square-foot retail store and 1,550 square feet of office space, which would be demolished.

The Project site is designated by the City of San Mateo General Plan (General Plan) as “Downtown Retail Core” and located in the Downtown Planning Area. According to the General Plan, the Downtown Retail Core designation allows for a mix of high-density residential and high-density commercial. A major goal of the General Plan is to establish the City’s downtown as the social, cultural, and economic center of the city with a mix of strong retail and office centers, high-density housing, public uses, and utilization of the transit center as a major transportation hub.

## **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 carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (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. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (Intergovernmental Panel on Climate Change [IPCC] 2014).

Table 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> (IPCC 2014). Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO<sub>2</sub>e), which weight 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 toxic air contaminants, 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 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. Of the total annual human-caused CO<sub>2</sub> emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO<sub>2</sub> emissions remains stored in the atmosphere (IPCC 2013).

Table 1. Greenhouse Gases	
Greenhouse Gas	Description
CO <sub>2</sub>	CO <sub>2</sub> 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>	CH <sub>4</sub> 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. CH <sub>4</sub> 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	N <sub>2</sub> O oxide is a clear, colorless gas with a slightly sweet odor. N <sub>2</sub> O 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; suffice it 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 to global climate change are inherently cumulative.

### 2.1.1 Sources of Greenhouse Gas Emissions

In 2019, the California Air Resources Board (CARB) released the 2019 edition of the California GHG inventory covering calendar year 2017 emissions. In 2017, California emitted 424 million gross metric tons of CO<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 2017, accounting for approximately 40 percent of total GHG emissions in the state. This sector was followed by the industrial sector (21 percent) and the electric power sector including both in-state and out-of-state sources (15 percent) (CARB 2019).

Emissions of CO<sub>2</sub> are by-products of fossil fuel combustion. CH<sub>4</sub>, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N<sub>2</sub>O is also largely attributable to agricultural practices and soil management. Carbon dioxide sinks, or reservoirs, include vegetation and the ocean, which absorb CO<sub>2</sub> through sequestration and dissolution (CO<sub>2</sub> dissolving into the water), respectively, two of the most common processes for removing carbon dioxide from the atmosphere.

## 2.2 Regulatory Framework

### 2.2.1 State

#### **Executive Order (EO) S-3-05**

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.

While dated, this EO remains relevant because a more recent California Appellate Court decision, *Cleveland National Forest Foundation v. San Diego Association of Governments* (November 24, 2014) 231 Cal.App.4th 1056, examined whether it should be viewed as having the equivalent force of a legislative mandate for specific emissions reductions. While the California Supreme Court ruled that the San Diego Association of Governments did not abuse its discretion by declining to adopt the 2050 goal as a measure of significance in light of the fact that the EO does not specify any plan or implementation measures to achieve its goal, the decision also recognized that the goal of a 40-percent reduction in 1990 GHG levels by 2030 is "widely acknowledged" as a "necessary interim target to ensure that California meets its longer-range goal of reducing greenhouse gas emissions 80 percent below 1990 levels by the year 2050."

#### **Assembly Bill (AB) 32 Climate Change Scoping Plan and Updates**

In 2006, the California legislature passed AB 32 (Health and Safety Code §38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires 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). AB 32 anticipates that the GHG reduction goals will be met, in part, through local government actions. CARB has identified a GHG reduction target of 15 percent from current levels for local governments and notes that successful implementation relies on local governments' land use planning and urban growth decisions.

Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which was re-approved by CARB on August 24, 2011, that outlines measures to meet the 2020 GHG reduction goals. To meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from today's levels. The Scoping Plan recommends measures for further study and possible State implementation, such as new fuel regulations. It estimates that a reduction of 174 million metric tons of CO<sub>2</sub>e (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry sectors, and other sources could be achieved should the State implement all of the measures in the Scoping Plan.

The Scoping Plan is required by AB 32 to be updated at least every five years. The first update to the AB 32 Scoping Plan was approved on May 22, 2014 by CARB. The 2017 Scoping Plan Update was adopted on December 14, 2017. The Scoping Plan Update addresses the 2030 target established by Senate Bill (SB) 32

as discussed below and establishes a proposed framework of action for California to meet a 40-percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include: increasing the use of renewable energy in the state, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of CH<sub>4</sub> emissions from agricultural and other wastes.

### **EO B-30-15**

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 28-nation European Union, which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). 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.

### **SB 32 and AB 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 Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels 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.

### **SB X1-2 of 2011, SB 350 of 2015, and SB 100 of 2018**

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California.

In October 2015, SB 350 was signed by Governor Brown, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from renewable resources by 2030. In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 RPS.

## **2.2.2 Local**

### **BAAQMD**

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) and establish thresholds of significance for impacts related to GHG emissions. These guidelines are based on substantial evidence to “attribute an appropriate share of greenhouse gas emission reductions necessary to reach AB 32 goals to new land use development projects in the BAAQMD’s jurisdiction that are evaluated pursuant to CEQA” (BAAQMD 2017a).

The BAAQMD project-level operational threshold of significance for GHG emissions is the project generation of 1,100 metric tons of CO<sub>2</sub>e per year during operations (bright-line numeric threshold); **or** the project generation of 4.6 metric tons of CO<sub>2</sub>e per service population (employees + patrons + residents) per year during operations (efficiency-based threshold); **or** compliance with a Qualified GHG Reduction Strategy.

### **Association of Bay Area Governments (ABAG) Final Plan Bay Area 2040**

The ABAG Plan Bay Area 2040 is the Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS) for the San Francisco Bay Area. ABAG was tasked by CARB to achieve a seven percent per capita reduction in mobile-source GHG emissions compared to 2005 vehicle emissions by 2020, and a 15 percent per capita reduction by 2035. Plan Bay Area 2040 establishes an overall mechanism to achieve these GHG targets for the Project region consistent with both the target date of AB 32 (2020) and the post-2020 GHG reduction goals of SB 32. CARB has confirmed the Project region will achieve its GHG reduction targets by implementing Plan Bay Area (CARB 2018).

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

The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. To protect the climate, the 2017 Clean Air Plan defines a vision for transitioning the region to a post-carbon economy 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 greenhouse gas 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” that are potent climate pollutants in the near-term; and to decrease emissions of CO<sub>2</sub> by reducing fossil fuel combustion.

### **City of San Mateo Sustainable Initiatives Plan**

The Sustainable Initiatives Plan (2007) addresses several areas of environmental responsibility for the City, including citywide sources of GHG emissions, impacts for new developments and construction, City planning, waste and resource management, and all modes of transportation. The Plan also addresses ways to engage the public and business in creating solutions to the environmental challenges. The Sustainable Initiative Plan consists of two sets of actions in regard to climate change: a proactive approach, which

reduces GHG emissions and therefore lessens the impact of global warming; and the adaptive approach, which serves to ensure that the City is prepared for the inevitable change.

### **City of San Mateo Greenhouse Gas Emission Reduction Program**

The City prepared a Greenhouse Gas Emission Reduction Program (2010) to summarize the City's GHG emissions and the actions being taken to mitigate those emissions. The program seeks to meet the requirements of the BAAQMD's Draft CEQA Guidelines and the corresponding criteria for a Qualified GHG Emissions Reduction Strategy as defined by the BAAQMD. The GHG Reduction Program calculates the GHG emissions reduction target and the impacts of the programs to achieve the target, consistent with State guidelines.

The program demonstrates the City's ability to reduce the GHG emissions to 1990 levels by 2020 or approximately 28 percent below business-as-usual forecasts in 2020. Based on a 2005 inventory prepared by the City, in order to achieve these emission reduction targets, the City would have to reduce its GHG emissions by 201,982 metric tons of CO<sub>2</sub>e by 2020. To remain on track to reach its 2050 target, the City would have to reduce its emissions by 458,560 metric tons of CO<sub>2</sub>e by 2030. This information was updated in the Climate Action Plan, as described below

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

The City adopted a community-wide Climate Action Plan (CAP) on April 6, 2015, which updates and consolidates the City's existing GHG Emissions Reduction Plan, CAP for Municipal Operations and Facilities, and Sustainable Initiatives Plan based on the vision of San Mateo residents, businesses, and local government. The goal was to prepare a CAP that serves as an updated and Qualified GHG Reduction Strategy consistent with BAAQMD GHG Plan Level Guidance and CEQA Guidelines Section 15183.5. The CAP was developed through a robust public process that engaged the San Mateo Sustainability Commission, staff, and the community.

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 City CAP includes five key pieces:

1. An inventory of the annual GHG emissions attributable to the City based on the types of activities occurring within the community and guidance from various protocols and agencies. The City has inventories of emissions for 2005 and 2010.
2. A forecast of what GHG emissions are likely to look like in 2020 and 2030, based on expected population and economic growth adopted in the General Plan.
3. A reduction target, which identifies a goal for reducing GHG emissions by 2020 and 2030.
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 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.

### **City of San Mateo CAP Consistency Checklist**

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

## **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 greenhouse gas 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.

### **BAAQMD Thresholds**

The assessment of GHG emissions below is based on guidance from the BAAQMD. The 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 of San Mateo has determined, in its discretion, that the guidelines are based on substantial evidence to "attribute an appropriate share of greenhouse gas emission reductions necessary to reach AB 32 goals to new land use development projects in the BAAQMD's jurisdiction that are evaluated pursuant to CEQA" (BAAQMD 2017a). Therefore, the City uses the BAAQMD CEQA Guidelines to determine the level of impact from the project contributions of GHG emissions.

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions; however, the BAAQMD recommends the quantification and disclosure of construction-generated GHG emissions.

The BAAQMD project-level operational threshold of significance for GHG emissions is the project generation of 1,100 metric tons of CO<sub>2</sub>e per year during operations (bright-line numeric threshold); **or** the project generation of 4.6 metric tons of CO<sub>2</sub>e per service population (employees + patrons + residents) per year during operations (efficiency-based threshold); **or** compliance with a Qualified GHG Reduction Strategy. For the purposes of this assessment, the Project is evaluated for compliance with the City CAP, as well as the BAAQMD bright-line numeric threshold of 1,100 metric tons of CO<sub>2</sub>e per year during operations.

As previously described, statewide goals for GHG reductions in the years beyond 2020 have been recently codified into State law with the passage of SB 32. The California Cap-and-Trade Program is the centerpiece of the current Scoping Plan as it allows the State to put a firm limit on overall carbon emissions. Under Cap-and-Trade, an overall limit on GHG emissions from capped sectors is established and facilities subject to the cap would be able to trade permits to emit GHG emissions. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. The program also covers fuel suppliers (natural gas and propane fuel providers as well as transportation fuel providers). Accordingly, GHG emissions associated with the Project's electricity and natural gas usage are covered by the Cap-and-Trade Program, as are GHG emissions associated with the combustion of transportation fuels in the state, whether refined in-state or imported. Therefore, while Project design can contribute to reducing potential GHG emissions from the Proposed Project, achievement of future GHG efficiency standards is also dependent, and primarily driven, on regulatory controls applied to all sectors of the California economy. Thus, the ability of this Project—and all land use development—to achieve GHG reduction goals beyond 2020 is partially out of the control of the Project and its proponents and is being addressed by the State.

Nonetheless, even though the City CAP was drafted before SB 32, the CAP addresses estimated emissions beyond 2020 as informed by the post-2020 GHG reduction targets of EO S-3-05. Specifically, the City set an additional goal of a 35-percent reduction from 2005 levels by 2030. Therefore, Project compliance with the CAP adequately establishes Project compliance not only with statewide GHG reduction goals for the year 2020 associated with AB 32, but also with statewide GHG reduction goals for the years beyond 2020.

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 both the target date of AB 32 (2020) and the post-2020 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-related impacts were assessed in accordance with methodologies recommended by CARB and the BAAQMD. Where GHG quantification was required, emissions were modeled using CalEEMod version 2016.3.2. 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 primarily calculated using CalEEMod model defaults. Operational GHG emissions were modeled with CalEEMod based on the Project site plans and vehicle trip generation rates provided by Hexagon Transportation Consultants, Inc. (2019). For the purposes of this analysis, projected operational emissions associated with proposed operations are compared to the existing baseline, which includes a gymnastics studio and office spaces.

### **2.3.3 Impact Analysis**

#### **Conflict 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 CAP**

The City CAP (2015) 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 GHG reduction programs, policies, projects, and strategies are referred to as "reduction measures" in the CAP. The emissions reduction program developed by the City follows the BAAQMD's CEQA Guidelines (2017a) and the corresponding criteria for a Qualified Greenhouse Gas Emissions Reduction Program as defined by the BAAQMD, which in turn were developed to comply with the requirements of AB 32 and achieve the goals of the AB 32 Scoping Plan. A Qualified Greenhouse Gas Emissions Reduction Program adopted by a local jurisdiction should include the elements below, as described in CEQA Guidelines Section 15183.5. The BAAQMD's CEQA Guidelines outline the methodology to determine whether a GHG reduction program meets these requirements.

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
- Specify measures or a group of measures, including performance standards, which substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels.
- Be adopted in a public process following environmental review.

The City's CAP meets BAAQMD guidelines as follows:

- The CAP quantifies citywide GHG emissions, both existing and projected over the specified time period, resulting from activities in San Mateo as defined by the City's General Plan.
- The CAP establishes a level, based on substantial evidence, below which the contribution of emissions from activities covered by the plan would not be cumulatively considerable.
- CAP policy provisions reduce emissions to 15 percent below 2005 levels by 2020.
- CAP policy provisions reduce emissions to 35 percent below 2005 levels by 2030.

- CAP policy provisions provide a foundation for the City to reach the goal of reducing emissions to 80 percent below 1990 levels by 2050.
- The CAP identifies and analyzes the emissions resulting from specific actions or categories of actions anticipated within the city.
- The CAP specifies measures or a group of measures, including performance standards.
- The CAP establishes a mechanism to monitor its progress toward achieving the level and to require amendment if the plan is not achieving specific levels.

The reduction measures proposed in the CAP build on inventory results and key opportunities prioritized by City staff, members of the San Mateo Sustainability Commission, and members of the public. The CAP strategies consist of measures and actions that identify the steps the City will take to support reductions in GHG emissions. The City will achieve these reductions in GHG emissions through a mix of voluntary programs and new strategic standards. All standards presented in the CAP respond to the needs of development, avoiding unnecessary regulation, streamlining new development, and achieving more efficient use of resources.

The Project is consistent with the GHG inventory and forecast in the CAP. Both the existing and the projected GHG inventories in the CAP were derived based on the land use designations and associated densities defined in the City's General Plan (2010). The General Plan designates the Project site as Downtown Retail Core. The Proposed Project is consistent with this land use designation, and is thereby consistent with the GHG inventory and forecast in the CAP.

In addition, a specific Project proposal is considered consistent with the City CAP if it complies with the "required" GHG reduction measures in the adopted CAP. The required GHG reduction measures applicable to the Proposed Project include the following:

- *Reduction Measure RE 5:* Renewable energy systems for new nonresidential buildings. New nonresidential buildings with greater than or equal to 10,000 square feet of gross floor area are to provide a minimum of a five-kilowatt photovoltaic system. The Project is required to adhere to the San Mateo Municipal Code as a condition of Project approval.
- *Reduction Measure EE 3:* Nonresidential energy efficiency retrofits. New nonresidential buildings are required to adopt the Building Energy Efficiency Standards, 2016 Edition, Title 24, part 6 of the California Code of Regulations (CCR). The retrofits in this code can reduce energy use in new buildings by 30 percent to 50 percent. The Project will be required to adhere to all energy efficiency building codes, both State and local, as a condition of Project approval.
- *Reduction Measure AT 2:* Implement transportation demand management strategies to comply with the appropriate trip reduction target identified by the City. Transport Demand Management (TDM) is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle trips to help relieve traffic congestion, parking demand, and air pollutants, including GHG emissions. The purpose of TDM is to promote more efficient utilization of existing transportation facilities, and to ensure that new developments are designed to maximize the potential for sustainable transportation usage. A TDM Plan has been prepared for the Proposed Project. The

Project TDM Plan includes trip reduction strategies with the goal of reducing overall vehicular trip-making activity in the Project area. The Project is located within walking distance to the San Mateo Caltrain station and three bus transit stops. The Project is also located in Downtown San Mateo, and thus within easy access to restaurants, retail stores, and other services. These services are conveniently located for future employees of the Proposed Project, which will further reduce the number of vehicle trips. The Project would also result in the location of retail services in close to proximity to existing offsite residential uses, providing exiting residents in the vicinity more walkable options for shopping.

- Reduction Measure SW 1: Provide an area of sufficient space to store and allow access to a compost bin and/or participate in a composting program. The Project is required, as a condition of Project approval, to either implement composting facilities onsite, or participate in a composting program with the Recology integrated resource recovery company.

All development in the City, including the Project, is required to adhere to all City-adopted policy provisions, including those contained in the adopted CAP. The Project applicant must complete a CAP consistency checklist (previously described) to confirm consistency with the CAP to the satisfaction of City staff. The City ensures all provisions of the City CAP are incorporated into projects and their permits through development review and applications of conditions of approval as applicable.

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

The 2017 Clean Air Plan provides a regional strategy to protect public health and protect 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 that are potent climate pollutants 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*. (The *Land Use and Local Impact Measures* 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 in that it is the redevelopment of an existing urban environment. Additionally, the Project is proposing no onsite parking to encourage the use of public transportation methods for patrons and employees. According to the Average Trip Generation and Parking Memo prepared by Hexagon Transportation Consultants, Inc. the Proposed Project is anticipated to generate nine less pm peak-hour trips compared to that of the existing use. Finally, 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." (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.) In turn, a "qualified urban use" is defined, pursuant to PRC section 21072, as "any residential, commercial, or public institutional, transit or transportation passenger facility, or retail use, or any combination of those uses."

The Proposed Project would provide a convenient proximity to transit options for its patrons and employees. For instance, the Project is located approximately 1,363 feet from the San Mateo Caltrain station, which is a 10 to 15-minute walk. Sidewalks exist between the Project site and the Caltrain for easy accessibility. Additionally, there are three bus transit stops in close proximity (<800 feet). Access between these bus stops and the Project site is provided via sidewalk located along both sides of South San Mateo Drive and East 4<sup>th</sup> Street. The Project site is served by bus routes 250, 295, 59, and 252 as well as access to Carpool 2.0 Rewards Program. These routes and the program run throughout the day and provide frequent and reliable transit service to and from the Project area. The increased transit accessibility would result in fewer vehicle trips and VMT compared to the statewide average and encourage walking and non-automotive forms of transportation, thus resulting in reductions of transportation-related emissions.

These aspects of the Project would result in the generation of a reduced amount of GHG. According to the USEPA, redevelopments produce 32 to 57 percent less emissions per capita relative to conventional developments; this is because the number of daily vehicle trips and VMT associated with the redevelopment tend to be lower compared with development on vacant land. 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 in 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 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 site represents an urban/compact infill location within the central portion of the City. The Project site is served by existing public transportation and as previously described, is within an active urban center surrounded with many existing offsite office/commercial and residential buildings. The Project would co-locate complementary office and retail land uses in close proximity to existing offsite office, commercial, and residential uses; therefore, the Project would provide job options to existing residents currently living near the site. The location efficiency of the Project site would result in synergistic benefits that would reduce vehicle trips and VMT compared to statewide average and would result in corresponding reduction of transportation-related GHG emissions.

The Project would increase density in the vicinity over current conditions. Increased density, measured in terms of persons and jobs per area, reduce 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 to reduce 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 through the implementation of cool roofing and cool paving techniques. The Project is proposing an occupiable rooftop deck for the employees and patrons of the building. These decks are commonly made of wood, lightweight industrial concert or wood fibers to ensure stability and comfortability through minimal heat absorption. Additionally, the proposed building would be built to the 2016 Title 24 Building Energy Efficiency Standards. The 2016 Building Efficiency Standards are 28 percent more efficient than previous 2013 Standards for residential construction and five percent better for nonresidential construction. The 2103 Standards were 25 percent more efficient than the 2010 Standards. Energy-efficient buildings require less electricity, and increased energy efficiency reduces fossil fuel consumption and decreased GHG emissions.

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 2040**

The ABAG 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 seven percent per

capita reduction in mobile-source GHG emissions compared to 2005 vehicle emissions by 2020 and a 15 percent per capita reduction by 2035. Plan Bay Area 2013-2040 establishes an overall mechanism to achieve these GHG targets for the Project region consistent with both the target date of AB 32 (2020) and the post-2020 GHG reduction goals of SB 32. CARB has confirmed the Project region will achieve its GHG reduction targets by implementing Plan Bay Area (CARB 2018). 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.

The Plan Bay Area 2040 core strategy is "focused growth" in existing communities along the existing transportation network. This strategy allows the best "bang for the buck" 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. The RTP/SCS identifies 200 "Priority Development Areas," which are areas focused for growth and development. Priority Development Areas are defined by the RTP/SCS as existing neighborhoods that are served by public transit and have been identified as appropriate for additional, compact development.

The Project site is located in an area identified as a Priority Development Area in the RTP/SCS. Since the Project site is a Priority Development Area in the RTP/SCS planning period as opposed to "Priority Conservation Area," it is included in an area where urban development is both predicted and encouraged by ABAG. Furthermore, the Project is a modernization of land uses within a built environment resulting in an increase of land use densification on the Project site. The Project will increase density and land use diversity in the vicinity over current conditions. Increased 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 site density by an additional 11,699 square feet of office and retail space.

For these reasons, the Project is consistent with Plan Bay Area and 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 the ABAG 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.

## **Contribution of Greenhouse Gas Emissions**

### **Construction**

Construction-related activities that would generate GHGs 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 illustrates the specific construction-generated GHG emissions that would result from construction of the Project.

<b>Table 2. Construction-Related Greenhouse Gas Emissions</b>	
<b>Emissions Source</b>	<b>CO<sub>2</sub>e (Metric Tons/ Year)</b>
2020 Construction	212
2021 Construction	113
<b>Project Construction Total</b>	<b>325</b>

Source: CalEEMod version 2016.3.2. Refer to **Attachment A** for Model Data Outputs.

Notes: Emissions estimates account for the demolition of 12,839 square feet of structures and export of 2,998 cubic yards of soil.

As shown in Table 2, Project construction (including demolition activities) would result in the generation of approximately 325 metric tons of CO<sub>2</sub>e over the course of construction. Once construction is complete, the generation of these GHG emissions would cease. As previously stated, the BAAQMD does not have an adopted threshold 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 are currently 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.

In addition, the California Energy Commission recently adopted changes to the 2016 Building Energy Efficiency Standards contained in the CCR, Title 24, Part 6 (also known as the California Energy Code). The 2016 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. For instance, effective January 1, 2017, owners/builders of construction projects have been required to divert (recycle) 65 percent of construction waste materials generated during the project. This requirement greatly reduces the generation of GHG emissions by reducing decomposition at landfills, which is a source of CH<sub>4</sub>, and reducing demand for natural resources.

## Operations

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 a gymnastics studio and office spaces. Table 3 summarizes all the direct and indirect annual GHG emissions associated with the Project.

<b>Table 3. Operational Greenhouse Gas Emissions</b>	
<b>Emission Source</b>	<b>CO<sub>2</sub>e (Metric Tons/ Year)</b>
<b>Proposed Project</b>	
Area Source (landscaping, hearth)	0
Energy	103
Mobile	237
Waste	11
Water	13
<b>Total</b>	<b>364</b>
<b>Existing Onsite Land Uses</b>	
Area Source (landscaping, hearth)	0
Energy	45
Mobile	374
Waste	64
Water	4
<b>Total</b>	<b>487</b>
<b>Difference</b>	
Area Source (landscaping, hearth)	0
Energy	58
Mobile	-137
Waste	-53
Water	9
<b>Total</b>	<b>-123</b>
<i>BAAQMD Bright-Line Significance Threshold</i>	<i>1,100</i>
<b>Exceed BAAQMD Daily Threshold?</b>	<b>No</b>

Source: CalEEMod version 2016.3.2. Refer to Attachment A for Model Data Outputs.

As shown in Table 3, the new Project would result in a decrease of operational emissions by 123 metric tons of CO<sub>2</sub>e per year compared with existing conditions. This is largely due to the decrease in mobile-source GHG emissions that can be attributed to a reduction in vehicle trips as a result of the Project. Therefore, the Proposed Project would not surpass the BAAQMD bright-line numeric significance threshold of 1,100 metric tons of CO<sub>2</sub>e annually. BAAQMD thresholds were developed based on substantial evidence that such thresholds represent quantitative levels of GHG emissions, compliance with which means that the environmental impact of the GHG emissions will normally not be cumulatively considerable under CEQA (BAAQMD 2017a). Compliance with such thresholds will be part of the solution

to the cumulative GHG emissions problem, rather than hinder the State's ability to meet its goals of reduced statewide GHG emissions under AB 32.

### **Cumulative GHG Impacts**

Climate change is a global problem. And GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, 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 much longer atmospheric lifetimes of one year to several thousand years that allow them to be dispersed around the globe.

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of Project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the Proposed Project would generate less GHG emissions than what is currently occupying on the site. As previously discussed, the Proposed Project would not conflict with the City CAP, the BAAQMD 2017 Clean Air Plan, or Plan Bay Area, the RTP/SCS for the Bay Area. As a result, the Project would not conflict with any GHG reduction plans. Therefore, the Project's cumulative contribution of GHG emissions would be less than significant and the Project's cumulative GHG impacts would also be less than cumulatively considerable.

### 3.0 REFERENCES

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