

**Greenhouse Gas Emissions Assessment  
Oyster Cove Project  
City of Petaluma, California**

Prepared by:

**Kimley»»Horn**

Expect More. Experience Better.

**Kimley-Horn and Associates, Inc.**  
10 S. Almaden Boulevard, Suite 1250  
San José, California 95113  
*Contact: Ms. Noemi Wyss, AICP*  
669.800.4152

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**LIST OF ABBREVIATED TERMS**

AB	Assembly Bill
CARB	California Air Resource Board
CCR	California Code of Regulations
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CALGreen	California Green Building Standards
CPUC	California Public Utilities Commission
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
CFC	Chlorofluorocarbon
CPP	Clean Power Plan
CCSP	Climate Change Scoping Plan
cy	cubic yard
EPA	Environmental Protection Agency
FAA	Federal Clean Air Act
FR	Federal Register
GHG	greenhouse gas
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
LCFS	Low Carbon Fuel Standard
CH <sub>4</sub>	Methane
MMTCO <sub>2</sub> e	million metric tons of carbon dioxide equivalent
MTCO <sub>2</sub> e	million tons of carbon dioxide equivalent
NHTSA	National Highway Traffic Safety Administration
NF <sub>3</sub>	nitrogen trifluoride
N <sub>2</sub> O	nitrous oxide
PFC	Perfluorocarbon
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
Sf	square foot
SF <sub>6</sub>	sulfur hexafluoride
TAC	toxic air contaminants

# 1 INTRODUCTION

This report describes effects of climate change and greenhouse gas (GHG) emissions that would be caused by implementation of the Oyster Cove Project. The study area for climate change and the analysis of GHG emissions is broad because climate change is influenced by world-wide emissions and their global effects. However, the study area is also limited by the CEQA Guidelines [Section 15064(d)], which directs lead agencies to consider an “indirect physical change” only if that change is a reasonably foreseeable impact that may be caused by the Project. This report limits discussion to those physical changes to the environment that are not speculative and are reasonably foreseeable.

## 1.1 PROJECT LOCATION

The proposed Project is located at 100 and 310 East D Street in Petaluma. [Figure 1: Regional Vicinity](#) and [Figure 2: Site Vicinity](#) depict the Project site in a regional and local context. The Project site is located in an urban area with a mix of surrounding uses including commercial, office, and industrial uses. The Project site is located in downtown Petaluma near Petaluma’s Historic Commercial District, the Sonoma Marin Rapid Transit (“SMART”) Petaluma Downtown Station, and immediately adjacent to the Steamer Landing/River Park. The site is bounded by East D Street to the west, the Petaluma River Park to the east, an Urban Center (T5) zoned unused rail spur to the north, the Petaluma River to the south, and by Civic Space/Trail owned by the City that surrounds the McNear Canal.

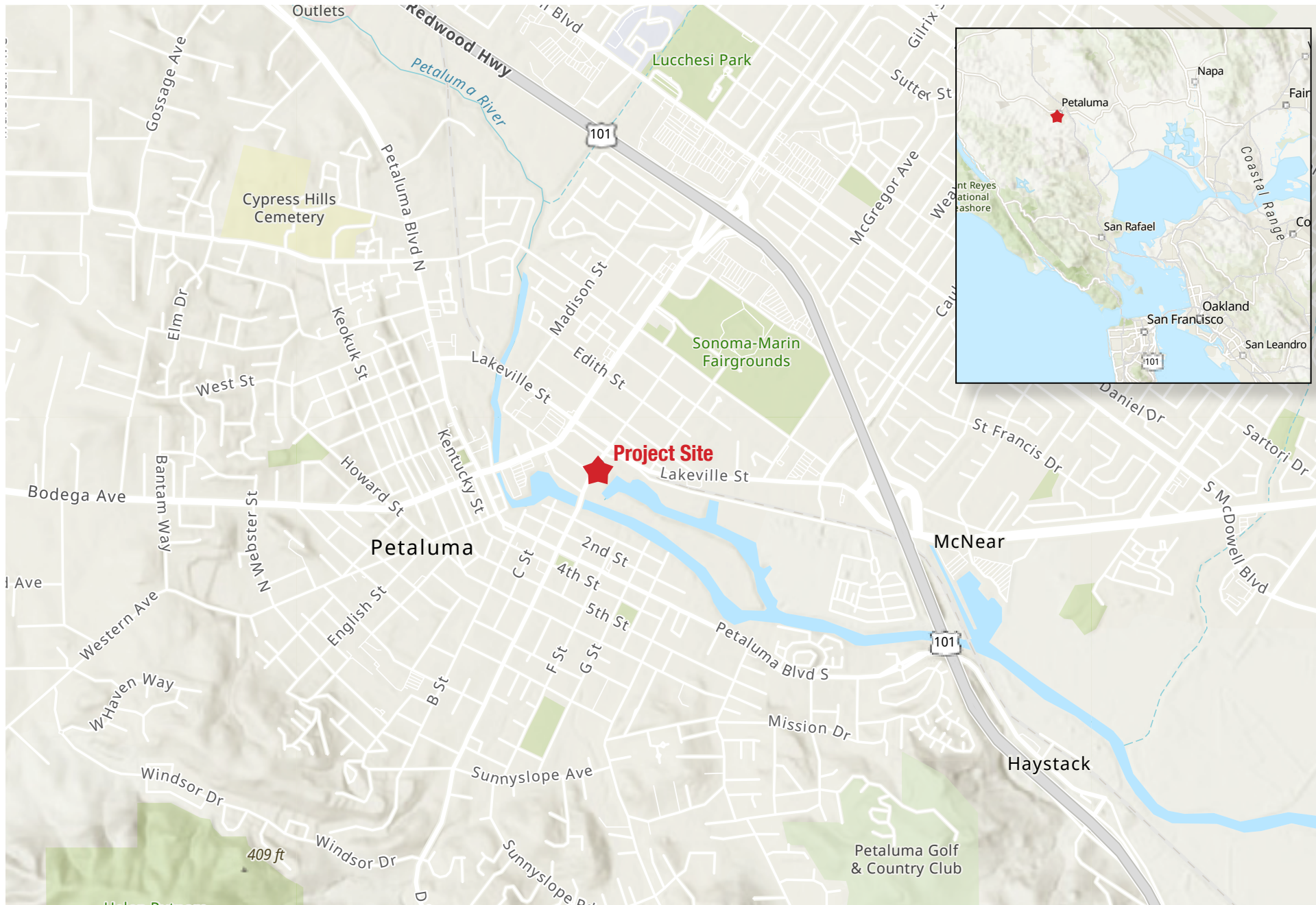
The site is partially developed with three one-story industrial buildings. The existing one-story buildings are located on the southern half of the Project site. Much of the Project site remains undeveloped and is vegetated with pavement and gravel surrounding the existing buildings.

## 1.2 PROJECT DESCRIPTION

The proposed Oyster Cove Project would demolish two of the existing industrial buildings and would renovate and adaptively reuse one of the buildings that has been identified by the City as possibly having historic value. The building-to-remain is approximately 9,000 square feet (sf). Construction of the Project is expected to commence in early 2023 and last for approximately two years. The proposed development would result in 122 three-story townhomes and 10 live/work units varying in size from approximately 1,350 sf to 2,130 sf. Certain units may also have optional ADUs. A new public pedestrian and bike path connecting East D Street to the Petaluma River Park is proposed. The building-to-remain is proposed to be a combination of commercial and boat storage. Proposed site work also includes site lighting and utility infrastructure as required to support project operations. [Figure 3: Site Plan](#), shows the proposed layout of the Project site.

Primary access to the Project site is from East D Street, directly across from its intersection with Copeland Street. The Project proposes a reconfiguration of current circulation patterns that would relocate vehicular traffic to the interior of the site, leaving the entire waterfront to be enjoyed by pedestrians and cyclists.

The Project site is designated as Mixed Use (MU) and River Dependent Industrial (RDI). MU allows for a combination of uses, including retail, residential, service commercial, and/or office. RDI allows for heavy industrial manufacturing, raw material processing, and related uses that require river access as an integral part of daily operations. The Project site is zoned as Urban Center (T-5) and River Dependent Industrial District (D3).



Source: USGS, 2021

**Figure 1: Regional Map**

Oyster Cove Project



Not to scale

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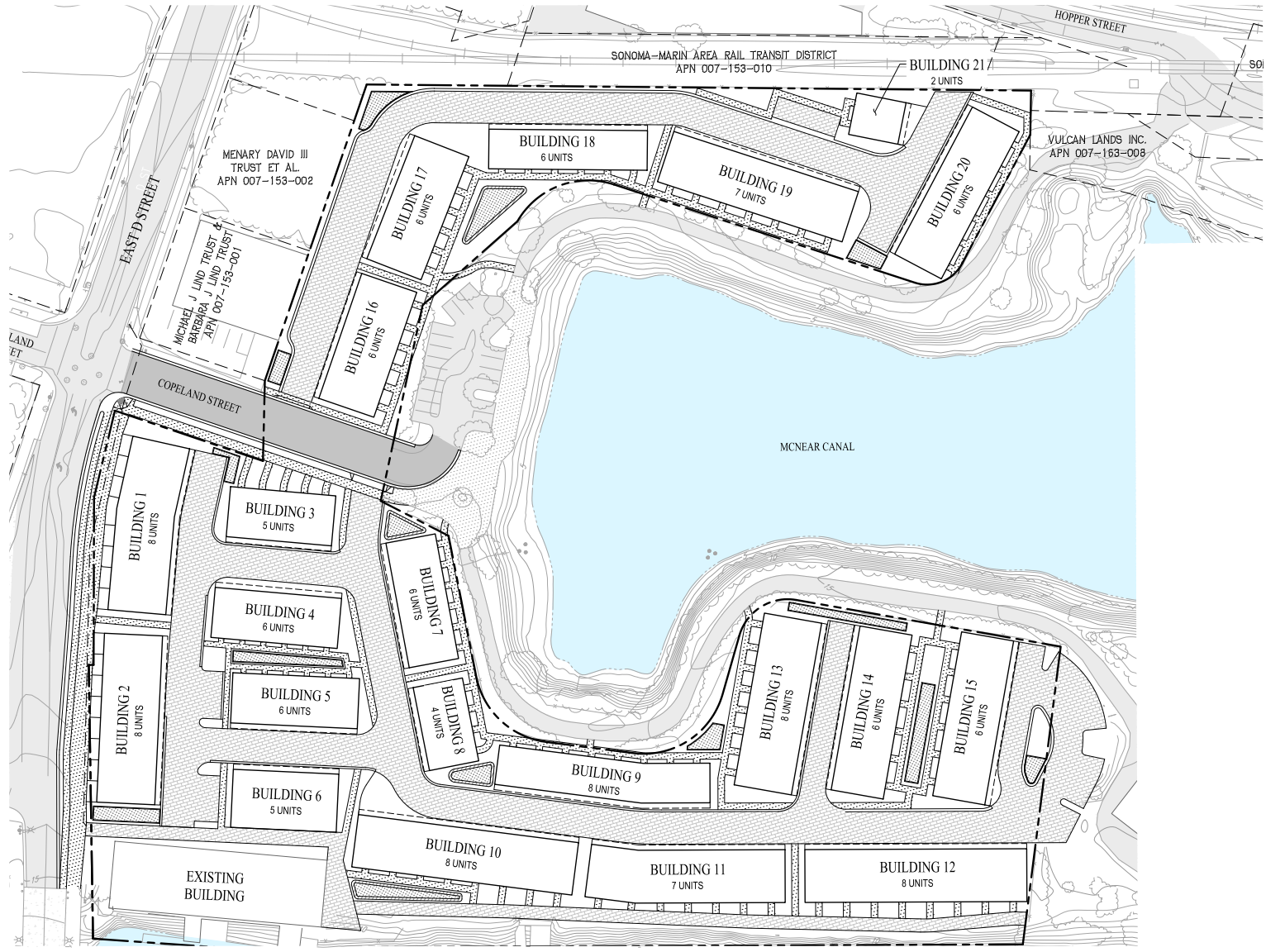
Source: Nearmap, 2022

**Figure 2: Project Vicinity Map**

Oyster Cove Project



Not to scale



Source: CBG Civil Engineers, 2022

**Figure 3: Site Plan**  
Oyster Cove Project



Not to scale

## 2 ENVIRONMENTAL SETTING

### 2.1 GREENHOUSE GASES AND CLIMATE CHANGE

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 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.

The primary 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. Examples of fluorinated gases include chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>); however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of GHGs exceeding 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.

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 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 a GHG molecule is dependent on multiple variables and cannot be pinpointed, more CO<sub>2</sub> is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms of carbon sequestration. 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 (Intergovernmental Panel on Climate Change, 2013). [Table 1: Description of Greenhouse Gases](#), describes the primary GHGs attributed to global climate change, including their physical properties.



**Table 1: Description of Greenhouse Gases**

Greenhouse Gas	Description
Carbon Dioxide (CO <sub>2</sub> )	CO <sub>2</sub> is a colorless, odorless gas that is emitted naturally and through human activities. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. 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, and industrial facilities. The atmospheric lifetime of CO <sub>2</sub> is variable because it is readily exchanged in the atmosphere. CO <sub>2</sub> is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining Global Warming Potentials for other GHGs.
Nitrous Oxide (N <sub>2</sub> O)	N <sub>2</sub> O is largely attributable to agricultural practices and soil management. Primary human-related sources of N <sub>2</sub> O include agricultural soil management, sewage treatment, combustion of fossil fuels, and adipic and nitric acid production. N <sub>2</sub> O is produced from 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. The Global Warming Potential of N <sub>2</sub> O is 298.
Methane (CH <sub>4</sub> )	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. Methane is the major component of natural gas, approximately 87 percent by volume. Human-related sources include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. Natural sources of CH <sub>4</sub> include wetlands, gas hydrates, termites, oceans, freshwater bodies, non-wetland soils, and wildfires. The atmospheric lifetime of CH <sub>4</sub> is approximately 12 years and the Global Warming Potential is 25.
Hydrofluorocarbons (HFCs)	HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is increasing, as the continued phase out of CFCs and HCFCs gains momentum. The 100-year Global Warming Potential of HFCs range from 124 for HFC-152 to 14,800 for HFC-23.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and only break down by ultraviolet rays approximately 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Global Warming Potentials range from 6,500 to 9,200.
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987. Global Warming Potentials for CFCs range from 3,800 to 14,400.
Sulfur Hexafluoride (SF <sub>6</sub> )	SF <sub>6</sub> is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas. The Global Warming Potential of SF <sub>6</sub> is 23,900.
Hydrochlorofluorocarbons (HCFCs)	HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, HCFCs are subject to a consumption cap and gradual phase out. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The 100-year Global Warming Potentials of HCFCs range from 90 for HCFC-123 to 1,800 for HCFC-142b.
Nitrogen Trifluoride (NF <sub>3</sub> )	NF <sub>3</sub> was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. This gas is used in electronics manufacture for semiconductors and liquid crystal displays. It has a high global warming potential of 17,200.
Source: Compiled from U.S. EPA, <i>Overview of Greenhouse Gases</i> , April 11, 2018 ( <a href="https://www.epa.gov/ghgemissions/overview-greenhouse-gases">https://www.epa.gov/ghgemissions/overview-greenhouse-gases</a> ); U.S. EPA, <i>Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016</i> , 2018; Intergovernmental Panel on Climate Change, <i>Climate Change 2007: The Physical Science Basis</i> , 2007; National Research Council, <i>Advancing the Science of Climate Change</i> , 2010; U.S. EPA, <i>Methane and Nitrous Oxide Emission from Natural Sources</i> , April 2010.	

### 3 REGULATORY SETTING

#### 3.1 FEDERAL

To date, national standards have not been established for nationwide GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

**Energy Independence and Security Act of 2007.** The Energy Independence and Security Act of 2007 (December 2007), among other key measures, requires the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

**U.S. Environmental Protection Agency Endangerment Finding.** The U.S. Environmental Protection Agency's (EPA) authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Federal Clean Air Act (FCAA) and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in December 2009. Based on scientific evidence, it found that six GHGs (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>) constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing FCAA and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions.

**Federal Vehicle Standards.** In response to the U.S. Supreme Court ruling discussed above, Executive Order 13432 was issued in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, an Executive Memorandum was issued directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO<sub>2</sub> in model year

2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking. On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks. It should be noted that the EPA is currently proposing to freeze the vehicle fuel efficiency standards at their planned 2020 level (37 mpg), canceling any future strengthening (currently 54.5 mpg by 2026).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO<sub>2</sub> emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6 to 23 percent over the 2010 baseline.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO<sub>2</sub> emissions by approximately 1.1 billion metric tons and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program.

In 2018, the President and the EPA have stated their intent to halt various Federal regulatory activities to reduce GHG emission, including the phase two program. California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives. On September 27, 2019, the U.S. EPA and the NHTSA published the “Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program.” (84 Fed. Reg. 51,310 (Sept. 27, 2019.)) The Part One Rule revokes California’s authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. On March 31, 2020, the U.S. EPA and NHTSA finalized rulemaking for SAFE Part Two sets CO<sub>2</sub> emissions standards and corporate average fuel economy (CAFE) standards for passenger vehicles and light duty trucks, covering model years 2021-2026. The current U.S. EPA administration has repealed SAFE Rule Part One, effective January 28, 2022 and is reconsidering Part Two.

## 3.2 STATE OF CALIFORNIA

### California Air Resources Board

The California Air Resources Board (CARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. Various statewide and local initiatives to reduce California’s contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects. California is a significant emitter of CO<sub>2</sub>e in the world and produced 440 million gross metric tons of CO<sub>2</sub>e in 2015. In the state, the transportation sector is the largest emitter of GHGs, followed by industrial operations such as manufacturing and oil and gas extraction.

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation, such as the landmark AB 32 California Global Warming Solutions Act of 2006, was specifically enacted to address GHG emissions. Other legislation, such as Title 24 building efficiency standards and Title 20 appliance energy standards, were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major legislation related to GHG emissions reduction.

**Assembly Bill 32 (California Global Warming Solutions Act of 2006).** AB 32 instructs the CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. AB 32 also directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. It set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

**CARB Scoping Plan.** CARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emissions level would require a reduction of GHG emissions of approximately 29 percent below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business-as-usual"). The Scoping Plan evaluates opportunities for sector-specific reductions, integrates early actions and additional GHG reduction measures by both CARB and the state's Climate Action Team, identifies additional measures to be pursued as regulations, and outlines the adopted role of a cap-and-trade program. Additional development of these measures and adoption of the appropriate regulations occurred through the end of 2013. Key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33 percent by 2020.
- Developing a California cap-and-trade program that links with other programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions (adopted in 2011).
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets (several sustainable community strategies have been adopted).
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, heavy-duty truck measures, the Low Carbon Fuel Standard (amendments to the Pavley Standard adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (adopted 2009).
- Creating targeted fees, including a public goods charge on water use, fees on gasses with high global warming potential, and a fee to fund the administrative costs of California's long-term commitment to AB 32 implementation.

In 2012, CARB released revised estimates of the expected 2020 emissions reductions. The revised analysis relied on emissions projections updated considering current economic forecasts that accounted for the economic downturn since 2008, reduction measures already approved and put in place relating to future

fuel and energy demand, and other factors. This update reduced the projected 2020 emissions from 596 million metric tons of CO<sub>2</sub>e (MMTCO<sub>2</sub>e) to 545 MMTCO<sub>2</sub>e. The reduction in forecasted 2020 emissions means that the revised business-as-usual reduction necessary to achieve AB 32's goal of reaching 1990 levels by 2020 is now 21.7 percent, down from 29 percent. CARB also provided a lower 2020 inventory forecast that incorporated state-led GHG emissions reduction measures already in place. When this lower forecast is considered, the necessary reduction from business-as-usual needed to achieve the goals of AB 32 is approximately 16 percent.

CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes the most recent science related to climate change, including anticipated impacts to California and the levels of GHG emissions reductions necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32.

In January 2017, CARB released the 2017 Climate Change Scoping Plan Update (Second Update) for public review and comment. The Second Update sets forth CARB's strategy for achieving the state's 2030 GHG target as established in Senate Bill (SB) 32 (discussed below). The Second Update was approved by CARB's Governing Board on December 14, 2017.

**Senate Bill 32 (California Global Warming Solutions Act of 2006).** Signed into law in September 2016, SB 32 codifies the 2030 GHG reduction target in Executive Order B-30-15 (40 percent below 1990 levels by 2030). The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG reductions.

With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017, CARB adopted a second update to the Scoping Plan. The 2017 Scoping Plan details how the State will reduce GHG emissions to meet the 2030 target set by Executive Order B-30-15 and codified by SB 32. Other objectives listed in the 2017 Scoping Plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and support the Clean Power Plan and other Federal actions.

**SB 375 (The Sustainable Communities and Climate Protection Act of 2008).** Signed into law on September 30, 2008, SB 375 provides a process to coordinate land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction goals established by AB 32. SB 375 requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, aligns planning for transportation and housing, and creates specified incentives for the implementation of the strategies. The applicable sustainable community strategy in the Bay Area is Plan Bay Area 2040.

**AB 1493 (Pavley Regulations and Fuel Efficiency Standards).** AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011. The regulations establish one set of emission standards for model years 2009–2016 and a second set of emissions standards for

model years 2017 to 2025. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO<sub>2</sub>e emissions and 75 percent fewer smog-forming emissions.

**SB 1368 (Emission Performance Standards).** SB 1368 is the companion bill of AB 32, which directs the California Public Utilities Commission (CPUC) to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 limits carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. The new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the state. The CPUC adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, for 1,100 pounds of CO<sub>2</sub> per megawatt-hour.

**SB 1078 and SBX1-2 (Renewable Electricity Standards).** SB 1078 required California to generate 20 percent of its electricity from renewable energy by 2017. This goal was accelerated with SB 107, which changed the due date to 2010 instead of 2017. On November 17, 2008, Executive Order S-14-08 established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Executive Order S-21-09 also directed CARB to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. SB X1-2 codified the 33 percent by 2020 goal.

**SB 350 (Clean Energy and Pollution Reduction Act of 2015).** Signed into law on October 7, 2015, SB 350 implements the goals of Executive Order B-30-15. The objectives of SB 350 are to increase the procurement of electricity from renewable sources from 33 percent to 50 percent (with interim targets of 40 percent by 2024, and 45 percent by 2027) and to double the energy efficiency savings in electricity and natural gas end uses of retail customers through energy efficiency and conservation. SB 350 also reorganizes the Independent System Operator to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

**AB 398 (Market-Based Compliance Mechanisms).** Signed on July 25, 2017, AB 398 extended the duration of the Cap-and-Trade program from 2020 to 2030. AB 398 required CARB to update the Scoping Plan and for all GHG rules and regulations adopted by the State. It also designated CARB as the statewide regulatory body responsible for ensuring that California meets its statewide carbon pollution reduction targets, while retaining local air districts' responsibility and authority to curb toxic air contaminants and criteria pollutants from local sources that severely impact public health. AB 398 also decreased free carbon allowances over 40 percent by 2030 and prioritized Cap-and-Trade spending to various programs including reducing diesel emissions in impacted communities.

**SB 150 (Regional Transportation Plans).** Signed on October 10, 2017, SB 150 aligns local and regional GHG reduction targets with State targets (i.e., 40 percent below their 1990 levels by 2030). SB 150 creates a process to include communities in discussions on how to monitor their regions' progress on meeting these goals. The bill also requires the CARB to regularly report on that progress, as well as on the successes and the challenges regions experience associated with achieving their targets. SB 150 provides for accounting of climate change efforts and GHG reductions and identify effective reduction strategies.

**SB 100 (California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases).** Signed into Law in September 2018, SB 100 increased California’s renewable electricity portfolio from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

### **Executive Orders Related to GHG Emissions**

California’s Executive Branch has taken several actions to reduce GHGs using executive orders. Although not regulatory, they set the state’s tone and guide the actions of state agencies.

**Executive Order S-3-05.** Executive Order S-3-05 was issued on June 1, 2005, which established the following GHG emissions reduction targets:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

**Executive Order S-01-07** Issued on January 18, 2007, Executive Order S-01-07 mandates that a statewide goal shall be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020. The executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the “life-cycle carbon intensity” of transportation fuels. CARB adopted the LCFS on April 23, 2009

**Executive Order S-13-08.** Issued on November 14, 2008, Executive Order S-13-08 facilitated the California Natural Resources Agency development of the 2009 California Climate Adaptation Strategy. Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

**Executive Order S-14-08.** Issued on November 17, 2008, Executive Order S-14-08 expands the state’s Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, Executive Order S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring 33 percent of electricity sold in the state come from renewable energy by 2020. CARB adopted the Renewable Electricity Standard on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

**Executive Order S-21-09.** Issued on July 17, 2009, Executive Order S-21-09 directs CARB to adopt regulations to increase California’s RPS to 33 percent by 2020. This builds upon SB 1078 (2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

**Executive Order B-30-15.** Issued on April 29, 2015, Executive Order B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of CO<sub>2</sub>e (MMTCO<sub>2</sub>e). The 2030 target acts as an interim goal on the way to achieving reductions of 80 percent below 1990 levels by 2050, a goal set by Executive Order S-3-05. The executive order also requires the state's climate adaptation plan to be updated every three years and for the state to continue its climate change research program, among other provisions. With the enactment of SB 32 in 2016, the Legislature codified the goal of reducing GHG emissions by 2030 to 40 percent below 1990 levels.

**Executive Order B-55-18.** Issued on September 10, 2018, Executive Order B-55-18 establishes a goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing GHG emissions. The executive order requires CARB to work with relevant state agencies to develop a framework for implementing this goal. It also requires CARB to update the Scoping Plan to identify and recommend measures to achieve carbon neutrality. The executive order also requires state agencies to develop sequestration targets in the Natural and Working Lands Climate Change Implementation Plan.

### California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat, even with rapid population growth.

**Title 20 Appliance Efficiency Regulations** The appliance efficiency regulations (California Code of Regulations [CCR] Title 20, Sections 1601-1608) include standards for new appliances. Twenty-three categories of appliances are included in the scope of these regulations. These standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances.

**Title 24 Building Energy Efficiency Standards.** California's Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6), was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2016 Building Energy Efficiency Standards approved on January 19, 2016 went into effect on January 1, 2017. The 2019 Building Energy Efficiency Standards were adopted on May 9, 2018 and took effect on January 1, 2020. Under the 2019 standards, residential dwellings will be required to use approximately 53 percent less energy and nonresidential buildings will be required to use approximately 30 percent less energy than buildings under the 2016 standards.

**Title 24 California Green Building Standards Code.** The California Green Building Standards Code (CCR Title 24, Part 11 code) commonly referred to as CALGreen, is a statewide mandatory construction code developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. The CALGreen standards require new residential and nonresidential buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency/conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt that encourage



or require additional measures in the five green building topics. The most recent update to the 2016 CALGreen Code, went into effect January 1, 2017. Updates to the 2016 CALGreen Code took effect on January 1, 2020 (2019 CALGreen). The 2019 CALGreen standards will continue to improve upon the existing standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The new 2019 CALGreen standards require residential buildings are required to be solar ready through solar panels (refer to Section 110.10 in the 2019 Building Energy Efficiency Standards for more details).

### 3.3 REGIONAL

#### Bay Area Air Quality Management District Thresholds

The BAAQMD is the regional agency with jurisdiction over the nine-county region located in the Basin. The Association of Bay Area Governments (ABAG), Metropolitan Transportation Commission (MTC), county transportation agencies, cities and counties, and various nongovernmental organizations also join in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs.

Under CEQA, the BAAQMD is a commenting responsible agency on air quality within its jurisdiction or impacting its jurisdiction. The BAAQMD reviews projects to ensure that they would: (1) support the primary goals of the latest Air Quality Plan; (2) include applicable control measures from the Air Quality Plan; and (3) not disrupt or hinder implementation of any Air Quality Plan control measures.

In May 2010, the BAAQMD adopted its updated California Environmental Quality Act (CEQA) Air Quality Guidelines as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA.

#### Clean Air Plan

Air quality plans developed to meet federal requirements are referred to as State Implementation Plans. The federal and state Clean Air Acts require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM<sub>10</sub> standard). The 2017 Clean Air Plan: Spare the Air, Cool the Climate was adopted on April 19, 2019, by the BAAQMD.

The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the plan describes how the BAAQMD will continue progress toward attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. 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 (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 reduction targets.

The 2017 Clean Air Plan includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other “super-GHGs” that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

### 3.4 LOCAL

#### City of Petaluma Climate Emergency Framework

In 2021, the City adopted the Petaluma Climate Emergency Framework (Framework) to outline principles to guide the City's ongoing response to and discussion about the climate crisis and to guide and inform subsequent policies and implementation strategies. In 2019, the City passed a Climate Emergency Resolution that calls for achieving carbon neutrality no later than 2045. The Framework recommends the City achieve carbon neutrality by 2030. To meet this goal, the City will need to reduce direct GHG emissions from all sectors, reduce GHG emissions resulting from goods and services consumption, and sequester GHG emissions from the atmosphere.

#### City of Petaluma Municipal Code

The City's Municipal Code includes the following regulations that would reduce GHG emissions from future development:

- Compliance with CALGreen recycling requirements (8.18)
- Woodburning Appliances (Chapter 17.33)
- Landscape water use efficiency standards (Chapter 15.17)
- All Electric Construction in Newly Constructed Buildings (Chapter 17.09)

#### City of Petaluma General Plan 2025

The General Plan includes the following GHG reduction policies, which are applicable to the project:

Goal 4-G-6:	<b>Greenhouse Gas Emissions.</b> Reduce the contribution to greenhouse gases from existing sources and minimize the contribution of greenhouse gases from new construction and sources.
Policy 4-P-23	Fund and/or designate a Green Program Manager to oversee implementation of all Greenhouse Gas Emissions policies and programs identified in the Greenhouse Gas Emissions section as well as the City's Climate Action Plan. The policies and programs will need to be reviewed and updated periodically as new information, regulatory standards, and technologies develop. A report shall be provided to the City Council biannually, reporting on the status of the City's efforts to reduce greenhouse gases, and recommendations for any changes that are deemed necessary.
Policy 4-P-24	Comply with AB 32 and its governing regulations to the full extent of the City's jurisdictional authority.
Policy 4-P-25	To the full extent of the City's jurisdictional authority, implement any additional adopted State legislative or regulatory standards, policies and practices designed to reduce greenhouse gas emissions, as those measures are developed.
Policy 4-P-26	Implement all measures identified in the municipal Climate Action Plan to meet the municipal target set in Resolution 2005-118 (20% below 2000 levels by 2010).

- Policy 4-P-27            The City shall prepare a Community Climate Action Plan to identify and prioritize programs, projects, and procedural policies that will help the City achieve the community greenhouse gas emission goals of Resolution 2005-118 (25% below 1990 levels by 2015).
- Policy 4-P-28            Prepare a feasibility report for the City of Petaluma forming a Community Choice Aggregation (through AB 117, permits any city or county to aggregate the electric loads of residents, businesses and municipal facilities to facilitate the purchase and sale of electrical energy) as a way of supplying renewable energy to the community.
- Policy 4-P-30            Continue to monitor new technology and innovative sustainable design practices for applicability to insure future development minimizes or eliminates the use of fossil fuel and GHG-emitting energy consumption.
- Policy 4-P-33            Investigate the feasibility of developing a City sponsored program to subsidize or assist homeowners in purchasing solar water heating or passive solar systems, or other forms of renewable energy, through low-interest loans or property tax assessments.
- Goal 2-G-18:            **Green Building.** Provide leadership and guidance to ensure the application of sustainable site planning and green building practices.
- Policy 2-P-118:            As part of the Development Code and Standards Updates, incorporate sustainable site planning, development, and maintenance standards and procedures, reflecting conditions in the variety of Petaluma settings (such as hillsides and floodplains).
- A. Prepare, periodically update, and implement green building guidelines and/or standards, appropriate to the Petaluma context, to ensure high level of energy efficiency and reduction of life-cycle environmental impacts associated with construction and operations of buildings.
- B. Prepare and adopt green street standards and incorporate these practices in design of city streets.
- C. Prepare a salvage ordinance that requires an inventory of usable materials prior to demolition.
- Policy 2-P-119:            Incorporate green building principles and practices into the planning, design, construction, management, renovation, operations, and demolition of all facilities that are constructed, owned, managed or financed by the City.
- Policy 2-P-122:            Require development projects to prepare a Construction Phase Recycling Plan that would address the reuse and recycling of major waste materials (soil, vegetation, concrete, lumber, metal scraps, cardboard packaging, etc.) generated by any demolition activities and construction of the project.
- Goal 4-G-4:            **Energy.** Reduce reliance on non-renewable energy sources in existing and new development.

Policy 4-P-18 Develop and adopt local energy standards that would result in less energy consumption than standards set by the California Energy Commission's (CEC) Title 24 or updates thereto.

*The State of California addresses energy conservation through Title 24 "Energy Efficiency Standards for Residential and Nonresidential Buildings." Whereas Title 24 applies to new buildings, much of the City west of Highway 101 was developed prior to 1953 and there is a tremendous opportunity to encourage greater energy efficiency in Petaluma's older structures. Energy-efficient air conditioners, high-efficiency lighting and glass, automatic controls for lighting, photocell dimming, higher insulation levels, and reflective rooftops are examples of standards that could reduce energy consumption in new and existing buildings.*

Policy 4-P-19 Encourage use and development of renewable or nontraditional sources of energy.

- A. Participate in state and local efforts to develop appropriate policies and review procedures for the institution of renewable energy sources such as solar, wind, geothermal, and hydroelectric power.  
*One such effort began in August 2005, when the City adopted a resolution requiring developers of residential projects of 5 or more units to wire all units for future photo voltaic arrays.  
In addition, the State's Emerging Renewables Buydown Program provides rebates to consumers who install qualifying energy systems, such as photo voltaic, wind turbines, and fuel cells. As of July 2005, nearly 80 participants from within Petaluma have been involved with the program through the use solar energy systems.*
- B. Implement green building code to allow use of alternative building materials and methods.
- D. Consider the feasibility of requiring a percentage of new development to meet 50% of their energy needs from fossil fuel alternatives (e.g. solar panels, etc)

## 4 SIGNIFICANCE CRITERIA AND METHODOLOGY

### 4.1 THRESHOLDS AND SIGNIFICANCE CRITERIA

Based upon the criteria derived from State CEQA Guidelines Appendix G, a project normally would have a significant effect on the environment if it would:

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

The Bay Area Air Quality Management District's (BAAQMD's) approach to developing a threshold of significance for GHG emissions is 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 needed to move towards climate stabilization. If a project would generate GHG emissions above the threshold level, it would be considered to contribute considerably to a significant cumulative impact. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an Air District permit to operate. If annual emissions of operational-related GHGs exceed these levels, the project would result in a cumulatively considerable contribution to a cumulatively significant impact to global climate change. BAAQMD's recommended thresholds are as follows:

- Achieve compliance with electric vehicle requirements in the most recently adopted version of CALGreen Tier 2; and
- Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
  - Residential projects: 15 percent below the existing VMT per capita
  - Office projects: 15 percent below the existing VMT per employee
  - Retail projects: no net increase in existing VMT; or
- Be consistent with a local GHG Reduction Strategy that meets the criteria under the CEQA Guidelines section 15183.5(b) C.

A qualified GHG Reduction Strategy adopted by a local jurisdiction should include the following elements as described in the State CEQA Guidelines Section 15183.5(b)(1):

- 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, that 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; and
- Be adopted in a public process following environmental review

The City of Petaluma does not have a qualified GHG Reduction Strategy as described in the State CEQA Guidelines Section 15183.5(b)(1). Additionally, it should be noted that the BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, the BAAQMD recommends quantification and disclosure of construction GHG emissions. The BAAQMD also recommends that the Lead Agency should make a determination on the significance of these construction generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals, as required by the Public Resources Code, Section 21082.2. The Lead Agency is encouraged to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable.

For CEQA analyses, project-related GHG impacts can be categorized as either direct or indirect. Direct emissions refer to those emitted by stationary sources at the project site or caused by project activity on-site, and these emissions are normally within control of the project sponsor or applicant. Indirect emissions include those emissions that are not within the direct control of the project sponsor or applicant, but may occur as a result of the project, such as the motor vehicle emissions induced by the project. Indirect emissions include emissions from any off-site facilities used for project support as a result of the construction or operation of a project, and these emissions are likely to occur outside the control of the project far off-site or even outside of California.

Construction-phase GHG emissions are quantified as part of the air quality impact assessment (see the *Air Quality Assessment*, and Appendix A for supporting calculations). These one-time emissions can be amortized over the life of the project to describe an equivalent annual emission rate. To amortize the construction emissions over the life of the project, the total GHG emissions due to construction are divided by a 30 year period. The amortized construction emissions can then be added to the annual operational GHG emissions.

The effects of the project are also considered based on whether the project implements reduction strategies identified in AB 32, SB 32, 2017 Scoping Plan, the Governor's Executive Order S-14-08, or other strategies to help reduce GHGs to the level proposed by the Governor. If so, it could reasonably follow that the project would not result in a significant contribution to the cumulative impact of global climate change.

## 4.2 METHODOLOGY

Global climate change is, by definition, a cumulative impact of GHG emissions. Therefore, there is no project-level analysis. The baseline against which to compare potential impacts of the project includes the natural and anthropogenic drivers of global climate change, including world-wide GHG emissions from human activities which almost doubled between 1970 and 2010 from approximately 27 gigatonnes (Gt)

of CO<sub>2</sub>/year to nearly 49 GtCO<sub>2</sub>/year.<sup>1</sup> As such, the geographic extent of climate change and GHG emissions' cumulative impact discussion is worldwide.

The Project's construction and operational emissions were calculated using the California Emissions Estimator Model version 2020.4.0 (CalEEMod). Details of the modeling assumptions and emission factors are provided in [Appendix A: Greenhouse Gas Emissions Data](#). For construction, CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and construction worker trips. The Project's construction-related GHG emissions were forecasted based on the proposed construction schedule and applying the mobile-source and fugitive dust emissions factors derived from CalEEMod. The Project's construction-related GHG emissions would be generated from off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles.

The Project's operations-related GHG emissions would be generated by vehicular traffic, area sources (e.g., landscaping maintenance, consumer products), electrical generation, natural gas consumption, water supply and wastewater treatment, and solid waste. Details of the modeling assumptions and emission factors are provided in [Appendix A](#).

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<sup>1</sup> Intergovernmental Panel on Climate Change, *Climate Change 2014 Mitigation of Climate Change Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2014.

## 5 POTENTIAL IMPACTS AND MITIGATION

### 5.1 GREENHOUSE GAS EMISSIONS

**Impact GHG 1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

#### Short-Term Construction Greenhouse Gas Emissions

Construction of the Project would result in direct emissions of CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> from the operation of construction equipment and the transport of materials and construction workers to and from the Project site. BAAQMD does not have a threshold for construction GHG emissions, which are one-time, short-term emissions and therefore would not significantly contribute to long-term cumulative GHG emissions impacts of the proposed Project. However, the BAAQMD advises that construction GHG should be disclosed and a determination on the significance of construction GHG emissions in relation to meeting AB 32 GHG reduction goals should be made. Total GHG emissions generated during all phases of construction were combined and are presented in [Table 2: Construction Greenhouse Gas Emissions](#). The CalEEMod outputs are contained within [Appendix A, Greenhouse Gas Emissions Data](#).

**Table 2: Construction Greenhouse Gas Emissions**

Year	MTCO <sub>2</sub> e <sup>1</sup>
2023	483
2024	189
<b>Emissions Total</b>	<b>673</b>
<i>Amortized</i>	22

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.  
 1. Due to Rounding, Total MTCO<sub>2</sub>e may be marginally different from CalEEMod output.  
 Source: CalEEMod version 2020.4.0. Refer to [Appendix A](#) for model outputs.

As shown in [Table 2](#), Project construction-related activities would generate approximately 673 MTCO<sub>2</sub>e of GHG emissions over the course of construction. One-time, short-term construction GHG emissions are typically summed and amortized over a 30 year period.<sup>2</sup> It is reasonable to look at a 30-year time frame for buildings since this is a typical interval before a new building requires the first major renovation.<sup>3</sup> The amortized Project emissions would be approximately 22 MTCO<sub>2</sub>e per year. Once construction is complete, the generation of construction-related GHG emissions would cease.

#### Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions would occur over the Project's life. GHG emissions would result from direct emissions such as Project generated vehicular traffic, on-site combustion of natural gas, and

<sup>2</sup> The project lifetime is based on the standard 30-year assumption of the South Coast Air Quality Management District (South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13*, August 26, 2009).

<sup>3</sup> International Energy Agency, *Energy Efficiency Requirements in Building Codes, Energy Efficiency Policies for New Buildings*, March 2008.



operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power over the life of the Project, the energy required to convey water to, and wastewater from the Project site, the emissions associated with solid waste generated from the Project site, and any fugitive refrigerants from air conditioning or refrigerators. [Table 3: Operational Greenhouse Gas Emissions](#), summarizes the total GHG emissions associated with the Project.

**Table 3: Operational Greenhouse Gas Emissions**

Category	MTCO <sub>2</sub> e <sup>1</sup>
<b>Existing Site</b>	
Area Source	0
Energy	9
Mobile	162
Waste	8
Water and Wastewater	7
<b>Total Existing MTCO<sub>2</sub>e/year<sup>2</sup></b>	<b>186</b>
<b>Proposed Project</b>	
Area Source	4
Energy	123
Mobile	499
Waste	16
Water and Wastewater	18
Amortized Construction <sup>3</sup>	22
<b>Total Project MTCO<sub>2</sub>e/year<sup>2</sup></b>	<b>662</b>
MTCO <sub>2</sub> e = metric tons of carbon dioxide equivalent per year. 1. Emissions were calculated using CalEEMod version 2020.4.0. Refer to <a href="#">Appendix A</a> for model outputs. 2. Emissions may not total due to rounding. 3. Construction GHG emissions are amortized over the 30-year lifetime of the project.	

Below is a description of the primary sources of operational emissions:

**Area Sources.** Area source emissions occur from architectural coatings, landscaping equipment, and consumer products. Landscaping is anticipated to occur throughout the Project site. Additionally, the primary emissions from architectural coatings are volatile organic compounds, which are relatively insignificant as direct GHG emissions. The Project would result in 6.43 MTCO<sub>2</sub>e/yr (refer to [Table 3](#)).

**Energy Consumption.** Energy consumption consists of emissions from Project consumption of electricity and natural gas. The Project would result in approximately 123.40 MTCO<sub>2</sub>e/yr from energy consumption (refer to [Table 3](#)).

**Mobile Sources.** Mobiles sources from the Project were calculated with CalEEMod based on the trip generation from the Transportation Analysis. As shown in Table 3, the mobile source emissions from the Project would be approximately 498.68 MTCO<sub>2</sub>e/yr.

**Solid Waste.** Solid waste releases GHG emissions in the form of methane when these materials decompose. The Project would result in approximately 15.67 MTCO<sub>2</sub>e/yr from solid waste (refer to Table 3).

**Water and Wastewater.** GHG emissions from water demand would occur from electricity consumption associated with water conveyance and treatment. The Project would result in approximately 18.06 MTCO<sub>2</sub>e/yr from water and wastewater conveyance and treatment (refer to Table 3).

It should be noted that the operational emissions incorporate adjustments for Project energy consumption based on the 2019 Title 24 Part 6 (Building Energy Efficiency Standards). The standards require updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa), residential and nonresidential ventilation requirements, and nonresidential lighting requirements that would cut residential energy use by more than 50 percent (with solar) and nonresidential energy use by 30 percent. The standards also encourage demand responsive technologies including battery storage and heat pump water heaters and improve the building's thermal envelope through high performance attics, walls and windows to improve comfort and energy savings.<sup>4</sup> The Project would also comply with the appliance energy efficiency standards in Title 20 of the California Code of Regulations. The Title 20 standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances. The Project would be constructed according to the standards for high-efficiency water fixtures for indoor plumbing and water efficient irrigation systems required in 2019 Title 24, Part 11 (CALGreen).

At the State and global level, improvements in technology, policy, and social behavior can also influence and reduce operational emissions generated by a project. The state is currently on a pathway to achieving the Renewable Portfolio Standards goal of 33 percent renewables by 2020 and 60 percent renewables by 2030 per SB 100. Despite these goals, the majority of the Project's emissions would still be from mobile and energy sources. Future mobile source emissions are greatly dependent on changes in vehicle technology, fuels, and social behavior, which can be influenced by policies to varying degrees. Taking known future policies into account, CARB estimates that about 93 percent of future vehicles in Sonoma County would still run on fossil fuels, even with increased electric vehicle mode share.<sup>5</sup> This is assumed to also be applicable to the project vehicle fleet, absent data that may suggest otherwise. Due to these external factors, average emissions from transportation in 2050 would mostly still generate GHG emissions, but the quantity is uncertain in light of potential changes in technology and policy over the next 30 years.

The majority of Project emissions (approximately 94 percent) would occur from mobile and energy sources. As noted above, energy and mobile sources are targeted by statewide measures such as low carbon fuels, cleaner vehicles, strategies to promote sustainable communities and improved transportation choices that result in reducing VMT, continued implementation of the Renewable Portfolio

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<sup>4</sup> California Energy Commission, *2019 Building Energy Efficiency Standards*, 2018. Available at: <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency>

<sup>5</sup> California Air Resources Board, *EMFAC2021 Web Database*, 2021. Available at: <https://arb.ca.gov/emfac/2021/>

Standard (the target is now set at 60 percent renewables by 2030), and extension of the Cap and Trade program (requires reductions from industrial sources, energy generation, and fossil fuels). The Cap and Trade program covers approximately 85 percent of California's GHG emissions as of January 2015. The statewide cap for GHG emissions from the capped sectors (i.e., electricity generation, industrial sources, petroleum refining, and cement production) commenced in 2013 and will decline approximately three percent each year, achieving GHG emission reductions throughout the program's duration. The passage of AB 398 in July 2017 extended the duration of the Cap and Trade program from 2020 to 2030. With continued implementation of various statewide measures, the Project's operational energy and mobile source emissions would continue to decline in the future.

The Project would include additional energy efficiency and GHG reduction design features per City policy, including eliminating the use of natural gas in new developments. Additionally, consistent with BAAQMD Regulation 6, Rule 3 the Project would prohibit the use of wood burning devices (e.g., fireplaces, wood stoves) and ensure compliance with BAAQMD Regulation 6, Rule 3.

The Project also reduces transportation GHG emissions through consistency with the *Vehicle Miles Travelled Implementation Guidelines Final* prepared for the City of Petaluma.<sup>6</sup> The Project would be consistent *Vehicle Miles Travelled Implementation Guidelines Final* by increasing diversity of land uses through ground-floor retail at residential developments, increasing residential density, increasing transit accessibility, and encouraging telecommuting. Additionally, the project would improve and complete pedestrian and bicycle connections around its perimeter and through the Project site. Bicycle storage would be provided in the apartments and bicycle racks would be provided near the commercial uses. The project would also improve and complete bicycle lanes and facilities along the perimeter and through the project site that connect with existing bicycle routes. Further, the project would implement **MM GHG-1**, which would ensure compliance with CAL Green Tier 2 electric vehicle requirements.

Project emissions are shown in Table 3: Operational Greenhouse Gas Emissions. Impacts are less than significant. Project-related GHG emissions would not result in a cumulatively considerable contribution to the significant cumulative impact of climate change.

#### **MM GHG-1 Compliance with CALGreen Tier 2 Electric Vehicle Requirements**

The project would include the following design measures to ensure compliance with CALGreen Tier 2 Electric Vehicle requirements:

##### Single-Family, Townhomes, and Duplexes

- All new construction must be EV capable. Each dwelling unit must have listed raceway to accommodate a dedicated 208/40-volt branch circuit.

##### Multifamily Dwellings

- Approximately 20% of total parking spaces shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE.
- If guest parking is available, at least one "EV Capable" spaces shall be provided for guest parking.

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<sup>6</sup> Fehr & Peers, *Senate Bill 743: Vehicle Miles Travelled Implementation Guidelines*, July 2021. Accessed at: <https://cityofpetaluma.org/documents/vmt-implementation-guidelines-sb-743/>.

Non-Residential

- Approximately 20% of total parking spaces shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE.
- Approximately 22% of total parking spaces shall be designated for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles.

**Consistency with the CARB Scoping Plan**

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, CARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan provides a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as the cap-and-trade program, and an AB 32 implementation fee to fund the program.

The latest CARB Climate Change Scoping Plan (2017) outlines the state's strategy to reduce state's GHG emissions to return to 40 percent below 1990 levels by 2030 pursuant to SB 32. The CARB Scoping Plan is applicable to state agencies and is not directly applicable to cities/counties and individual projects. Nonetheless, the Scoping Plan has been the primary tool that is used to develop performance-based and efficiency-based CEQA criteria and GHG reduction targets for climate action planning efforts.

The 2017 Scoping Plan Update identifies additional GHG reduction measures necessary to achieve the 2030 target. These measures build upon those identified in the First Update to the Climate Change Scoping Plan (2013). Although a number of these measures are currently established as policies and measures, some measures have not yet been formally proposed or adopted. It is expected that these measures or similar actions to reduce GHG emissions would be adopted as required to achieve statewide GHG emissions targets. As shown in [Table 4: Project Consistency with Applicable CARB Scoping Plan Measures](#) the Project is consistent with most of the strategies, while others are not applicable to the Project.

**Table 4: Project Consistency with Applicable CARB Scoping Plan Measures**

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Transportation	California Cap-and-Trade Program Linked to Western Climate Initiative	Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanism October 20, 2015 (CCR 95800)	<b>Consistent.</b> The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers. However, the regulation indirectly affects people who use the products and services produced by these industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
			emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period.
	California Light-Duty Vehicle Greenhouse Gas Standards	Pavley I 2005 Regulations to Control GHG Emissions from Motor Vehicles	<b>Consistent.</b> This measure applies to all new vehicles starting with model year 2012. The Project would not conflict with its implementation as it would apply to all new passenger vehicles purchased in California. Passenger vehicles, model year 2012 and later, associated with construction and operation of the Project would be required to comply with the Pavley emissions standards.
		2012 LEV III Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards	<b>Consistent.</b> The LEV III amendments provide reductions from new vehicles sold in California between 2017 and 2025. Passenger vehicles associated with construction and operation of the Project would comply with LEV III standards.
	Low Carbon Fuel Standard	2009 readopted in 2015. Regulations to Achieve Greenhouse Gas Emission Reductions Subarticle 7. Low Carbon Fuel Standard CCR 95480	<b>Consistent.</b> This measure applies to transportation fuels utilized by vehicles in California. The Project would not conflict with implementation of this measure. Motor vehicles associated with construction and operation of the Project would utilize low carbon transportation fuels as required under this measure.
	Regional Transportation-Related Greenhouse Gas Targets	SB 375. Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28	<b>Consistent.</b> The Project would provide development in the region that is consistent with the growth projections in the Regional Transportation Plan/Sustainable Communities Strategy (SCS) (Plan Bay Area 2040).
	Goods Movement	Goods Movement Action Plan January 2007	<b>Not applicable.</b> The Project does not propose any changes to maritime, rail, or

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
			intermodal facilities or forms of transportation.
	Medium/Heavy-Duty Vehicle	2010 Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the Tractor-Trailer Greenhouse Gas Regulation	<b>Consistent.</b> This measure applies to medium and heavy-duty vehicles that operate in the state. The Project would not conflict with implementation of this measure. Medium and heavy-duty vehicles associated with construction and operation of the Project would be required to comply with the requirements of this regulation.
	High Speed Rail	Funded under SB 862	<b>Not applicable.</b> This is a statewide measure that cannot be implemented by a Project Applicant or Lead Agency.
Electricity and Natural Gas	Energy Efficiency	Title 20 Appliance Efficiency Regulation	<b>Consistent.</b> The Project would not conflict with implementation of this measure. The Project would comply with the latest energy efficiency standards.
		Title 24 Part 6 Energy Efficiency Standards for Residential and Non-Residential Building	
		Title 24 Part 11 California Green Building Code Standards	
	Renewable Portfolio Standard/Renewable Electricity Standard.	2010 Regulation to Implement the Renewable Electricity Standard (33% 2020)	<b>Consistent.</b> The Project would obtain electricity from the electric utility company, PG&E. PG&E obtained 39 percent of its power supply from renewable sources in 2018. Therefore, the utility would provide power when needed on site that is composed of a greater percentage of renewable sources.
		SB 350 Clean Energy and Pollution Reduction Act of 2015 (50% 2030)	
Million Solar Roofs Program	Tax incentive program	<b>Consistent.</b> This measure is to increase solar throughout California, which is being done by various electricity providers and existing solar programs. Future tenants within the Project would be able to take advantage of incentives that are in place at the time of construction and every townhouse associated with the Project would have solar on the roof.	
Water	Water	Title 24 Part 11 California Green	<b>Consistent.</b> The Project would comply with the California Green Building

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
		Building Code Standards	Standards Code, which requires a 20 percent reduction in indoor water use. The Project would also comply with the City’s Landscape Water Use Efficiency Standards Ordinance (Chapter 15.17 of the Petaluma Municipal Code).
		SBX 7-7—The Water Conservation Act of 2009	
		Model Water Efficient Landscape Ordinance	
Green Buildings	Green Building Strategy	Title 24 Part 11 California Green Building Code Standards	<b>Consistent.</b> The State goal is to increase the use of green building practices. The Project would implement required green building strategies through existing regulation that requires the Project to comply with various CalGreen requirements.
Industry	Industrial Emissions	2010 CARB Mandatory Reporting Regulation	<b>Not Applicable.</b> The Project is a residential and live-work development project that does not include industrial uses.
Recycling and Waste Management	Recycling and Waste	Title 24 Part 11 California Green Building Code Standards	<b>Consistent.</b> The Project would not conflict with implementation of these measures. The Project is required to achieve the recycling mandates via compliance with the CALGreen code.
		AB 341 Statewide 75 Percent Diversion Goal	
Forests	Sustainable Forests	Cap and Trade Offset Projects	<b>Not applicable.</b> The Project site is an existing disturbed site located in an urban area. No forested lands exist on-site.
High Global Warming Potential	High Global Warming Potential Gases	CARB Refrigerant Management Program CCR 95380	<b>Not applicable.</b> The regulations are applicable to refrigerants used by large air conditioning systems and large commercial and industrial refrigerators and cold storage system. The Project is not expected to use large systems subject to the refrigerant management regulations adopted by CARB.
Agriculture	Agriculture	Cap and Trade Offset Projects for Livestock and Rice Cultivation	<b>Not applicable.</b> The Project site a former industrial site. No grazing, feedlot or other agricultural activities that generate manure currently exist on-site or are proposed to be implemented by the Project.

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Source: California Air Resources Board (CARB), <i>California's 2017 Climate Change Scoping Plan</i> , 2017b and CARB, <i>Climate Change Scoping Plan</i> , December 2008.			

As noted above, the Project would emit approximately 740 MTCO<sub>2</sub>e per year, directly from on-site activities and indirectly from off-site motor vehicles. Project implementation would result in a net increase of 554 MTCO<sub>2</sub>e/yr below existing site GHG emissions and would be below the 900 MTCO<sub>2</sub>e/yr threshold. As demonstrated in [Table 4](#), the Project would not conflict with the CARB Scoping Plan. As discussed above, the Scoping Plan reflects the 2030 target of a 40 percent reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. GHG emissions caused by long-term operation of the proposed would be less than significant.

Appendix B, Local Action, of the 2017 CARB Scoping Plan lists potential actions that support the State's climate goals. However, the Scoping Plan notes that the applicability and performance of the actions may vary across the regions. The document is organized into two categories (A) examples of plan-level GHG reduction actions that could be implemented by local governments and (B) examples of on-site project design features, mitigation measures, that could be required of individual projects under CEQA, if feasible, when the local jurisdiction is the lead agency.

The Project would require a number of the City Standard Development Requirements be enforced for construction. For example, a few of the construction measures include enforcing idling time restrictions on construction vehicles, use of added exhaust muffling and filtering devices, replant vegetation in disturbed areas as quickly as possible, and posting a publicly visible sign with the telephone number and person at the lead agency to contact regarding dust complaints. As indicated above, GHG reductions are also achieved as a result of State of California energy and water efficiency requirements for new non-residential developments. These efficiency improvements correspond to reductions in secondary GHG emissions. For example, in California, most of the electricity that powers homes are derived from natural gas combustion. Therefore, energy saving measures, such as Title 24, reduces GHG emissions from the power generation facilities by reducing load demand.

Several of the State's plans and policies would contribute to a reduction in mobile source emissions from the Project including reductions from the LCFS, implementing the short-lived GHG strategy (e.g., hydrofluorocarbons), CARB's Sustainable Freight Action Plan, CARB's Emissions Reduction Plan for Ports and Goods Movement, CARB's Advanced Clean Truck Regulation, Executive Order N-79-20, and CARB's Mobile Source Strategy.

CARB's Advanced Clean Truck Regulation in June 2020 requiring truck manufacturers to transition from diesel trucks and vans to electric zero-emission trucks beginning in 2024. By 2045, every new truck sold in California is required to be zero-emission. The Advanced Clean Truck Regulation accelerates the transition of zero-emission medium-and heavy-duty vehicles from Class 2b to Class 8.

Executive Order N-79-20 establishes the goal for all new passenger cars and trucks, as well as all drayage/cargo trucks and off-road vehicles and equipment, sold in California, will be zero-emission by 2035 and all medium and heavy-duty vehicles will be zero-emission by 2045. It also directs CARB to develop and propose rulemaking for passenger vehicles and trucks, medium-and heavy-duty fleets where



feasible, drayage trucks, and off-road vehicles and equipment “requiring increasing volumes” of new ZEVs “towards the target of 100 percent.”

CARB’s Mobile Source Strategy which include increasing ZEV buses and trucks and their Sustainable Freight Action Plan which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks. This Plan applies to all trucks accessing the Project site and may include existing trucks or new trucks that are part of the statewide goods movement sector. CARB’s Emissions Reduction Plan for Ports and Goods Movement identifies measures to improve goods movement efficiencies such as advanced combustion strategies, friction reduction, waste heat recovery, and electrification of accessories. While these measures are not directly applicable to the Project, any commercial activity associated with goods movement would be required to comply with these measures as adopted. As such, the Project would not interfere with their implementation.

The Project would not obstruct or interfere with efforts to increase ZEVs or state efforts to improve system efficiency. As discussed above, the Project would result in a net increase in GHG emissions and would benefit from implementation of the State programs for ZEVs and goods movement efficiencies that reduce future GHG emissions from trucks.

The Project would be required to comply with existing regulations, including applicable measures from the City’s General Plan, or would be directly affected by the outcomes (vehicle trips and energy consumption would be less carbon intensive due to statewide compliance with future low carbon fuel standard amendments and increasingly stringent Renewable Portfolio Standards). As such, the Project would not conflict with any other state-level regulations pertaining to GHGs.

Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the Project would benefit from implementation of current and potential future regulations (e.g., improvements in vehicle emissions, SB 100/renewable electricity portfolio improvements, etc.) enacted to meet an 80 percent reduction below 1990 levels by 2050.

### **Consistency with Plan Bay Area**

The Project would be consistent with the overall goals of Plan Bay Area 2040 to provide housing, healthy and safe communities, and climate protection with an overall goal to reduce VMT. As noted above, the Project would develop the Project site with residential and mixed-use uses consistent with the General Plan. The Project would add some additional employment trips related to employees that work directly at the Project site. Thus, implementation of the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and this impact would be less than significant.

**Mitigation Measures:** No mitigation is required.

**Level of Significance:** Less than significant impact.

## **5.2 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES**

### **Cumulative Setting**

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 (approximately one day), GHGs have much longer atmospheric lifetimes of one year to several thousand years that allow them to be dispersed around the globe.

### **Cumulative Impacts and Mitigation Measures**

It is generally the case that an individual project of the Project's 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 GHG emissions would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the Project as well as other cumulative related projects, would be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As shown in [Table 2](#) and [Table 3](#), the Project's GHG emissions would be less than significant. The Project would not conflict with any GHG reduction plan. 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.

**Mitigation Measures:** No mitigation is required.

**Level of Significance:** Less than significant impact.

## 6 REFERENCES

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## **Appendix A**

### **Greenhouse Gas Emissions Data**

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Oyster Cove Existing - Sonoma-San Francisco County, Annual

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

**Oyster Cove Existing  
Sonoma-San Francisco County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	17.00	1000sqft	0.39	17,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	75
<b>Climate Zone</b>	4			<b>Operational Year</b>	2022
<b>Utility Company</b>	Pacific Gas and Electric Company				
<b>CO2 Intensity (lb/MW hr)</b>	203.98	<b>CH4 Intensity (lb/MW hr)</b>	0.033	<b>N2O Intensity (lb/MW hr)</b>	0.004

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

Project Characteristics -

Land Use -

Construction Phase - Existing operational run only.

Vehicle Trips - Per traffic analysis

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	0.00
tblConstructionPhase	PhaseEndDate	8/24/2022	8/17/2022
tblVehicleTrips	ST_TR	1.74	8.82
tblVehicleTrips	SU_TR	1.74	8.82
tblVehicleTrips	WD_TR	1.74	8.82

**2.0 Emissions Summary**

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

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

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0753	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Energy	3.2000e-004	2.8700e-003	2.4100e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	8.6259	8.6259	9.5000e-004	1.7000e-004	8.6989
Mobile	0.1002	0.1533	0.9430	1.7100e-003	0.1612	1.9300e-003	0.1631	0.0432	1.8200e-003	0.0450	0.0000	158.9665	158.9665	0.0116	8.7800e-003	161.8713
Waste						0.0000	0.0000		0.0000	0.0000	3.2438	0.0000	3.2438	0.1917	0.0000	8.0364
Water						0.0000	0.0000		0.0000	0.0000	1.2472	1.9682	3.2154	0.1284	3.0600e-003	7.3387
<b>Total</b>	<b>0.1758</b>	<b>0.1562</b>	<b>0.9456</b>	<b>1.7300e-003</b>	<b>0.1612</b>	<b>2.1500e-003</b>	<b>0.1634</b>	<b>0.0432</b>	<b>2.0400e-003</b>	<b>0.0453</b>	<b>4.4910</b>	<b>169.5609</b>	<b>174.0519</b>	<b>0.3327</b>	<b>0.0120</b>	<b>185.9456</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0753	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Energy	3.2000e-004	2.8700e-003	2.4100e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	8.6259	8.6259	9.5000e-004	1.7000e-004	8.6989
Mobile	0.1002	0.1533	0.9430	1.7100e-003	0.1612	1.9300e-003	0.1631	0.0432	1.8200e-003	0.0450	0.0000	158.9665	158.9665	0.0116	8.7800e-003	161.8713
Waste						0.0000	0.0000		0.0000	0.0000	3.2438	0.0000	3.2438	0.1917	0.0000	8.0364

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Water						0.0000	0.0000		0.0000	0.0000	1.2472	1.9682	3.2154	0.1284	3.0600e-003	7.3387
<b>Total</b>	<b>0.1758</b>	<b>0.1562</b>	<b>0.9456</b>	<b>1.7300e-003</b>	<b>0.1612</b>	<b>2.1500e-003</b>	<b>0.1634</b>	<b>0.0432</b>	<b>2.0400e-003</b>	<b>0.0453</b>	<b>4.4910</b>	<b>169.5609</b>	<b>174.0519</b>	<b>0.3327</b>	<b>0.0120</b>	<b>185.9456</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**3.0 Construction Detail**

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	8/18/2022	8/17/2022	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 25,500; Non-Residential Outdoor: 8,500; Striped Parking Area: 0 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**





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

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated Construction Off-Site**

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

**4.0 Operational Detail - Mobile**

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

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1002	0.1533	0.9430	1.7100e-003	0.1612	1.9300e-003	0.1631	0.0432	1.8200e-003	0.0450	0.0000	158.9665	158.9665	0.0116	8.7800e-003	161.8713
Unmitigated	0.1002	0.1533	0.9430	1.7100e-003	0.1612	1.9300e-003	0.1631	0.0432	1.8200e-003	0.0450	0.0000	158.9665	158.9665	0.0116	8.7800e-003	161.8713

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-No Rail	150.01	150.01	150.01	437,950	437,950
Total	150.01	150.01	150.01	437,950	437,950

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Unrefrigerated Warehouse-No Rail	0.518054	0.061069	0.177567	0.134026	0.039945	0.009365	0.014425	0.006389	0.001127	0.000304	0.031388	0.001549	0.004793

5.0 Energy Detail

Historical Energy Use: N

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5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5.5052	5.5052	8.9000e-004	1.1000e-004	5.5596
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5.5052	5.5052	8.9000e-004	1.1000e-004	5.5596
NaturalGas Mitigated	3.2000e-004	2.8700e-003	2.4100e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1207	3.1207	6.0000e-005	6.0000e-005	3.1393
NaturalGas Unmitigated	3.2000e-004	2.8700e-003	2.4100e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1207	3.1207	6.0000e-005	6.0000e-005	3.1393

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	58480	3.2000e-004	2.8700e-003	2.4100e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1207	3.1207	6.0000e-005	6.0000e-005	3.1393
<b>Total</b>		<b>3.2000e-004</b>	<b>2.8700e-003</b>	<b>2.4100e-003</b>	<b>2.0000e-005</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>3.1207</b>	<b>3.1207</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>3.1393</b>

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**Mitigated**

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	58480	3.2000e-004	2.8700e-003	2.4100e-003	2.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	3.1207	3.1207	6.0000e-005	6.0000e-005	3.1393
<b>Total</b>		<b>3.2000e-004</b>	<b>2.8700e-003</b>	<b>2.4100e-003</b>	<b>2.0000e-005</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>3.1207</b>	<b>3.1207</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>3.1393</b>

**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-No Rail	59500	5.5052	8.9000e-004	1.1000e-004	5.5596
<b>Total</b>		<b>5.5052</b>	<b>8.9000e-004</b>	<b>1.1000e-004</b>	<b>5.5596</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
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Land Use	kWh/yr	MT/yr			
Unrefrigerated Warehouse-No Rail	59500	5.5052	8.9000e-004	1.1000e-004	5.5596
<b>Total</b>		<b>5.5052</b>	<b>8.9000e-004</b>	<b>1.1000e-004</b>	<b>5.5596</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0753	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Unmitigated	0.0753	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

**6.2 Area by SubCategory**

**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

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

Architectural Coating	8.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0664					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
<b>Total</b>	<b>0.0753</b>	<b>0.0000</b>	<b>1.6000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-004</b>	<b>3.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.2000e-004</b>

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0664					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
<b>Total</b>	<b>0.0753</b>	<b>0.0000</b>	<b>1.6000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-004</b>	<b>3.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.2000e-004</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.2154	0.1284	3.0600e-003	7.3387
Unmitigated	3.2154	0.1284	3.0600e-003	7.3387

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-No Rail	3.93125 / 0	3.2154	0.1284	3.0600e-003	7.3387
<b>Total</b>		<b>3.2154</b>	<b>0.1284</b>	<b>3.0600e-003</b>	<b>7.3387</b>

**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unrefrigerated Warehouse-No Rail	3.93125 / 0	3.2154	0.1284	3.0600e-003	7.3387
<b>Total</b>		<b>3.2154</b>	<b>0.1284</b>	<b>3.0600e-003</b>	<b>7.3387</b>



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

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.2438	0.1917	0.0000	8.0364
Unmitigated	3.2438	0.1917	0.0000	8.0364

**8.2 Waste by Land Use**

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-No Rail	15.98	3.2438	0.1917	0.0000	8.0364
<b>Total</b>		<b>3.2438</b>	<b>0.1917</b>	<b>0.0000</b>	<b>8.0364</b>

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**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unrefrigerated Warehouse-No Rail	15.98	3.2438	0.1917	0.0000	8.0364
<b>Total</b>		<b>3.2438</b>	<b>0.1917</b>	<b>0.0000</b>	<b>8.0364</b>

**9.0 Operational Offroad**

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

**Fire Pumps and Emergency Generators**

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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

**Oyster Cove**

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**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	1.34	Acre	1.34	58,370.40	0
Apartments Low Rise	10.00	Dwelling Unit	0.63	10,000.00	29
Condo/Townhouse	122.00	Dwelling Unit	7.63	122,000.00	349
Regional Shopping Center	1.50	1000sqft	0.03	1,500.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	75
<b>Climate Zone</b>	4			<b>Operational Year</b>	2024
<b>Utility Company</b>	Pacific Gas and Electric Company				
<b>CO2 Intensity (lb/MWhr)</b>	203.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

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

- Project Characteristics -
- Land Use - Apartment Low Rise = Live/Work units (ITE 220)
- Construction Phase - Per construction assumptions
- Demolition - 10,000 sf building material + 64,800 sf pavement
- Grading -
- Vehicle Trips - Per TA
- Woodstoves - No wood burning appliances per BAAQMD
- Construction Off-road Equipment Mitigation - per BAAQMD rule compliance
- Waste Mitigation - Per AB 393

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

Energy Use - No natural gas per city policy

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	87.00
tblConstructionPhase	NumDays	230.00	170.00
tblConstructionPhase	NumDays	20.00	24.00
tblConstructionPhase	NumDays	20.00	133.00
tblConstructionPhase	NumDays	20.00	174.00
tblConstructionPhase	NumDays	10.00	21.00
tblEnergyUse	NT24NG	3,155.00	0.00
tblEnergyUse	NT24NG	3,155.00	0.00
tblEnergyUse	T24E	77.89	2,568.89
tblEnergyUse	T24E	52.36	3,108.36
tblEnergyUse	T24E	2.46	172.31
tblEnergyUse	T24NG	6,712.79	0.00
tblEnergyUse	T24NG	14,104.62	0.00
tblEnergyUse	T24NG	2.34	0.00
tblFireplaces	NumberWood	1.70	0.00
tblFireplaces	NumberWood	20.74	0.00
tblGrading	MaterialExported	0.00	3,000.00
tblGrading	MaterialImported	0.00	12,500.00
tblVehicleTrips	ST_TR	8.14	3.36
tblVehicleTrips	ST_TR	8.14	4.30
tblVehicleTrips	ST_TR	46.12	49.63
tblVehicleTrips	SU_TR	6.28	3.36
tblVehicleTrips	SU_TR	6.28	4.30

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tblVehicleTrips	SU_TR	21.10	49.63
tblVehicleTrips	WD_TR	7.32	3.36
tblVehicleTrips	WD_TR	7.32	4.30
tblVehicleTrips	WD_TR	37.75	49.63

**2.0 Emissions Summary**

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

**2.1 Overall Construction**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2593	2.5630	2.2977	5.3100e-003	0.7987	0.1072	0.9060	0.3611	0.0994	0.4606	0.0000	475.9566	475.9566	0.1053	0.0156	483.2320
2024	1.1358	1.5393	2.2698	4.0200e-003	0.0667	0.0710	0.1377	0.0179	0.0661	0.0840	0.0000	355.7044	355.7044	0.0831	4.5500e-003	359.1351
<b>Maximum</b>	<b>1.1358</b>	<b>2.5630</b>	<b>2.2977</b>	<b>5.3100e-003</b>	<b>0.7987</b>	<b>0.1072</b>	<b>0.9060</b>	<b>0.3611</b>	<b>0.0994</b>	<b>0.4606</b>	<b>0.0000</b>	<b>475.9566</b>	<b>475.9566</b>	<b>0.1053</b>	<b>0.0156</b>	<b>483.2320</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2593	2.5630	2.2977	5.3100e-003	0.3809	0.1072	0.4881	0.1651	0.0994	0.2646	0.0000	475.9562	475.9562	0.1053	0.0156	483.2316
2024	1.1358	1.5393	2.2698	4.0200e-003	0.0633	0.0710	0.1344	0.0171	0.0661	0.0832	0.0000	355.7040	355.7040	0.0831	4.5500e-003	359.1348
<b>Maximum</b>	<b>1.1358</b>	<b>2.5630</b>	<b>2.2977</b>	<b>5.3100e-003</b>	<b>0.3809</b>	<b>0.1072</b>	<b>0.4881</b>	<b>0.1651</b>	<b>0.0994</b>	<b>0.2646</b>	<b>0.0000</b>	<b>475.9562</b>	<b>475.9562</b>	<b>0.1053</b>	<b>0.0156</b>	<b>483.2316</b>

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	48.67	0.00	40.36	51.93	0.00	36.14	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2023	4-1-2023	0.8279	0.8279
2	4-2-2023	7-1-2023	0.7093	0.7093
3	7-2-2023	10-1-2023	0.6811	0.6811
4	10-2-2023	1-1-2024	0.5886	0.5886
5	1-2-2024	4-1-2024	0.5461	0.5461
6	4-2-2024	7-1-2024	0.4099	0.4099
7	7-2-2024	9-30-2024	0.5867	0.5867
		Highest	0.8279	0.8279

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

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6602	0.0150	1.0749	3.7000e-004		0.0210	0.0210		0.0210	0.0210	2.0588	4.0729	6.1316	0.0112	5.0000e-005	6.4253
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	122.1920	122.1920	0.0198	2.4000e-003	123.4003
Mobile	0.3279	0.4262	2.8354	5.2200e-003	0.5223	5.0100e-003	0.5273	0.1400	4.7000e-003	0.1447	0.0000	489.7199	489.7199	0.0365	0.0270	498.6764
Waste						0.0000	0.0000		0.0000	0.0000	12.6463	0.0000	12.6463	0.7474	0.0000	31.3308
Water						0.0000	0.0000		0.0000	0.0000	2.7637	6.1392	8.9030	0.2849	6.8200e-003	18.0576
<b>Total</b>	<b>0.9880</b>	<b>0.4412</b>	<b>3.9103</b>	<b>5.5900e-003</b>	<b>0.5223</b>	<b>0.0260</b>	<b>0.5483</b>	<b>0.1400</b>	<b>0.0257</b>	<b>0.1657</b>	<b>17.4689</b>	<b>622.1240</b>	<b>639.5928</b>	<b>1.0997</b>	<b>0.0363</b>	<b>677.8903</b>



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

**2.2 Overall Operational**

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6602	0.0150	1.0749	3.7000e-004		0.0210	0.0210		0.0210	0.0210	2.0588	4.0729	6.1316	0.0112	5.0000e-005	6.4253
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	122.1920	122.1920	0.0198	2.4000e-003	123.4003
Mobile	0.3279	0.4262	2.8354	5.2200e-003	0.5223	5.0100e-003	0.5273	0.1400	4.7000e-003	0.1447	0.0000	489.7199	489.7199	0.0365	0.0270	498.6764
Waste						0.0000	0.0000		0.0000	0.0000	6.3232	0.0000	6.3232	0.3737	0.0000	15.6654
Water						0.0000	0.0000		0.0000	0.0000	2.7637	6.1392	8.9030	0.2849	6.8200e-003	18.0576
<b>Total</b>	<b>0.9880</b>	<b>0.4412</b>	<b>3.9103</b>	<b>5.5900e-003</b>	<b>0.5223</b>	<b>0.0260</b>	<b>0.5483</b>	<b>0.1400</b>	<b>0.0257</b>	<b>0.1657</b>	<b>11.1457</b>	<b>622.1240</b>	<b>633.2697</b>	<b>0.7261</b>	<b>0.0363</b>	<b>662.2249</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>36.20</b>	<b>0.00</b>	<b>0.99</b>	<b>33.98</b>	<b>0.00</b>	<b>2.31</b>

**3.0 Construction Detail**

**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2023	2/2/2023	5	24	
2	Site Preparation	Site Preparation	2/3/2023	3/3/2023	5	21	
3	Grading	Grading	3/6/2023	9/6/2023	5	133	

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4	Building Construction	Building Construction	9/7/2023	5/1/2024	5	170
5	Paving	Paving	5/2/2024	12/31/2024	5	174
6	Architectural Coating	Architectural Coating	9/2/2024	12/31/2024	5	87

**Acres of Grading (Site Preparation Phase): 31.5**

**Acres of Grading (Grading Phase): 133**

**Acres of Paving: 1.34**

**Residential Indoor: 267,300; Residential Outdoor: 89,100; Non-Residential Indoor: 2,250; Non-Residential Outdoor: 750; Striped Parking Area: 3,502 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

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Architectural Coating	Air Compressors	1	6.00	78	0.48
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**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	417.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	1,938.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	120.00	24.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	24.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

- Replace Ground Cover
- Water Exposed Area
- Water Unpaved Roads
- Reduce Vehicle Speed on Unpaved Roads
- Clean Paved Roads

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

**3.2 Demolition - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	6.8400e-003	0.0000	6.8400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.2578	0.2357	4.7000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	40.7905	40.7905	0.0114	0.0000	41.0761
<b>Total</b>	<b>0.0272</b>	<b>0.2578</b>	<b>0.2357</b>	<b>4.7000e-004</b>	<b>0.0452</b>	<b>0.0120</b>	<b>0.0571</b>	<b>6.8400e-003</b>	<b>0.0111</b>	<b>0.0180</b>	<b>0.0000</b>	<b>40.7905</b>	<b>40.7905</b>	<b>0.0114</b>	<b>0.0000</b>	<b>41.0761</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.4000e-004	0.0304	6.6000e-003	1.3000e-004	3.4700e-003	2.1000e-004	3.6800e-003	9.5000e-004	2.0000e-004	1.1500e-003	0.0000	12.7230	12.7230	3.6000e-004	2.0100e-003	13.3313
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	4.4000e-004	4.9600e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.1579	1.1579	4.0000e-005	4.0000e-005	1.1699
<b>Total</b>	<b>1.0800e-003</b>	<b>0.0308</b>	<b>0.0116</b>	<b>1.4000e-004</b>	<b>4.8800e-003</b>	<b>2.2000e-004</b>	<b>5.1000e-003</b>	<b>1.3300e-003</b>	<b>2.1000e-004</b>	<b>1.5300e-003</b>	<b>0.0000</b>	<b>13.8809</b>	<b>13.8809</b>	<b>4.0000e-004</b>	<b>2.0500e-003</b>	<b>14.5013</b>

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**3.2 Demolition - 2023**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0193	0.0000	0.0193	2.9200e-003	0.0000	2.9200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.2578	0.2357	4.7000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	40.7904	40.7904	0.0114	0.0000	41.0760
<b>Total</b>	<b>0.0272</b>	<b>0.2578</b>	<b>0.2357</b>	<b>4.7000e-004</b>	<b>0.0193</b>	<b>0.0120</b>	<b>0.0313</b>	<b>2.9200e-003</b>	<b>0.0111</b>	<b>0.0141</b>	<b>0.0000</b>	<b>40.7904</b>	<b>40.7904</b>	<b>0.0114</b>	<b>0.0000</b>	<b>41.0760</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.4000e-004	0.0304	6.6000e-003	1.3000e-004	3.3100e-003	2.1000e-004	3.5200e-003	9.1000e-004	2.0000e-004	1.1200e-003	0.0000	12.7230	12.7230	3.6000e-004	2.0100e-003	13.3313
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	4.4000e-004	4.9600e-003	1.0000e-005	1.3400e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.1579	1.1579	4.0000e-005	4.0000e-005	1.1699
<b>Total</b>	<b>1.0800e-003</b>	<b>0.0308</b>	<b>0.0116</b>	<b>1.4000e-004</b>	<b>4.6500e-003</b>	<b>2.2000e-004</b>	<b>4.8700e-003</b>	<b>1.2700e-003</b>	<b>2.1000e-004</b>	<b>1.4900e-003</b>	<b>0.0000</b>	<b>13.8809</b>	<b>13.8809</b>	<b>4.0000e-004</b>	<b>2.0500e-003</b>	<b>14.5013</b>

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**3.3 Site Preparation - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2064	0.0000	0.2064	0.1061	0.0000	0.1061	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0279	0.2890	0.1916	4.0000e-004		0.0133	0.0133		0.0122	0.0122	0.0000	35.1232	35.1232	0.0114	0.0000	35.4072
<b>Total</b>	<b>0.0279</b>	<b>0.2890</b>	<b>0.1916</b>	<b>4.0000e-004</b>	<b>0.2064</b>	<b>0.0133</b>	<b>0.2197</b>	<b>0.1061</b>	<b>0.0122</b>	<b>0.1183</b>	<b>0.0000</b>	<b>35.1232</b>	<b>35.1232</b>	<b>0.0114</b>	<b>0.0000</b>	<b>35.4072</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7000e-004	4.6000e-004	5.2000e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2158	1.2158	4.0000e-005	4.0000e-005	1.2284
<b>Total</b>	<b>6.7000e-004</b>	<b>4.6000e-004</b>	<b>5.2000e-003</b>	<b>1.0000e-005</b>	<b>1.4800e-003</b>	<b>1.0000e-005</b>	<b>1.4900e-003</b>	<b>3.9000e-004</b>	<b>1.0000e-005</b>	<b>4.0000e-004</b>	<b>0.0000</b>	<b>1.2158</b>	<b>1.2158</b>	<b>4.0000e-005</b>	<b>4.0000e-005</b>	<b>1.2284</b>

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**3.3 Site Preparation - 2023**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0882	0.0000	0.0882	0.0454	0.0000	0.0454	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0279	0.2890	0.1916	4.0000e-004		0.0133	0.0133		0.0122	0.0122	0.0000	35.1232	35.1232	0.0114	0.0000	35.4072
<b>Total</b>	<b>0.0279</b>	<b>0.2890</b>	<b>0.1916</b>	<b>4.0000e-004</b>	<b>0.0882</b>	<b>0.0133</b>	<b>0.1015</b>	<b>0.0454</b>	<b>0.0122</b>	<b>0.0576</b>	<b>0.0000</b>	<b>35.1232</b>	<b>35.1232</b>	<b>0.0114</b>	<b>0.0000</b>	<b>35.4072</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7000e-004	4.6000e-004	5.2000e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.2158	1.2158	4.0000e-005	4.0000e-005	1.2284
<b>Total</b>	<b>6.7000e-004</b>	<b>4.6000e-004</b>	<b>5.2000e-003</b>	<b>1.0000e-005</b>	<b>1.4100e-003</b>	<b>1.0000e-005</b>	<b>1.4200e-003</b>	<b>3.8000e-004</b>	<b>1.0000e-005</b>	<b>3.8000e-004</b>	<b>0.0000</b>	<b>1.2158</b>	<b>1.2158</b>	<b>4.0000e-005</b>	<b>4.0000e-005</b>	<b>1.2284</b>

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**3.4 Grading - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4719	0.0000	0.4719	0.2279	0.0000	0.2279	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1138	1.1927	0.9809	1.9700e-003		0.0515	0.0515		0.0474	0.0474	0.0000	173.3031	173.3031	0.0561	0.0000	174.7043
<b>Total</b>	<b>0.1138</b>	<b>1.1927</b>	<b>0.9809</b>	<b>1.9700e-003</b>	<b>0.4719</b>	<b>0.0515</b>	<b>0.5234</b>	<b>0.2279</b>	<b>0.0474</b>	<b>0.2753</b>	<b>0.0000</b>	<b>173.3031</b>	<b>173.3031</b>	<b>0.0561</b>	<b>0.0000</b>	<b>174.7043</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0600e-003	0.1413	0.0307	6.0000e-004	0.0161	9.8000e-004	0.0171	4.4200e-003	9.4000e-004	5.3600e-003	0.0000	59.1299	59.1299	1.6900e-003	9.3500e-003	61.9572
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e-003	2.4200e-003	0.0275	7.0000e-005	7.8300e-003	5.0000e-005	7.8800e-003	2.0800e-003	4.0000e-005	2.1300e-003	0.0000	6.4166	6.4166	2.3000e-004	2.0000e-004	6.4833
<b>Total</b>	<b>5.5900e-003</b>	<b>0.1437</b>	<b>0.0582</b>	<b>6.7000e-004</b>	<b>0.0240</b>	<b>1.0300e-003</b>	<b>0.0250</b>	<b>6.5000e-003</b>	<b>9.8000e-004</b>	<b>7.4900e-003</b>	<b>0.0000</b>	<b>65.5465</b>	<b>65.5465</b>	<b>1.9200e-003</b>	<b>9.5500e-003</b>	<b>68.4404</b>



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**3.4 Grading - 2023**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2017	0.0000	0.2017	0.0974	0.0000	0.0974	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1138	1.1927	0.9809	1.9700e-003		0.0515	0.0515		0.0474	0.0474	0.0000	173.3029	173.3029	0.0561	0.0000	174.7041
<b>Total</b>	<b>0.1138</b>	<b>1.1927</b>	<b>0.9809</b>	<b>1.9700e-003</b>	<b>0.2017</b>	<b>0.0515</b>	<b>0.2533</b>	<b>0.0974</b>	<b>0.0474</b>	<b>0.1448</b>	<b>0.0000</b>	<b>173.3029</b>	<b>173.3029</b>	<b>0.0561</b>	<b>0.0000</b>	<b>174.7041</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0600e-003	0.1413	0.0307	6.0000e-004	0.0154	9.8000e-004	0.0164	4.2400e-003	9.4000e-004	5.1800e-003	0.0000	59.1299	59.1299	1.6900e-003	9.3500e-003	61.9572
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5300e-003	2.4200e-003	0.0275	7.0000e-005	7.4200e-003	5.0000e-005	7.4700e-003	1.9800e-003	4.0000e-005	2.0300e-003	0.0000	6.4166	6.4166	2.3000e-004	2.0000e-004	6.4833
<b>Total</b>	<b>5.5900e-003</b>	<b>0.1437</b>	<b>0.0582</b>	<b>6.7000e-004</b>	<b>0.0228</b>	<b>1.0300e-003</b>	<b>0.0238</b>	<b>6.2200e-003</b>	<b>9.8000e-004</b>	<b>7.2100e-003</b>	<b>0.0000</b>	<b>65.5465</b>	<b>65.5465</b>	<b>1.9200e-003</b>	<b>9.5500e-003</b>	<b>68.4404</b>

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

**3.5 Building Construction - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0645	0.5898	0.6660	1.1000e-003		0.0287	0.0287		0.0270	0.0270	0.0000	95.0400	95.0400	0.0226	0.0000	95.6052
<b>Total</b>	<b>0.0645</b>	<b>0.5898</b>	<b>0.6660</b>	<b>1.1000e-003</b>		<b>0.0287</b>	<b>0.0287</b>		<b>0.0270</b>	<b>0.0270</b>	<b>0.0000</b>	<b>95.0400</b>	<b>95.0400</b>	<b>0.0226</b>	<b>0.0000</b>	<b>95.6052</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0700e-003	0.0467	0.0131	2.0000e-004	6.3900e-003	2.5000e-004	6.6400e-003	1.8500e-003	2.4000e-004	2.0900e-003	0.0000	19.4078	19.4078	3.5000e-004	2.9400e-003	20.2916
Worker	0.0174	0.0119	0.1354	3.4000e-004	0.0386	2.4000e-004	0.0389	0.0103	2.2000e-004	0.0105	0.0000	31.6489	31.6489	1.1200e-003	1.0100e-003	31.9776
<b>Total</b>	<b>0.0185</b>	<b>0.0586</b>	<b>0.1485</b>	<b>5.4000e-004</b>	<b>0.0450</b>	<b>4.9000e-004</b>	<b>0.0455</b>	<b>0.0121</b>	<b>4.6000e-004</b>	<b>0.0126</b>	<b>0.0000</b>	<b>51.0566</b>	<b>51.0566</b>	<b>1.4700e-003</b>	<b>3.9500e-003</b>	<b>52.2692</b>

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

**3.5 Building Construction - 2023**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0645	0.5898	0.6660	1.1000e-003		0.0287	0.0287		0.0270	0.0270	0.0000	95.0398	95.0398	0.0226	0.0000	95.6051
<b>Total</b>	<b>0.0645</b>	<b>0.5898</b>	<b>0.6660</b>	<b>1.1000e-003</b>		<b>0.0287</b>	<b>0.0287</b>		<b>0.0270</b>	<b>0.0270</b>	<b>0.0000</b>	<b>95.0398</b>	<b>95.0398</b>	<b>0.0226</b>	<b>0.0000</b>	<b>95.6051</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0700e-003	0.0467	0.0131	2.0000e-004	6.1200e-003	2.5000e-004	6.3700e-003	1.7800e-003	2.4000e-004	2.0200e-003	0.0000	19.4078	19.4078	3.5000e-004	2.9400e-003	20.2916
Worker	0.0174	0.0119	0.1354	3.4000e-004	0.0366	2.4000e-004	0.0369	9.7900e-003	2.2000e-004	0.0100	0.0000	31.6489	31.6489	1.1200e-003	1.0100e-003	31.9776
<b>Total</b>	<b>0.0185</b>	<b>0.0586</b>	<b>0.1485</b>	<b>5.4000e-004</b>	<b>0.0427</b>	<b>4.9000e-004</b>	<b>0.0432</b>	<b>0.0116</b>	<b>4.6000e-004</b>	<b>0.0120</b>	<b>0.0000</b>	<b>51.0566</b>	<b>51.0566</b>	<b>1.4700e-003</b>	<b>3.9500e-003</b>	<b>52.2692</b>

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

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5915	0.7113	1.1900e-003		0.0270	0.0270		0.0254	0.0254	0.0000	102.0136	102.0136	0.0241	0.0000	102.6167
<b>Total</b>	<b>0.0648</b>	<b>0.5915</b>	<b>0.7113</b>	<b>1.1900e-003</b>		<b>0.0270</b>	<b>0.0270</b>		<b>0.0254</b>	<b>0.0254</b>	<b>0.0000</b>	<b>102.0136</b>	<b>102.0136</b>	<b>0.0241</b>	<b>0.0000</b>	<b>102.6167</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0497	0.0136	2.1000e-004	6.8600e-003	2.7000e-004	7.1200e-003	1.9800e-003	2.5000e-004	2.2400e-003	0.0000	20.4881	20.4881	3.9000e-004	3.1000e-003	21.4214
Worker	0.0174	0.0114	0.1340	3.5000e-004	0.0414	2.4000e-004	0.0417	0.0110	2.2000e-004	0.0113	0.0000	33.1273	33.1273	1.0800e-003	1.0000e-003	33.4526
<b>Total</b>	<b>0.0185</b>	<b>0.0610</b>	<b>0.1476</b>	<b>5.6000e-004</b>	<b>0.0483</b>	<b>5.1000e-004</b>	<b>0.0488</b>	<b>0.0130</b>	<b>4.7000e-004</b>	<b>0.0135</b>	<b>0.0000</b>	<b>53.6154</b>	<b>53.6154</b>	<b>1.4700e-003</b>	<b>4.1000e-003</b>	<b>54.8740</b>

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

**3.5 Building Construction - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5915	0.7113	1.1900e-003		0.0270	0.0270		0.0254	0.0254	0.0000	102.0135	102.0135	0.0241	0.0000	102.6166
<b>Total</b>	<b>0.0648</b>	<b>0.5915</b>	<b>0.7113</b>	<b>1.1900e-003</b>		<b>0.0270</b>	<b>0.0270</b>		<b>0.0254</b>	<b>0.0254</b>	<b>0.0000</b>	<b>102.0135</b>	<b>102.0135</b>	<b>0.0241</b>	<b>0.0000</b>	<b>102.6166</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0497	0.0136	2.1000e-004	6.5700e-003	2.7000e-004	6.8300e-003	1.9100e-003	2.5000e-004	2.1700e-003	0.0000	20.4881	20.4881	3.9000e-004	3.1000e-003	21.4214
Worker	0.0174	0.0114	0.1340	3.5000e-004	0.0393	2.4000e-004	0.0395	0.0105	2.2000e-004	0.0107	0.0000	33.1273	33.1273	1.0800e-003	1.0000e-003	33.4526
<b>Total</b>	<b>0.0185</b>	<b>0.0610</b>	<b>0.1476</b>	<b>5.6000e-004</b>	<b>0.0459</b>	<b>5.1000e-004</b>	<b>0.0464</b>	<b>0.0124</b>	<b>4.7000e-004</b>	<b>0.0129</b>	<b>0.0000</b>	<b>53.6154</b>	<b>53.6154</b>	<b>1.4700e-003</b>	<b>4.1000e-003</b>	<b>54.8740</b>

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

**3.6 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0860	0.8286	1.2724	1.9800e-003		0.0408	0.0408		0.0375	0.0375	0.0000	174.2308	174.2308	0.0564	0.0000	175.6396
Paving	1.7600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0877</b>	<b>0.8286</b>	<b>1.2724</b>	<b>1.9800e-003</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0375</b>	<b>0.0375</b>	<b>0.0000</b>	<b>174.2308</b>	<b>174.2308</b>	<b>0.0564</b>	<b>0.0000</b>	<b>175.6396</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-003	2.8100e-003	0.0331	9.0000e-005	0.0102	6.0000e-005	0.0103	2.7300e-003	5.0000e-005	2.7800e-003	0.0000	8.1877	8.1877	2.7000e-004	2.5000e-004	8.2681
<b>Total</b>	<b>4.3000e-003</b>	<b>2.8100e-003</b>	<b>0.0331</b>	<b>9.0000e-005</b>	<b>0.0102</b>	<b>6.0000e-005</b>	<b>0.0103</b>	<b>2.7300e-003</b>	<b>5.0000e-005</b>	<b>2.7800e-003</b>	<b>0.0000</b>	<b>8.1877</b>	<b>8.1877</b>	<b>2.7000e-004</b>	<b>2.5000e-004</b>	<b>8.2681</b>

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

**3.6 Paving - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0860	0.8286	1.2724	1.9800e-003		0.0408	0.0408		0.0375	0.0375	0.0000	174.2306	174.2306	0.0564	0.0000	175.6394
Paving	1.7600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0877</b>	<b>0.8286</b>	<b>1.2724</b>	<b>1.9800e-003</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0375</b>	<b>0.0375</b>	<b>0.0000</b>	<b>174.2306</b>	<b>174.2306</b>	<b>0.0564</b>	<b>0.0000</b>	<b>175.6394</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-003	2.8100e-003	0.0331	9.0000e-005	9.7100e-003	6.0000e-005	9.7700e-003	2.6000e-003	5.0000e-005	2.6500e-003	0.0000	8.1877	8.1877	2.7000e-004	2.5000e-004	8.2681
<b>Total</b>	<b>4.3000e-003</b>	<b>2.8100e-003</b>	<b>0.0331</b>	<b>9.0000e-005</b>	<b>9.7100e-003</b>	<b>6.0000e-005</b>	<b>9.7700e-003</b>	<b>2.6000e-003</b>	<b>5.0000e-005</b>	<b>2.6500e-003</b>	<b>0.0000</b>	<b>8.1877</b>	<b>8.1877</b>	<b>2.7000e-004</b>	<b>2.5000e-004</b>	<b>8.2681</b>

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

**3.7 Architectural Coating - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9492					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8600e-003	0.0530	0.0787	1.3000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	11.1067	11.1067	6.3000e-004	0.0000	11.1223
<b>Total</b>	<b>0.9571</b>	<b>0.0530</b>	<b>0.0787</b>	<b>1.3000e-004</b>		<b>2.6500e-003</b>	<b>2.6500e-003</b>		<b>2.6500e-003</b>	<b>2.6500e-003</b>	<b>0.0000</b>	<b>11.1067</b>	<b>11.1067</b>	<b>6.3000e-004</b>	<b>0.0000</b>	<b>11.1223</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4400e-003	2.2500e-003	0.0265	7.0000e-005	8.1900e-003	5.0000e-005	8.2400e-003	2.1800e-003	4.0000e-005	2.2200e-003	0.0000	6.5502	6.5502	2.1000e-004	2.0000e-004	6.6145
<b>Total</b>	<b>3.4400e-003</b>	<b>2.2500e-003</b>	<b>0.0265</b>	<b>7.0000e-005</b>	<b>8.1900e-003</b>	<b>5.0000e-005</b>	<b>8.2400e-003</b>	<b>2.1800e-003</b>	<b>4.0000e-005</b>	<b>2.2200e-003</b>	<b>0.0000</b>	<b>6.5502</b>	<b>6.5502</b>	<b>2.1000e-004</b>	<b>2.0000e-004</b>	<b>6.6145</b>



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

**3.7 Architectural Coating - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9492					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8600e-003	0.0530	0.0787	1.3000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	11.1066	11.1066	6.3000e-004	0.0000	11.1223
<b>Total</b>	<b>0.9571</b>	<b>0.0530</b>	<b>0.0787</b>	<b>1.3000e-004</b>		<b>2.6500e-003</b>	<b>2.6500e-003</b>		<b>2.6500e-003</b>	<b>2.6500e-003</b>	<b>0.0000</b>	<b>11.1066</b>	<b>11.1066</b>	<b>6.3000e-004</b>	<b>0.0000</b>	<b>11.1223</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4400e-003	2.2500e-003	0.0265	7.0000e-005	7.7700e-003	5.0000e-005	7.8200e-003	2.0800e-003	4.0000e-005	2.1200e-003	0.0000	6.5502	6.5502	2.1000e-004	2.0000e-004	6.6145
<b>Total</b>	<b>3.4400e-003</b>	<b>2.2500e-003</b>	<b>0.0265</b>	<b>7.0000e-005</b>	<b>7.7700e-003</b>	<b>5.0000e-005</b>	<b>7.8200e-003</b>	<b>2.0800e-003</b>	<b>4.0000e-005</b>	<b>2.1200e-003</b>	<b>0.0000</b>	<b>6.5502</b>	<b>6.5502</b>	<b>2.1000e-004</b>	<b>2.0000e-004</b>	<b>6.6145</b>

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3279	0.4262	2.8354	5.2200e-003	0.5223	5.0100e-003	0.5273	0.1400	4.7000e-003	0.1447	0.0000	489.7199	489.7199	0.0365	0.0270	498.6764
Unmitigated	0.3279	0.4262	2.8354	5.2200e-003	0.5223	5.0100e-003	0.5273	0.1400	4.7000e-003	0.1447	0.0000	489.7199	489.7199	0.0365	0.0270	498.6764

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	33.60	33.60	33.60	77,603	77,603
Condo/Townhouse	524.60	524.60	524.60	1,211,620	1,211,620
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	74.45	74.45	74.45	130,525	130,525
Total	632.65	632.65	632.65	1,419,748	1,419,748

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

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

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347
Condo/Townhouse	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347
Parking Lot	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347
Regional Shopping Center	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**







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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied****5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	65520.1	6.0622	9.8000e-004	1.2000e-004	6.1221
Condo/Townhouse	964345	89.2249	0.0144	1.7500e-003	90.1071
Parking Lot	20429.6	1.8902	3.1000e-004	4.0000e-005	1.9089
Regional Shopping Center	270360	25.0147	4.0500e-003	4.9000e-004	25.2621
<b>Total</b>		<b>122.1920</b>	<b>0.0198</b>	<b>2.4000e-003</b>	<b>123.4003</b>

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

**5.3 Energy by Land Use - Electricity**

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	65520.1	6.0622	9.8000e-004	1.2000e-004	6.1221
Condo/Townhouse	964345	89.2249	0.0144	1.7500e-003	90.1071
Parking Lot	20429.6	1.8902	3.1000e-004	4.0000e-005	1.9089
Regional Shopping Center	270360	25.0147	4.0500e-003	4.9000e-004	25.2621
<b>Total</b>		<b>122.1920</b>	<b>0.0198</b>	<b>2.4000e-003</b>	<b>123.4003</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**



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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6602	0.0150	1.0749	3.7000e-004		0.0210	0.0210		0.0210	0.0210	2.0588	4.0729	6.1316	0.0112	5.0000e-005	6.4253
Unmitigated	0.6602	0.0150	1.0749	3.7000e-004		0.0210	0.0210		0.0210	0.0210	2.0588	4.0729	6.1316	0.0112	5.0000e-005	6.4253

**6.2 Area by SubCategory**

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0949					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5252					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0106	3.6700e-003	0.0952	3.2000e-004		0.0156	0.0156		0.0156	0.0156	2.0588	2.4718	4.5306	9.6700e-003	5.0000e-005	4.7859
Landscaping	0.0295	0.0113	0.9797	5.0000e-005		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	1.6011	1.6011	1.5400e-003	0.0000	1.6395
<b>Total</b>	<b>0.6602</b>	<b>0.0150</b>	<b>1.0749</b>	<b>3.7000e-004</b>		<b>0.0210</b>	<b>0.0210</b>		<b>0.0210</b>	<b>0.0210</b>	<b>2.0588</b>	<b>4.0729</b>	<b>6.1316</b>	<b>0.0112</b>	<b>5.0000e-005</b>	<b>6.4253</b>

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

**6.2 Area by SubCategory**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0949					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5252					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0106	3.6700e-003	0.0952	3.2000e-004		0.0156	0.0156		0.0156	0.0156	2.0588	2.4718	4.5306	9.6700e-003	5.0000e-005	4.7859
Landscaping	0.0295	0.0113	0.9797	5.0000e-005		5.4300e-003	5.4300e-003		5.4300e-003	5.4300e-003	0.0000	1.6011	1.6011	1.5400e-003	0.0000	1.6395
<b>Total</b>	<b>0.6602</b>	<b>0.0150</b>	<b>1.0749</b>	<b>3.7000e-004</b>		<b>0.0210</b>	<b>0.0210</b>		<b>0.0210</b>	<b>0.0210</b>	<b>2.0588</b>	<b>4.0729</b>	<b>6.1316</b>	<b>0.0112</b>	<b>5.0000e-005</b>	<b>6.4253</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	8.9030	0.2849	6.8200e-003	18.0576
Unmitigated	8.9030	0.2849	6.8200e-003	18.0576

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.65154 / 0.410754	0.6659	0.0213	5.1000e-004	1.3506
Condo/Townhouse	7.94879 / 5.01119	8.1241	0.2599	6.2300e-003	16.4773
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.111109 / 0.0680989	0.1129	3.6300e-003	9.0000e-005	0.2297
<b>Total</b>		<b>8.9030</b>	<b>0.2849</b>	<b>6.8300e-003</b>	<b>18.0576</b>

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

**7.2 Water by Land Use**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	0.65154 / 0.410754	0.6659	0.0213	5.1000e-004	1.3506
Condo/Townhouse	7.94879 / 5.01119	8.1241	0.2599	6.2300e-003	16.4773
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.111109 / 0.0680989	0.1129	3.6300e-003	9.0000e-005	0.2297
<b>Total</b>		<b>8.9030</b>	<b>0.2849</b>	<b>6.8300e-003</b>	<b>18.0576</b>

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services

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

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.3232	0.3737	0.0000	15.6654
Unmitigated	12.6463	0.7474	0.0000	31.3308

**8.2 Waste by Land Use**

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	4.6	0.9338	0.0552	0.0000	2.3134
Condo/Townhouse	56.12	11.3919	0.6732	0.0000	28.2228
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.58	0.3207	0.0190	0.0000	0.7946
<b>Total</b>		<b>12.6463</b>	<b>0.7474</b>	<b>0.0000</b>	<b>31.3308</b>

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

**8.2 Waste by Land Use**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	2.3	0.4669	0.0276	0.0000	1.1567
Condo/Townhouse	28.06	5.6959	0.3366	0.0000	14.1114
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.79	0.1604	9.4800e-003	0.0000	0.3973
<b>Total</b>		<b>6.3232</b>	<b>0.3737</b>	<b>0.0000</b>	<b>15.6654</b>

**9.0 Operational Offroad**

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

Fire Pumps and Emergency Generators

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

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

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

Equipment Type	Number
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**11.0 Vegetation**

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