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# **Keller Crossing Specific Plan**

## **GREENHOUSE GAS ANALYSIS**

### **COUNTY OF RIVERSIDE**

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## **LIST OF ABBREVIATED TERMS**

%	Percent
°F	Degrees Fahrenheit
(1)	Reference
AB	Assembly Bill
AB 32	Global Warming Solutions Act of 2006
AB 1493	Pavley Fuel Efficiency Standards
ABAU	Adjusted BAU
Annex I	Industrialized Nations
APA	Administrative Procedure Act
BAU	Business as Usual
C <sub>2</sub> F <sub>6</sub>	Hexafluoroethane
C <sub>2</sub> H <sub>6</sub>	Ethane
C <sub>2</sub> H <sub>2</sub> F <sub>4</sub>	Tetrafluoroethane
C <sub>2</sub> H <sub>4</sub> F <sub>2</sub>	Ethylidene Fluoride
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CALGAPS	California LBNL GHG Analysis of Policies Spreadsheet
CALGreen	California Green Building Standards Code
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CAP	Climate Action Plan
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CF <sub>4</sub>	Tetrafluoromethane
CFC	Chlorofluorocarbons
CH <sub>4</sub>	Methane
CHF <sub>3</sub>	Fluoroform
CH <sub>2</sub> FCF	1,1,1,2-tetrafluoroethane
CH <sub>3</sub> CF <sub>2</sub>	1,1-difluoroethane
CNRA	California Natural Resources Agency
CNRA 2009	2009 California Climate Adaptation Strategy
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EMFAC	EMissions FACtor
EPA	U.S. Environmental Protection Agency

GCC	Global Climate Change
Gg	Gigagram
GHGA	Greenhouse Gas Analysis
GWP	Global Warming Potential
HDT	Heavy-Duty Trucks
IPCC	Intergovernmental Panel on Climate Change
LBNL	Lawrence Berkeley National Laboratory
LCA	Life-Cycle Analysis
LCD	Liquid Crystal Display
LCFS	Low Carbon Fuel Standard
LEV III	Low-Emission Vehicle
MMT CO <sub>2</sub> e	Million Metric Ton of Carbon Dioxide Equivalent
MPG	Miles Per Gallon
MPOs	Metropolitan Planning Organizations
MT/yr	Metric Tons Per Year
MT CO <sub>2</sub> e	Metric Ton of Carbon Dioxide Equivalent
MWELO	California Department of Water Resources' Model Water Efficient
N <sub>2</sub> O	Nitrous Oxide
NF <sub>3</sub>	Nitrogen Trifluoride
NHTSA	National Highway Traffic Safety Administration
NIOSH	National Institute for Occupational Safety and Health
NO <sub>x</sub>	Oxides of Nitrogen
Non-Annex I	Developing Nations
OAL	Office of Administrative Law
OPR	Office of Planning and Research
PFC	Perfluorocarbons
ppm	Parts Per Million
ppt	Parts Per Trillion
Project	Keller Crossing Specific Plan
RPS	Renewable Portfolio Standards
RTPs	Regional Transportation Plans
SB	Senate Bill
SB 32	California Global Warming Solutions Act of 2006: Emission Limit
SB 375	Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies
SCAQMD	South Coast Air Quality Management District

sf	Square Feet
SF <sub>6</sub>	Sulfur Hexafluoride
SP	Service Population
SR-79	State Route 79
UNFCCC	United Nations' Framework Convention on Climate Change
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WRI	World Resources Institute
ZEV	Zero-Emissions Vehicles

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## EXECUTIVE SUMMARY

### ES.1 SUMMARY OF FINDINGS

The results of this Keller Crossing Specific Plan Greenhouse Gas Analysis (GHGA) is summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for potential greenhouse gas (GHG) impacts under CEQA.

**TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS**

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
GHG Impact #1: Would the Project generate direct or indirect GHG emission that would result in a significant impact on the environment?	3.8	<i>Less Than Significant</i>	<i>N/A</i>
GHG Impact #2: Would the Project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?	3.8	<i>Less Than Significant</i>	<i>N/A</i>

### ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the State of California and the South Coast Air Quality Management District (SCAQMD) aimed at the reduction of air pollutant emissions. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of GHG emissions include:

- Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32) (2) and California Global Warming Solutions Act of 2006: Emissions Limit (SB 32) (3).
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (Senate Bill (SB) 375) (4).
- Pavley Fuel Efficiency Standards (AB 1493). Establishes fuel efficiency ratings for new vehicles (5).
- California Building Code (Title 24 California Code of Regulations (CCR)). Establishes energy efficiency requirements for new construction (6).
- Appliance Energy Efficiency Standards (Title 20 CCR). Establishes energy efficiency requirements for appliances (7).
- Low Carbon Fuel Standard (LCFS). Requires carbon content of fuel sold in California to be 10% less by 2020 (8).
- California Water Conservation in Landscaping Act of 2006 (AB 1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance

or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes (9).

- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (10).
- Renewable Portfolio Standards (SB 1078 – also referred to as RPS). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent (%) by 2010 and 33% by 2020 (11).

Promulgated regulations that will affect the Project's emissions are accounted for in the Project's GHG calculations provided in this report. In particular, AB 1493, LCFS, and RPS, and therefore are accounted for in the Project's emission calculations.

# 1 INTRODUCTION

This report presents the results of the Greenhouse Gas Analysis (GHGA) prepared by Urban Crossroads, Inc., for the proposed Keller Crossing Specific Plan (“Project”). The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of greenhouse gas (GHG) impacts as a result of constructing and operating the proposed Project.

## 1.1 SITE LOCATION

The proposed Project is located on the northwest corner of Winchester Road (SR-79) and Keller Road in the County of Riverside, as shown on Exhibit 1-A. The area surrounding the Project Site is developed with rural residential homes.

## 1.2 PROJECT DESCRIPTION

A preliminary land use plan for the proposed Project is shown on Exhibit 1-B. The Project is proposing to amend the Specific Plan with a mix of residential and commercial uses, as described below:

- Phase 1 (Opening Year of 2023) is anticipated to include the development of 195 single family detached residential dwelling units.
- Project Buildout (Buildout year of 2028) is anticipated to include a total of 356 single family detached residential dwelling units, 80 attached senior housing units, a 5.7-acre sports park/active park<sup>1</sup>, and 176,000 square feet of commercial retail uses. For the purposes of the calculating and evaluating a conservative trip generation, the commercial retail area is proposed to include a 50,000 square foot supermarket, 14,000 square foot pharmacy, 101,500 square feet of commercial retail uses, and 10,500 square feet of fast-food restaurant with drive-through window use. The commercial area land use assumptions are an estimation of the types of uses that could be developed within this area of the Specific Plan.

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<sup>1</sup> The Project design has been updated and reduce the main park size from 6.5 to 5.7 acres. The modeling and findings are based on a worst-case project with a 6.5-acre park.

EXHIBIT 1-A: LOCATION MAP

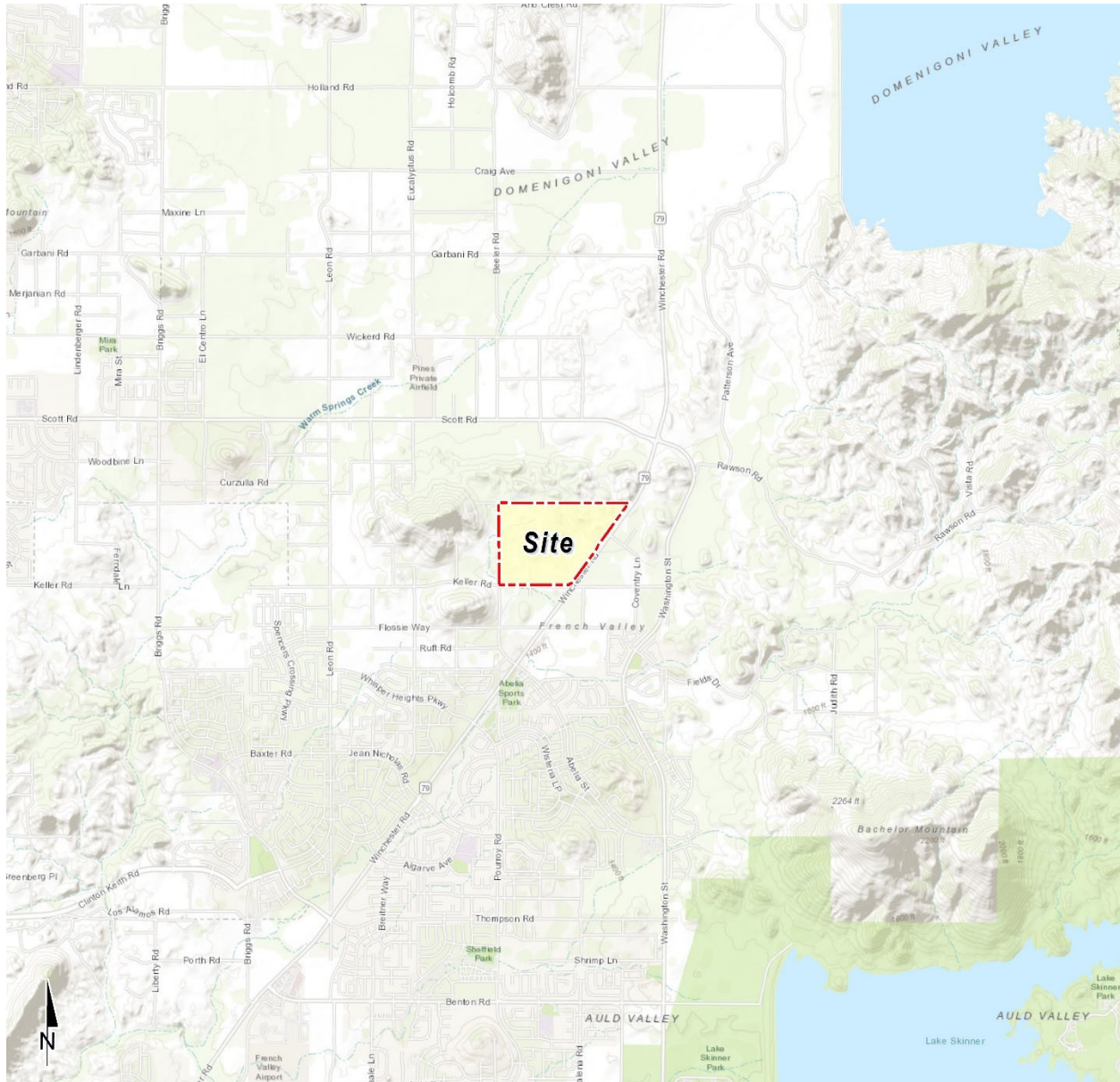
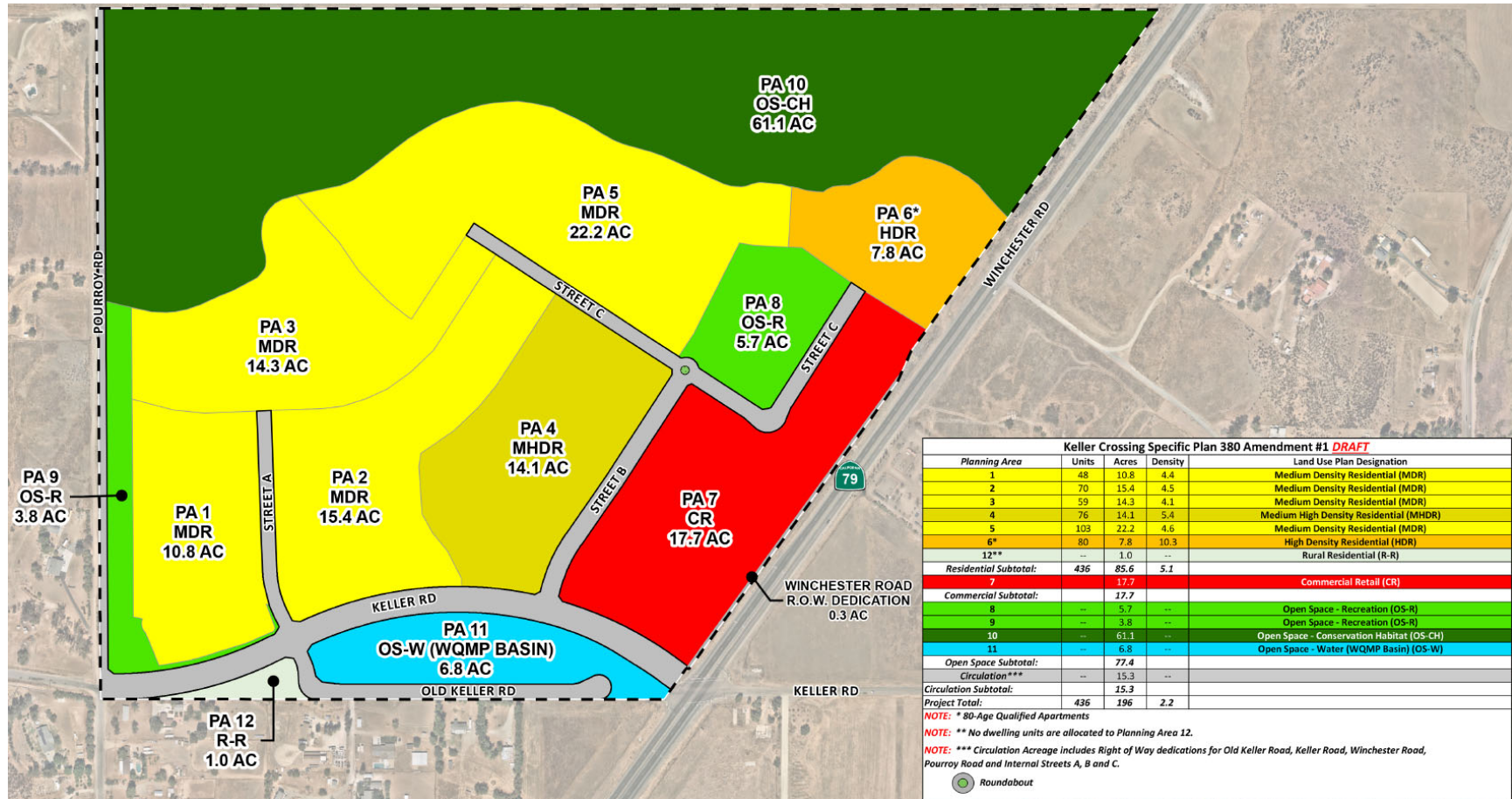


EXHIBIT 1-B: PRELIMINARY LAND USE PLAN



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## **2 CLIMATE CHANGE SETTING**

### **2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE**

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. The majority of scientists believe that the climate shift taking place since the Industrial Revolution is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of GHGs in the earth's atmosphere, including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases. The majority of scientists believe that this increased rate of climate change is the result of GHGs resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough GHG emissions to affect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 will evaluate the potential for the proposed Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

### **2.2 GLOBAL CLIMATE CHANGE DEFINED**

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF<sub>6</sub>). These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radioactive heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as GHGs. GHGs are released into the atmosphere by both natural and anthropogenic activity. Without the natural GHG effect, the earth's average temperature would be approximately 61 degrees Fahrenheit (°F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

### **2.3 GREENHOUSE GASES**

#### **GREENHOUSE GASES AND HEALTH EFFECTS**

GHGs trap heat in the atmosphere, creating a GHG effect that results in global warming and climate change. Many gases demonstrate these properties and as discussed in Table 2-1. For the purposes of this analysis, emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were evaluated (see Table 3-1 later in

this report) because these gases are the primary contributors to GCC from development projects. Although there are other substances such as fluorinated gases that also contribute to GCC, these fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate these gases.

**TABLE 2-1: GREENHOUSE GASES**

Greenhouse Gases	Description	Sources	Health Effects
Water	<p>Water is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change.</p> <p>As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop</p>	<p>The main source of water vapor is evaporation from the oceans (approximately 85 percent [%]). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.</p>	<p>There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.</p>



**TABLE 2-1: GREENHOUSE GASES**

Greenhouse Gases	Description	Sources	Health Effects
	<p>will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up) (12).</p>		
<p>CO<sub>2</sub></p>	<p>CO<sub>2</sub> is an odorless and colorless GHG. Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO<sub>2</sub> concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30%. Left unchecked, the concentration of CO<sub>2</sub> in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (13).</p>	<p>CO<sub>2</sub> is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. CO<sub>2</sub> is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (14).</p>	<p>Outdoor levels of CO<sub>2</sub> are not high enough to result in negative health effects.</p> <p>According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of CO<sub>2</sub> can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of CO<sub>2</sub> in the earth's atmosphere are estimated to be approximately 370 ppm, the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of</p>

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
			30,000 ppm averaged over a 15 minute period (15).
CH <sub>4</sub>	CH <sub>4</sub> is an extremely effective absorber of radiation, although its atmospheric concentration is less than CO <sub>2</sub> and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs.	CH <sub>4</sub> has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH <sub>4</sub> . Other anthropogenic sources include fossil-fuel combustion and biomass burning (16).	CH <sub>4</sub> is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Exposure to high levels of CH <sub>4</sub> can cause asphyxiation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, loss of coordination, and an increased breathing rate.
N <sub>2</sub> O	N <sub>2</sub> O, also known as laughing gas, is a colorless GHG. Concentrations of N <sub>2</sub> O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion.	N <sub>2</sub> O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and	N <sub>2</sub> O can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (17).

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
		<p>vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. N<sub>2</sub>O can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction (17).</p>	
Chlorofluorocarbons (CFCs)	<p>CFCs are gases formed synthetically by replacing all hydrogen atoms in CH<sub>4</sub> or ethane (C<sub>2</sub>H<sub>6</sub>) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).</p>	<p>CFCs have no natural source but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the</p>	<p>In confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.</p>

TABLE 2-1: GREENHOUSE GASES

Greenhouse Gases	Description	Sources	Health Effects
		atmosphere for over 100 years (18).	
HFCs	HFCs are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential (GWP). The HFCs with the largest measured atmospheric abundances are (in order), fluoroform (CHF <sub>3</sub> ), 1,1,1,2-tetrafluoroethane (CH <sub>2</sub> FCF), and 1,1-difluoroethane (CH <sub>3</sub> CF <sub>2</sub> ). Prior to 1990, the only significant emissions were of CHF <sub>3</sub> . CH <sub>2</sub> FCF emissions are increasing due to its use as a refrigerant.	HFCs are manmade for applications such as automobile air conditioners and refrigerants.	No health effects are known to result from exposure to HFCs.
PFCs	PFCs have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF <sub>4</sub> ) and hexafluoroethane (C <sub>2</sub> F <sub>6</sub> ). The U.S. Environmental Protection Agency (EPA) estimates that concentrations of CF <sub>4</sub> in the atmosphere are over 70 parts per trillion (ppt).	The two main sources of PFCs are primary aluminum production and semiconductor manufacture.	No health effects are known to result from exposure to PFCs.
SF <sub>6</sub>	SF <sub>6</sub> is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest global warming potential (GWP) of any gas evaluated (23,900) (19). The EPA	SF <sub>6</sub> is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor	In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

**TABLE 2-1: GREENHOUSE GASES**

Greenhouse Gases	Description	Sources	Health Effects
	indicates that concentrations in the 1990s were about 4 ppt.	manufacturing, and as a tracer gas for leak detection.	
Nitrogen Trifluoride (NF <sub>3</sub> )	NF <sub>3</sub> is a colorless gas with a distinctly moldy odor. The World Resources Institute (WRI) indicates that NF <sub>3</sub> has a 100-year GWP of 17,200 (20).	NF <sub>3</sub> is used in industrial processes and is produced in the manufacturing of semiconductors, Liquid Crystal Display (LCD) panels, types of solar panels, and chemical lasers.	Long-term or repeated exposure may affect the liver and kidneys and may cause fluorosis (21).

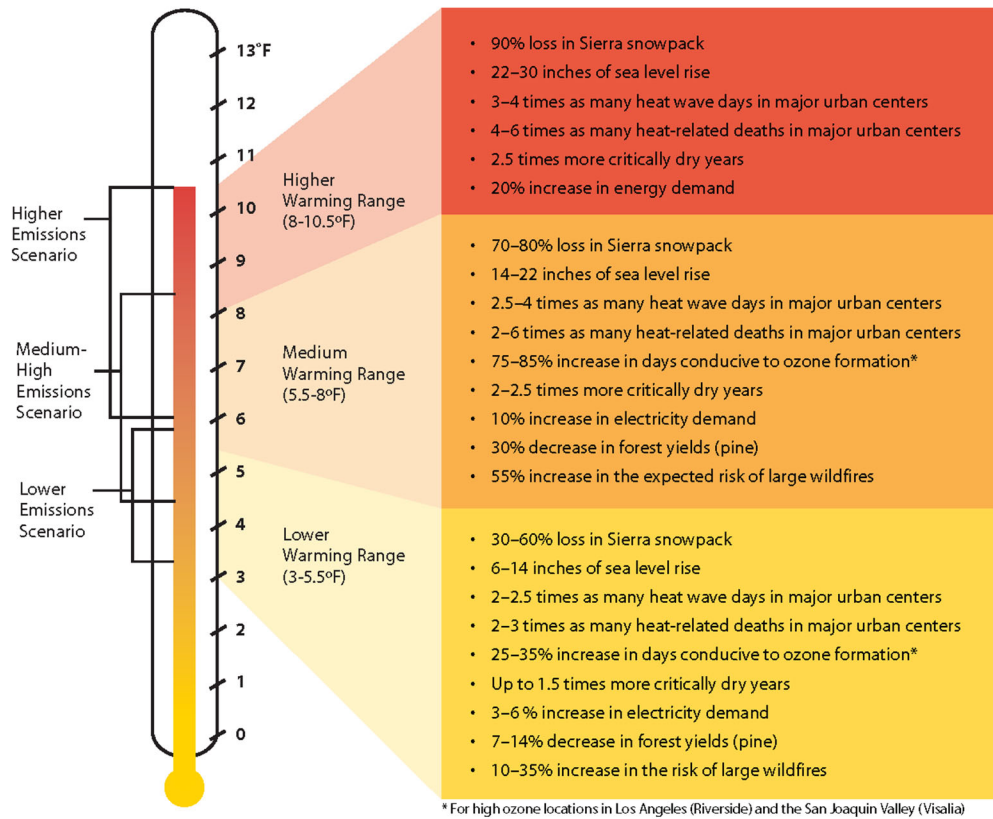
The potential health effects related directly to the emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to GCC have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (22). Exhibit 2-A presents the potential impacts of global warming (23).

## 2.4 GLOBAL WARMING POTENTIAL

GHGs have varying GWP values. GWP of a GHG indicates the amount of warming a gas causes over a given period of time and represents the potential of a gas to trap heat in the atmosphere. CO<sub>2</sub> is utilized as the reference gas for GWP, and thus has a GWP of 1. CO<sub>2</sub> equivalent (CO<sub>2</sub>e) is a term used for describing the difference GHGs in a common unit. CO<sub>2</sub>e signifies the amount of CO<sub>2</sub> which would have the equivalent GWP.

The atmospheric lifetime and GWP of selected GHGs are summarized at Table 2-2. As shown in the table below, GWP for the Second Assessment Report, the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for CO<sub>2</sub> to 23,900 for SF<sub>6</sub> and GWP for the IPCC's 5<sup>th</sup> Assessment Report range from 1 for CO<sub>2</sub> to 23,500 for SF<sub>6</sub> (24).

**EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT, 2070-2099 (AS COMPARED WITH 1961-1990)**



Source: Barbara H. Allen-Diaz. "Climate change affects us all." *University of California, Agriculture and Natural Resources*, 2009.

**TABLE 2-2: GWP AND ATMOSPHERIC LIFETIME OF SELECT GHGS**

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)	
		Second Assessment Report	5 <sup>th</sup> Assessment Report
CO <sub>2</sub>	See*	1	1
CH <sub>4</sub>	12.4	21	28
N <sub>2</sub> O	121	310	265
HFC-23	222	11,700	12,400
HFC-134a	13.4	1,300	1,300
HFC-152a	1.5	140	138
SF <sub>6</sub>	3,200	23,900	23,500

\*As per Appendix 8.A. of IPCC's 5th Assessment Report, no single lifetime can be given.  
Source: Table 2.14 of the IPCC Fourth Assessment Report, 2007

## 2.5 GREENHOUSE GAS EMISSIONS INVENTORIES

### *Global*

Worldwide anthropogenic GHG emissions are tracked by the IPCC for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2018. Based on the latest available data, the sum of these emissions totaled approximately 31,952.61 gigatons (Gt) CO<sub>2</sub>e<sup>2</sup> (25) (26) as summarized on Table 2-3.

### *United States*

As noted in Table 2-3, the United States, as a single country, was the number two producer of GHG emissions in 2018.

**TABLE 2-3: TOP GHG PRODUCING COUNTRIES AND THE EUROPEAN UNION <sup>3</sup>**

<b>Emitting Countries</b>	<b>GHG Emissions (Gt CO<sub>2</sub>e)</b>
China	11,705.81
United States	5,794.35
India	3,346.63
European Union (28-member countries)	3,333.16
Russian Federation	1,992.08
Indonesia	1,703.86
Brazil	1,420.58
Japan	1,154.72
Iran	828.34
South Korea	673.08
<b>Total</b>	<b>31,952.61</b>

Gt = gigaton (one billion tons)

Source: Climatewatch, Historical GHG Emissions, 2021.

### *State of California*

California has significantly slowed the rate of growth of GHG emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls but is still a substantial contributor to the U.S. emissions inventory total (27). The California Air

<sup>2</sup> The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2018 data, the United Nations' Framework Convention on Climate Change (UNFCCC) data for the most recent year were used U.N. Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," The most recent GHG emissions for China and India are from 2014 and 2010, respectively.

<sup>3</sup> Used <http://unfccc.int> data for Annex I countries. Consulted the CAIT Climate Data Explorer in <https://www.climatewatchdata.org> site to reference Historical GHG Emissions, Top Emitters.

Resource Board (CARB) compiles GHG inventories for the State of California. Based upon the 2021 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2019 GHG emissions period, California emitted 418.2 million metric tons of CO<sub>2</sub>e (MMT CO<sub>2</sub>e), 12.8 MMT CO<sub>2</sub>e below the Statewide goal for 2020 (28).

## **2.6 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA**

### *Public Health*

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35% under the lower warming range to 75 to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

### *Water Resources*

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90%. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused



by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

#### *Agriculture*

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25% of the water supply needed. Although higher CO<sub>2</sub> levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued GCC could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued GCC could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

#### *Forests and Landscapes*

GCC has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90% due to decreased precipitation.

Moreover, continued GCC has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80% by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of GCC.

#### *Rising Sea Levels*

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland

water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

## 2.7 REGULATORY SETTING

### FEDERAL

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

**GHG Endangerment.** In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, the Supreme Court found that four GHGs, including CO<sub>2</sub>, are air pollutants subject to regulation under Section 202(a)(1) of the federal Clean Air Act (CAA). The Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs— CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section “Clean Vehicles” below. After a lengthy legal challenge, the U.S. Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator’s findings (29).

**Clean Vehicles.** Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA and the Department of Transportation’s National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty (MD) passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO<sub>2</sub> level solely through fuel economy improvements. Together, these standards would cut CO<sub>2</sub> emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the

vehicles sold under the program (model years 2012–2016). The EPA and the NHTSA issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012. The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and MD passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO<sub>2</sub> in model year 2025, which is equivalent to 54.5 mpg if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks (HDT) and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20% reduction in CO<sub>2</sub> emissions and fuel consumption by the 2018 model year. For HDT and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10% reduction for gasoline vehicles and a 15% reduction for diesel vehicles by the 2018 model year (12 and 17% respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10% reduction in fuel consumption and CO<sub>2</sub> emissions from the 2014 to 2018 model years.

**Mandatory Reporting of GHGs.** The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons per year (MT/yr) or more of GHG emissions are required to submit annual reports to the EPA.

**New Source Review.** The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule “tailors” the requirements of these CAA permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

*“This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the CAA, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources but excludes certain smaller sources from Prevention of Significant*

*Deterioration and Title V permitting for GHG emissions until at least April 30, 2016.”*

The EPA estimates that facilities responsible for nearly 70% of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation’s largest GHG emitters—power plants, refineries, and cement production facilities.

**Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units.** As required by a settlement agreement, the EPA proposed new performance standards for emissions of CO<sub>2</sub> for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output-based standard of 1,000 pounds of CO<sub>2</sub> per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016, the U.S. Supreme Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO<sub>2</sub> standards. The Clean Power Plan was officially repealed on June 19, 2019, when the EPA issued the final Affordable Clean Energy rule (ACE). Under ACE, new state emission guidelines were established that provided existing coal-fired electric utility generating units with achievable standards.

**Cap-and-Trade.** Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the N<sub>2</sub>O Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps CO<sub>2</sub> emissions from power plants, auctions CO<sub>2</sub> emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008 and in 2020 has retained all participating states.

The Western Climate Initiative (WCI) partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15% below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec’s cap-and-trade system January 1, 2014, and joint offset auctions took place in 2015. While the WCI has yet to publish whether it has successfully reached the 2020 emissions goal initiative set in 2007, Senate Bill (SB) 32, requires that California, a major partner in the WCI, adopt the goal of reducing statewide GHG emissions to 40% below the 1990 level by 2030.

**SmartWay Program.** The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the

environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (33):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all HDTs will have to comply with the CARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10% or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.
- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

## **CALIFORNIA**

### **Legislative Actions to Reduce GHGs**

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 Assembly Bill (AB 32) was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as

energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

**AB 32.** The California State Legislature enacted AB 32, which required that GHGs emitted in California be reduced to 1990 levels by the year 2020 (this goal has been met<sup>4</sup>). GHGs as defined under AB 32 include CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. CARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

*“Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.”*

**Senate Bill 32.** SB 32 requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80% below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but also the Legislature (3).

**CARB Scoping Plan Update.** In November 2017, CARB released the *Final 2017 Scoping Plan Update*, which identifies the State’s post-2020 reduction strategy. The *Final 2017 Scoping Plan Update* reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the Low Carbon Fuel Standard (LCFS), and much cleaner cars, trucks and freight movement, utilizing cleaner, renewable energy, and strategies to reduce CH<sub>4</sub> emissions from agricultural and other wastes.

The *Final 2017 Scoping Plan Update* establishes a new emissions limit of 260 MMT CO<sub>2</sub>e for the year 2030, which corresponds to a 40% decrease in 1990 levels by 2030 (34).

California’s climate strategy will require contributions from all sectors of the economy, including the land base, and will include enhanced focus on zero- and near-zero-emission vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (CH<sub>4</sub>, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and

<sup>4</sup> Based upon the 2019 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2017 GHG emissions period, California emitted an average 424.1 MMT CO<sub>2</sub>e (28). This is less than the 2020 emissions target of 431 MMT CO<sub>2</sub>e.

other lands. Requirements for direct GHG reductions at refineries will further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California’s local air pollution control and air quality management districts (air districts) to tighten emission limits on a broad spectrum of industrial sources. Major elements of the *Final 2017 Scoping Plan Update* framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero-emission vehicles (ZEV) buses and trucks.
- LCFS, with an increased stringency (18% by 2030).
- Implementing SB 350, which expands the RPS to 50% RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH<sub>4</sub> and hydrofluorocarbon emissions by 40% and anthropogenic black carbon emissions by 50% by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20% reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California’s land base as a net carbon sink.

Note, however, that the *Final 2017 Scoping Plan Update* acknowledges that:

*“[a]chieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA.”*

In addition to the statewide strategies listed above, the *Final 2017 Scoping Plan Update* also identifies local governments as essential partners in achieving the State’s long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 metric tons of CO<sub>2</sub>e (MT CO<sub>2</sub>e) or less per capita by 2030 and 2 MT CO<sub>2</sub>e or less per capita by 2050. For California Environmental Quality Act (CEQA) projects, CARB states that lead agencies may develop evidenced-based bright-line numeric thresholds—consistent with the Scoping Plan and the State’s long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and mitigation measures that avoid or minimize project emissions to the degree feasible; or, a performance-based metric using a CAP or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory (LBNL) and supported by CARB, California, under its existing and proposed GHG reduction policies, could

achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that by 2030, emissions could range from 211 to 428 MT CO<sub>2</sub>e per year, indicating that “even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40% below the 1990 level [of SB 32].” CALGAPS analyzed emissions through 2050 even though it did not generally account for policies that might be put in place after 2030. Although the research indicated that the emissions would not meet the State’s 80% reduction goal by 2050, various combinations of policies could allow California’s cumulative emissions to remain very low through 2050 (35) (36).

**Cap-and-Trade Program.** The Scoping Plan identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to CARB, a cap-and-trade program will help put California on the path to meet its goal of achieving a 40% reduction in GHG emissions from 1990 levels by 2030. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

CARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. The Cap-and-Trade Program is designed to reduce GHG emissions from regulated entities by more than 16% between 2013 and 2020, and by an additional 40% by 2030. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program’s duration.

Covered entities that emit more than 25,000 MT CO<sub>2</sub>e per year must comply with the Cap-and-Trade Program. Triggering of the 25,000 MT CO<sub>2</sub>e per year “inclusion threshold” is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule).

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender “compliance instruments” for each MT CO<sub>2</sub>e of GHG they emit. There also are requirements to surrender compliance instruments covering 30% of the prior year’s compliance obligation by November of each year (37).

The Cap-and-Trade Program provides a firm cap, which provides the highest certainty of achieving the 2030 target. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by CARB in the *First Update to the Climate Change Scoping Plan*:

*“The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities.*”



*Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative.” (38)*

The Cap-and-Trade Program covered approximately 80% of California’s GHG emissions (34). The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG 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. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported.

**SB 375 – the Sustainable Communities and Climate Protection Act of 2008.** According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40% of the total GHG emissions in California. SB 375 states, “Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32.” SB 375 does the following: it (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans (RTPs) for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that CARB accepts as achieving the GHG emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

**Pavley Fuel Efficiency Standards (AB 1493).** California 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 standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22% reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30% reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program (LEV III) or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34% from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

**SB 350— Clean Energy and Pollution Reduction Act of 2015.** In October 2015, the legislature approved, and the Governor signed SB 350, which reaffirms California’s commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50% reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill’s passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

#### **EXECUTIVE ORDERS RELATED TO GHG EMISSIONS**

California’s Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

**Executive Order B-55-18 and SB 100.** Executive Order B-55-18 and SB 100. SB 100 and Executive Order B-55-18 were signed by Governor Brown on September 10, 2018. Under the existing RPS, 25% of retail sales are required to be from renewable sources by December 31, 2016, 33% by

December 31, 2020, 40% by December 31, 2024, 45% by December 31, 2027, and 50% by December 31, 2030. SB 100 raises California's RPS requirement to 50% renewable resources target by December 31, 2026, and to achieve a 60% target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030. In addition to targets under AB 32 and SB 32, Executive Order B-55-18 establishes a carbon neutrality goal for the state of California by 2045; and sets a goal to maintain net negative emissions thereafter. The Executive Order directs the California Natural Resources Agency (CNRA), California Environmental Protection Agency, the Department of Food and Agriculture, and CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

**Executive Order S-3-05.** Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% 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 – Low Carbon Fuel Standard.** 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% by 2020. CARB adopted the LCFS on April 23, 2009.

The LCFS was challenged in the U.S. District Court in Fresno in 2011. The court's ruling issued on December 29, 2011, included a preliminary injunction against CARB's implementation of the rule. The Ninth Circuit Court of Appeals stayed the injunction on April 23, 2012, pending final ruling on appeal, allowing CARB to continue to implement and enforce the regulation. The Ninth Circuit Court's decision, filed September 18, 2013, vacated the preliminary injunction. In essence, the court held that LCFS adopted by CARB were not in conflict with federal law. On August 8, 2013, the Fifth District Court of Appeal (California) ruled CARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for LCFS. In a partially published opinion, the Court of Appeal reversed the trial court's judgment and directed issuance of a writ of mandate setting aside Resolution 09-31 and two executive orders of CARB approving LCFS regulations promulgated to reduce GHG emissions. However, the court tailored its remedy to protect the public interest by allowing the LCFS regulations to remain operative while CARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, CARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions

to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon intensity fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. On November 16, 2015 the Office of Administrative Law (OAL) approved the Final Rulemaking Package. The new LCFS regulation became effective on January 1, 2016.

In 2018, CARB approved amendments to the regulation, which included strengthening the carbon intensity benchmarks through 2030 in compliance with the SB 32 GHG emissions reduction target for 2030. The amendments included crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector (39).

**Executive Order S-13-08.** Executive Order S-13-08 states that “climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California’s economy, to the health and welfare of its population and to its natural resources.” Pursuant to the requirements in the Order, the 2009 California Climate Adaptation Strategy (CNRA 2009) was adopted, which is the “...first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States.” 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 B-30-15.** On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40% below 1990 levels by 2030. The Governor’s executive order aligns California’s GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The Order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40% below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMT CO<sub>2</sub>e. The 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. As with Executive Order S-3-05, this Order is not legally enforceable for local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

## **CALIFORNIA REGULATIONS AND BUILDING CODES**

California has a long history of adopting regulations to improve building safety, energy efficiency, in new and remodeled buildings, and make new building more sustainable.

### **Title 20**

Title 20, Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations, regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. 23 categories of appliances are included in the scope of these regulations. The standards within

these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2012).

### **Title 24, Part 6**

Title 24, Part 6 is California's Energy Efficiency Standards Code (Energy Code) for Residential and Nonresidential Buildings. It 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 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020.

The 2019 Energy Code requires solar photovoltaic systems for new residences, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, update indoor and outdoor lighting for nonresidential buildings. The CEC estimates that single-family homes built with the 2019 standards are approximately 7% more energy efficient than a residence built under the 2016 standards. After implementation of solar photovoltaic systems, residences built under the 2019 standards will about 53% less energy than residences built under the 2016 standard. Nonresidential buildings will use approximately 30% less energy due primarily to lighting upgrades (40).

### **Title 24, Part 11**

Title 24, Part 11 is California's Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2008, and is administered by the California Building Standards Commission. CALGreen standards were initially voluntary but over time many measures have become mandatory. CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2019 code update that became effective on January 1, 2020. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances and defers to them as the ruling guidance provided, they establish a minimum 65% diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. 2019 CALGreen standards are applicable to the Project and require (41):

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).

- Designated parking. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phase project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1) (a 20 percent reduction over the standard)
  - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2) (a 20 percent reduction over the standard)
  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1) (a 20 percent reduction over the standard). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2)
  - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1) (a 20 percent reduction over the standard). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor portable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gal/day (5.303.1.1 and 5.303.1.2).
- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).

- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

**MWELo.** The MWELo was required by AB 1881, the Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Governor Brown's Drought Executive Order of April 1, 2015 (Executive Order B-29-15) directed Department of Water Resources (DWR) to update the Ordinance through expedited regulation. The California Water Commission approved the revised Ordinance on July 15, 2015, effective December 15, 2015. New development projects that include landscape areas of 500 sf or more are subject to the Ordinance. The update requires:

- More efficient irrigation systems;
- Incentives for graywater usage;
- Improvements in on-site stormwater capture;
- Limiting the portion of landscapes that can be planted with high water use plants; and
- Reporting requirements for local agencies.

**SB 97 and the CEQA Guidelines Update.** Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research (OPR) shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the OPR pursuant to subdivision (a)." Section 21097 was also added to the Public Resources Code. It provided CEQA protection until January 1, 2010, for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA.

On December 28, 2018, the Natural Resources Agency announced the OAL approved the amendments to the CEQA Guidelines for implementing the CEQA. The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 15064.3 was added the CEQA Guidelines and states that in determining the significance of a project's GHG emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions. The agency's analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. Additionally, a lead agency may use a model or methodology to estimate GHG emissions resulting from a

project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use (42).

## **REGIONAL**

The project is within the South Coast Air Basin (SCAB), which is under the jurisdiction of the SCAQMD.

## **SCAQMD**

SCAQMD is the agency responsible for air quality planning and regulation in the SCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SCAB. The Working Group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
  - Residential and Commercial land use: 3,000 MT CO<sub>2</sub>e per year
  - Industrial land use: 10,000 MT CO<sub>2</sub>e per year
  - Based on land use type: residential: 3,500 MT CO<sub>2</sub>e per year; commercial: 1,400 MT CO<sub>2</sub>e per year; or mixed use: 3,000 MT CO<sub>2</sub>e per year
- Tier 4 has the following options:



- Option 1: Reduce BAU emissions by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
  - Option 3: 2020 target for service populations (SP), which includes residents and employees: 4.8 MT CO<sub>2</sub>e/SP/year for projects and 6.6 MT CO<sub>2</sub>e/SP/year for plans;
  - Option 3, 2035 target: 3.0 MT CO<sub>2</sub>e/SP/year for projects and 4.1 MT CO<sub>2</sub>e/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05-year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap CO<sub>2</sub> concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the project would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Project requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

## 2.8 COUNTY OF RIVERSIDE

The County of Riverside's Climate Action Plan (CAP) was designed under the premise that the County of Riverside, and the community it represents, is uniquely capable of addressing emissions associated with sources under the County of Riverside's jurisdiction, and that the County of Riverside's emission reduction efforts should coordinate with the state strategies of reducing emissions in order to accomplish these reductions in an efficient and cost-effective manner.

The CAP Update (November 2019) establishes GHG emission reduction programs and regulations that correlate with and support evolving State GHG emissions reduction goals and strategies. The CAP Update includes reduction targets for year 2030 and year 2050. These reduction targets require the County of Riverside to reduce emissions by at least 525,511 MT CO<sub>2</sub>e below the adjusted BAU (ABAU) scenario by 2030 and at least 2,982,948 MT CO<sub>2</sub>e below the ABAU scenario by 2050 (43).

To evaluate consistency with the CAP Update, the County of Riverside has implemented CAP Update Screening Tables (Screening Tables) to aid in measuring the reduction of GHG emissions attributable to certain design and construction measures incorporated in development projects.

To this end, the Screening Tables establish categories of GHG Implementation Measures. Under each Implementation Measure category, mitigation or project design features (collectively “features”) are assigned point values that correspond to the minimum GHG emissions reduction that would result from each feature. Projects that yield at least 100 points are considered to be consistent with the GHG emissions reduction quantities anticipated in the County of Riverside’s GHG Technical Report and support the GHG emissions reduction targets established under the CAP Update. The potential for such projects to generate direct or indirect GHG emissions that would result in 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 would be considered less-than-significant.

## **2.9 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS**

The CAP identifies a three-step approach in evaluating GHG emissions at a project level. The first is a screening threshold of 3,000 MT CO<sub>2</sub>e/yr, which is used to determine if additional analysis is required. Projects that exceed the 3,000 MT CO<sub>2</sub>e/yr are required to calculate GHG emissions at 2017 levels of efficiency and compare those emissions to the GHG emissions at the project buildout year levels of efficiency (inclusive of project design features and/or mitigation to reduce GHG emissions, which based on the CAP 2017 emissions and the 2030 target is approximately 16.4%) or demonstrate at least 100 points (equivalent to an approximate 15% reduction in GHG emissions) through the CAP Screening Tables (43).

If a Project can demonstrate an efficiency equal to or greater than the GHG efficiency identified in the CAP by comparing the emissions estimate from a 2017 scenario to the proposed Project the Project is determined to be consistent with the reduction quantities anticipated in the County of Riverside’s GHG Technical Report, and consequently would be consistent with the CAP Update and are considered to have a less than significant individual and cumulative impact on GHG emissions.

Projects that garner at least 100 points are determined to be consistent with the reduction quantities anticipated in the County of Riverside’s GHG Technical Report, and consequently would be consistent with the CAP Update. As such, projects that achieve a total of 100 points or more are considered to have a less than significant individual and cumulative impact on GHG emissions. It should be noted many of the CAP checklist implementation measures are incomplete and do not assign points to 22 measures and several others offer a large range of point reductions without providing guidance on how to determine the proper points for those measures.

### **3 PROJECT GREENHOUSE GAS IMPACT**

#### **3.1 INTRODUCTION**

The Project has been evaluated to determine if it will result in a significant GHG impact. The significance of these potential impacts is described in the following section.

#### **3.2 STANDARDS OF SIGNIFICANCE**

The criteria used to determine the significance of potential Project-related GHG impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to GHG if it would (44):

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

#### **3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™**

In June 2021, CAPCOA in association with California air districts released CalEEMod, version 2020.4.0. The purpose of CalEEMod is to calculate construction-source and operational-source criteria pollutant (VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, particulate matter 10 microns in diameter or less, and particulate matter 2.5 microns in diameter or less) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (45). Accordingly, the latest version of CalEEMod (v2020.4.0) has been used for the Project and the 2017 scenario to determine projected GHG emissions. Output from the model runs for construction and operational activity are provided in Appendix 3.1 for the Project as proposed and Appendix 3.2 for the 2017 scenario. CalEEMod includes GHG emissions from the following source categories: construction, area, energy, mobile, waste, water.

#### **3.4 CONSTRUCTION AND OPERATIONAL LIFE-CYCLE ANALYSIS NOT REQUIRED**

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time (46). Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, infrastructure and on-going operations) depends on emission factors or econometric factors that are not well established for all processes. At this time, an LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (47). Additionally, the science to calculate life cycle emissions

is not yet established or well defined; therefore, SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

### 3.5 CONSTRUCTION EMISSIONS

Project construction activities would generate CO<sub>2</sub> and CH<sub>4</sub> emissions. The report *Keller Crossing Specific Plan Air Quality Impact Analysis Report* (Urban Crossroads, Inc.) contains detailed information regarding Project construction activities (48). As discussed in the Air Quality Impact Analysis, Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

#### 3.5.1 CONSTRUCTION DURATION

The anticipated construction duration, by phase, is shown in Table 3-1. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines 15064* (49).

**TABLE 3-1: CONSTRUCTION DURATION**

Phase Name	Start Date	End Date	Days
Site Preparation	11/1/2022	12/16/2022	34
Grading	11/16/2022	2/3/2023	58
Building Construction	2/6/2023	12/27/2024	495
Paving	7/15/2024	12/27/2024	120
Architectural Coating	7/15/2024	12/27/2024	120

Source: CalEEMod 2016, Appendix 3.1.

#### 3.5.2 CONSTRUCTION EQUIPMENT

Site specific construction fleet may vary due to specific project needs at the time of construction. The associated construction equipment was generally based on CalEEMod 2016.3.2 defaults, and the Project applicant has confirmed that the equipment list is reasonable for the Project's construction. A detailed summary of construction equipment assumptions by phase is provided at Table 3-2. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.1 of this GHGA.

**TABLE 3-2: CONSTRUCTION EQUIPMENT ASSUMPTIONS**

Phase Name	Equipment	Amount	Hours Per Day
Site Preparation	Crawler Tractors	4	8
	Rubber Tired Dozers	3	8
Grading	Crawler Tractors	2	8
	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
Building Construction	Cranes	2	8
	Forklifts	6	8
	Generator Sets	2	8
	Tractors/Loaders/Backhoes	6	8
	Welders	2	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

Source: CalEEMod 2016, Appendix 3.1

**3.5.3 CONSTRUCTION EMISSIONS SUMMARY**

For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total GHG emissions for the construction activities, dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions (50). As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions. The construction emissions from the Project are also used for estimating the total 2017 scenario emissions. The amortized construction emissions are presented in Table 3-3.

**TABLE 3-3: CONSTRUCTION GHG EMISSIONS**

Year	Emissions (MT/yr)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> e
2022	152.51	0.05	0.00	153.75
2023	2904.45	0.23	0.17	2962.01
2024	3365.26	0.27	0.19	3428.92
Total Annual Construction Emissions	3,056.96	0.28	0.17	3,115.76
<b>Amortized Construction Emissions (MTCO<sub>2</sub>e)</b>	<b>101.90</b>	<b>0.01</b>	<b>0.01</b>	<b>103.86</b>

Source: CalEEMod 2016, Appendix 3.1

### 3.6 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- Water Supply, Treatment, and Distribution
- Solid Waste

#### 3.6.1 AREA SOURCE EMISSIONS

##### Landscape Maintenance Equipment

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod. The same settings for area sources were used for the 2017 and Project emissions modeling.

#### 3.6.2 ENERGY SOURCE EMISSIONS

##### Combustion Emissions Associated with Natural Gas and Electricity

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO<sub>2</sub> and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building; the building energy use emissions do not include street lighting<sup>5</sup>. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. The electricity intensity factors for calculating emissions associated with energy were not adjusted in Project scenario but were adjusted to the 2017 intensity factors for the 2017 scenario.

##### Title 24 Energy Efficiency Standards

California's Energy Efficiency Standards for Residential and Nonresidential Buildings 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. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020. Based on CEC guidance single-family residences built with the 2019 standards will use approximately 7% less energy compared to the residential residences built under the 2016 standards.

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<sup>5</sup> The CalEEMod emissions inventory model does not include indirect emission related to street lighting. Indirect emissions related to street lighting are expected to be negligible and cannot be accurately quantified at this time as there is insufficient information as to the number and type of street lighting that would occur.

Additionally, after implementation of solar photovoltaic systems, residences under four stories built under the 2019 standards will about 53% less energy than the same residences built under the 2016 standards (40). The Project was modeled based on 2019 Title 24 requirements and the 2017 scenario was based on the 2016 Title 24 requirements.

Additionally, based on Title 24, Part 6 requirements, residential units of approximately 2,000 sf and constructed in Climate Zone 10 would be required to install solar photovoltaic systems capable of generating the equivalent of 2.66 kW. Thus, under the current building code, the entire single-family development would be required to install the equivalent of 503.2 kW of solar electrical generation.

### **3.6.3 MOBILE SOURCE EMISSIONS**

Project mobile source GHG impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project-related GHG impacts are derived primarily from vehicle trips generated by the Project. The Project was modeled using a conservative opening year of 2023 and includes the effects of the SAFE Rule, which results in slightly higher mobile source emissions due to changes in fuel efficiencies. Per the County of Riverside GHG Screening Tables guidance, the 2017 Scenario was modeled using the year 2017 emission factors, which predate the SAFE Rule and are not affected by it.

#### **EMFAC2017 Emission Rates**

The EMissions FACtor (EMFAC) model web database is used for State Implementation Plans and transportation conformity analyses. EMFAC is a mathematical model that was developed to calculate emission rates, fuel consumption, vehicle miles traveled (VMT) from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources (51). The 2017 version of EMFAC (EMFAC2017) is incorporated into CalEEMod, version 2020.4.0, the 2014 version of EMFAC (EMFAC2014) is incorporated into CalEEMod, version 2016.3.2. This GHGA uses the EMFAC2017 emission factors that include CARB's SAFE rule correction factors in order to derive vehicle emissions associated with Project operational activities. The 2017 scenario does not apply these as they would not affect emissions from vehicles in that year.

### **3.6.4 WATER SUPPLY, TREATMENT AND DISTRIBUTION**

Indirect GHG emissions result from the production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. CalEEMod default end use water demand rates are based on 2000 water demand data. Since 2013 CalGreen has required a 20% reduction in indoor water use over base line rates. This was implemented through design requirements in the code for water closets, faucets and other plumbing fixtures to achieve the 20% decrease by decreasing the flow rates by 20%. Therefore, CalEEMod default parameters for the Project were modified to reflect this requirement for both the Project and the 2017 scenario as it would have affected both.

### 3.6.5 SOLID WASTE

GHG emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste. Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle) (52). These estimates are based on the best available data and no alteration to waste generation factors was applied to emissions modeling. The same settings were used for the 2017 scenario and Project emissions modeling.

### 3.7 EMISSIONS SUMMARY

The annual GHG emissions associated with the operation of the proposed Project are estimated to be approximately 6,867 MT CO<sub>2</sub>e per year as summarized in Table 3-4. Detailed calculations are provided in Appendix 3.1. It should be noted to account for the required solar photovoltaic system, emission are summarized from the mitigated results.

**TABLE 3-4: PROJECT GHG EMISSIONS**

Emission Source	Emissions (MT/yr)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> e
Annual construction-related emissions amortized over 30 years	101.90	0.01	0.01	103.86
Area	101.48	0.01	0.00	102.22
Energy	1,880.63	0.11	0.03	1,890.97
Mobile	3,996.81	0.31	0.20	4,065.56
Waste	204.28	12.07	0.00	506.11
Water Use	158.80	1.22	0.03	198.19
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>6,866.90</b>			

Source: CalEEMod, Appendix 3.1

-- = Emission factor only provided in MT CO<sub>2</sub>e

As shown in Table 3-4, Project emissions would exceed the screening threshold of 3,000 MT CO<sub>2</sub>e, and therefore requires additional analysis to compare the Project's emissions against a 2017 Project scenario. The annual GHG emissions associated with the operation of the proposed Project under a 2017 scenario per the County of Riverside CAP GHG Screening Table document are estimated to be approximately 8,358 MT CO<sub>2</sub>e per year as summarized in Table 3-5.



**TABLE 3-5: 2017 PROJECT SCENARIO GHG EMISSIONS**

Emission Source	Emissions (MT/yr)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> e
Project Total				
Annual construction-related emissions amortized over 30 years	101.90	0.01	0.01	103.86
Area	101.48	0.01	0.00	102.23
Energy	2,685.94	0.09	0.03	2,697.85
Mobile	4,700.33	0.45	0.28	4,794.67
Waste	204.28	12.07	0.00	506.11
Water Use	218.01	1.21	0.03	257.42
<b>Total CO<sub>2</sub>e (All Sources)</b>	<b>8,358.26</b>			

Source: CalEEMod , Appendix 3.2

-- = Emission factor only provided in MT CO<sub>2</sub>e

### 3.8 GREENHOUSE GAS EMISSIONS FINDINGS AND RECOMMENDATIONS

***GHG Impact 1: The Project would not generate direct or indirect GHG emission that would result in a significant impact on the environment.***

The purpose of the CAP is to provide guidance on how to analyze GHG emissions and determine significance during the CEQA review of proposed development projects within the County of Riverside.

As discussed, the CAP identifies a three-step approach in evaluating GHG emissions at a project level. For this GHGA, consistency with the County of Riverside CAP is determine through the evaluation of Project efficiency as compared to a 2017 project scenario.

As shown in Table 3-4, the Project as proposed will result in 6,866.90 MT CO<sub>2</sub>e per year (MT CO<sub>2</sub>e/yr). As shown in Table 3-5, under a 2017 scenario the Project would result in 8,358.26 MT CO<sub>2</sub>e/yr. Thus, the Project as proposed would be approximately 18% ( $(8,358.26 - 6,866.90) / 8,358.26 = 17.84\%$ ) more efficient than the County of Riverside's CAP projected reductions through 2030.

According to the CAP, if a Project can demonstrate an efficiency equal to or greater than the 16.4% GHG efficiency identified in the CAP when comparing the emissions estimate of the Project to a 2017 scenario, the Project is considered to be consistent with the reduction quantities anticipated in the County of Riverside CAP for the land use located at the site. Since the project would be 18% more efficient than the 2017 scenario, the Project is consistent with the County of Riverside CAP emissions estimates and projected reductions and impacts under Criterion 1 are less than significant.

***GHG Impact #2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.***

As previously stated, pursuant to 15604.4 of the CEQA Guidelines, a lead agency may rely on qualitative analysis or performance-based standards to determine the significance of impacts from GHG emissions (42). As such, the Project's consistency with AB 32, SB 32, and the County of Riverside's CAP are discussed below.

**County of Riverside CAP Consistency**

To address the state's requirement to reduce GHG emissions, the County of Riverside prepared its CAP Update to assess the previous GHG reduction targets identified in the 2015 CAP and proposes new targets that are consistent with the State policies in order to meet the requirements of SB 32. The State recommended a 15% reduction below 2005–2008 baseline levels by 2020, a 49% reduction below 2008 levels by 2030, and an 80% reduction below 2008 levels by 2050. To continue reductions consistent with the State's long-term emissions reduction goals, the County of Riverside would need to reduce emissions in 2030 by 525,511 MT CO<sub>2</sub>e from an ABAU forecast and by 2,982,947 MT CO<sub>2</sub>e from an ABAU forecast by 2050 (43). The County of Riverside's target is consistent with the SB 32 target and ensures that the County of Riverside will be providing GHG reductions locally that will complement state efforts to reduce GHG emissions. Because the County of Riverside's CAP addresses GHG emissions reductions and is consistent with the requirements of SB 32 and international efforts to reduce GHG emissions, compliance with the CAP fulfills the description of mitigation found in the State CEQA Guidelines.

As discussed under Criterion #1, the Project would be approximately 18% more efficient than a 2017 scenario. Based on the project level analysis guidance included with the CAP, the Project would achieve the required 16.4% reduction in emissions to be consistent with the County of Riverside CAP reductions which are consistent with the State goals contained in the 2017 Scoping Plan and enumerated by SB32. Therefore, the Project would have a less than significant impact on GHG reduction plans at the local or state level.

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*Less than significant impact.*

## 5 CERTIFICATIONS

The contents of this GHG study report represent an accurate depiction of the GHG impacts associated with the proposed Keller Crossing Specific Plan Project. The information contained in this GHG report is based on the best available data at the time of preparation. If you have any questions, please contact me directly (619) 778-1971.

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Senior Associate  
URBAN CROSSROADS, INC.  
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### EDUCATION

Bachelor of Science in Urban and Regional Planning  
California Polytechnic State University, Pomona • June 2000

### PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America  
APA – American Planning Association  
AWMA – Air and Waste Management Association

### PROFESSIONAL CERTIFICATIONS

HARP Model Training – Bluescape Environmental • 2004  
Air Dispersion Modeling – Lakes Environmental • 2008

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## **APPENDIX 3.1:**

### **PROJECT CALEEMOD EMISSIONS MODEL OUTPUTS**

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Keller Crossing - South Coast AQMD Air District, Annual

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

**Keller Crossing  
South Coast AQMD Air District, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Pharmacy/Drugstore w/o Drive Thru	14.00	1000sqft	0.32	14,000.00	0
Other Non-Asphalt Surfaces	48.30	Acre	48.30	2,103,948.00	0
City Park	6.50	Acre	6.50	283,140.00	0
Fast Food Restaurant with Drive Thru	10.50	1000sqft	0.24	10,500.00	0
Retirement Community	80.00	Dwelling Unit	16.00	80,000.00	229
Single Family Housing	356.00	Dwelling Unit	115.58	640,800.00	1018
Strip Mall	101.50	1000sqft	3.31	101,500.00	0
Supermarket	50.00	1000sqft	1.15	50,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	10			<b>Operational Year</b>	2023
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	390.98	<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 - Acres of retail increased to match site plan acreage of 191.4

Construction Phase - Based on developed time frame

Off-road Equipment - Standard 8-hour day

Off-road Equipment - increased equipmnet for construction duration and standard 8-hour day

Keller Crossing - South Coast AQMD Air District, Annual

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

Off-road Equipment - Tractor/Backhoe/Loaders and Excavators replaced with crawler tractor for dust generation. HP and LF from Tractor/Backhoe/Loaders and Excavators used to simulate original equipment

Off-road Equipment -

Off-road Equipment - Tractor/Backhoe/Loaders replaced with crawler tractor for dust generation. HP and LF from Tractor/Backhoe/Loaders used to simulate original equipment

Trips and VMT -

Grading - No import or export

Vehicle Trips - Trip rate apportioned based on traffic report and ratio of weekday to weekend trip

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - Rule 445

Area Coating -

Water And Wastewater - 20% reduction in indoor water use based on CALGreen plumbing fixture flow rates as compared to CalEEMod 2000 data set.

Solid Waste -

Construction Off-road Equipment Mitigation - Rule 403 watering 4x/day and trackout device

Energy Mitigation - Based on Title 24 requirements

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	126,237.00	0.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	486,540.00	490,185.00
tblArchitecturalCoating	ConstArea_Residential_Interior	1,459,620.00	1,470,555.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	46
tblConstDustMitigation	WaterExposedAreaPM10PercentReduction	61	74
tblConstDustMitigation	WaterExposedAreaPM25PercentReduction	61	74
tblConstructionPhase	NumDays	120.00	34.00
tblConstructionPhase	NumDays	310.00	58.00
tblConstructionPhase	NumDays	3,100.00	495.00
tblConstructionPhase	NumDays	220.00	120.00

Keller Crossing - South Coast AQMD Air District, Annual

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

tblConstructionPhase	NumDays	220.00	120.00
tblFireplaces	NumberGas	68.00	72.00
tblFireplaces	NumberGas	302.60	320.00
tblFireplaces	NumberNoFireplace	35.60	36.00
tblFireplaces	NumberWood	4.00	0.00
tblFireplaces	NumberWood	17.80	0.00
tblLandUse	LotAcreage	2.33	3.31
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	158.00
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.38
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	WorkerTripNumber	1,246.00	1,247.00
tblVehicleTrips	ST_TR	1.96	36.34
tblVehicleTrips	ST_TR	616.12	177.42
tblVehicleTrips	ST_TR	90.08	41.87
tblVehicleTrips	ST_TR	2.03	0.90
tblVehicleTrips	ST_TR	9.54	2.75
tblVehicleTrips	ST_TR	42.04	16.35
tblVehicleTrips	ST_TR	177.62	51.17

Keller Crossing - South Coast AQMD Air District, Annual

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

tblVehicleTrips	SU_TR	2.19	40.60
tblVehicleTrips	SU_TR	472.58	136.09
tblVehicleTrips	SU_TR	90.08	35.62
tblVehicleTrips	SU_TR	1.95	0.86
tblVehicleTrips	SU_TR	8.55	2.46
tblVehicleTrips	SU_TR	20.43	7.94
tblVehicleTrips	SU_TR	166.47	47.95
tblVehicleTrips	WD_TR	0.78	14.46
tblVehicleTrips	WD_TR	470.95	135.62
tblVehicleTrips	WD_TR	90.08	31.43
tblVehicleTrips	WD_TR	2.40	1.06
tblVehicleTrips	WD_TR	9.44	2.72
tblVehicleTrips	WD_TR	44.32	17.23
tblVehicleTrips	WD_TR	106.78	30.76
tblWater	IndoorWaterUseRate	3,187,103.98	2,549,683.18
tblWater	IndoorWaterUseRate	986,265.32	789,012.26
tblWater	IndoorWaterUseRate	5,212,322.05	4,169,857.64
tblWater	IndoorWaterUseRate	23,194,833.12	18,555,866.50
tblWater	IndoorWaterUseRate	7,518,360.93	6,014,688.74
tblWater	IndoorWaterUseRate	6,163,410.74	4,930,728.59
tblWoodstoves	NumberCatalytic	4.00	0.00
tblWoodstoves	NumberCatalytic	17.80	0.00
tblWoodstoves	NumberNoncatalytic	4.00	0.00
tblWoodstoves	NumberNoncatalytic	17.80	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

Keller Crossing - South Coast AQMD Air District, Annual

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

**2.0 Emissions Summary**

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Keller Crossing - South Coast AQMD Air District, Annual

**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	0.1445	1.4370	0.8681	1.7300e-003	0.5996	0.0760	0.6756	0.2454	0.0700	0.3154	0.0000	152.4949	152.4949	0.0476	1.5000e-004	153.7312
2023	0.9613	6.5880	10.0266	0.0313	2.1546	0.2215	2.3761	0.5822	0.2076	0.7898	0.0000	2,904.4362	2,904.4362	0.2294	0.1739	2,961.9990
2024	4.1518	7.1240	11.8010	0.0362	2.3352	0.2273	2.5625	0.6290	0.2133	0.8422	0.0000	3,365.2615	3,365.2615	0.2684	0.1911	3,428.9167
<b>Maximum</b>	<b>4.1518</b>	<b>7.1240</b>	<b>11.8010</b>	<b>0.0362</b>	<b>2.3352</b>	<b>0.2273</b>	<b>2.5625</b>	<b>0.6290</b>	<b>0.2133</b>	<b>0.8422</b>	<b>0.0000</b>	<b>3,365.2615</b>	<b>3,365.2615</b>	<b>0.2684</b>	<b>0.1911</b>	<b>3,428.9167</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					
2022	0.1445	1.4370	0.8681	1.7300e-003	0.1583	0.0760	0.2343	0.0645	0.0700	0.1344	0.0000	152.4947	152.4947	0.0476	1.5000e-004	153.7311
2023	0.9613	6.5880	10.0266	0.0313	1.2531	0.2215	1.4745	0.3564	0.2076	0.5641	0.0000	2,904.4355	2,904.4355	0.2294	0.1739	2,961.9982
2024	4.1518	7.1240	11.8010	0.0362	1.4320	0.2273	1.6593	0.4073	0.2133	0.6205	0.0000	3,365.2605	3,365.2605	0.2684	0.1911	3,428.9157
<b>Maximum</b>	<b>4.1518</b>	<b>7.1240</b>	<b>11.8010</b>	<b>0.0362</b>	<b>1.4320</b>	<b>0.2273</b>	<b>1.6593</b>	<b>0.4073</b>	<b>0.2133</b>	<b>0.6205</b>	<b>0.0000</b>	<b>3,365.2605</b>	<b>3,365.2605</b>	<b>0.2684</b>	<b>0.1911</b>	<b>3,428.9157</b>



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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
Percent Reduction	0.00	0.00	0.00	0.00	44.13	0.00	40.01	43.14	0.00	32.27	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	11-1-2022	1-31-2023	2.0583	2.0583
2	2-1-2023	4-30-2023	1.8242	1.8242
3	5-1-2023	7-31-2023	1.9171	1.9171
4	8-1-2023	10-31-2023	1.9314	1.9314
5	11-1-2023	1-31-2024	1.9291	1.9291
6	2-1-2024	4-30-2024	1.8151	1.8151
7	5-1-2024	7-31-2024	2.2232	2.2232
8	8-1-2024	9-30-2024	2.6309	2.6309
		Highest	2.6309	2.6309

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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	3.8609	0.1332	4.5349	7.6000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	101.4841	101.4841	8.8800e-003	1.7300e-003	102.2205
Energy	0.0828	0.7195	0.3889	4.5200e-003		0.0572	0.0572		0.0572	0.0572	0.0000	2,041.2676	2,041.2676	0.1188	0.0275	2,052.4402
Mobile	2.5734	2.6384	21.9498	0.0428	4.3598	0.0331	4.3929	1.1635	0.0308	1.1942	0.0000	3,996.8125	3,996.8125	0.3142	0.2043	4,065.5562
Waste						0.0000	0.0000		0.0000	0.0000	204.2840	0.0000	204.2840	12.0728	0.0000	506.1050
Water						0.0000	0.0000		0.0000	0.0000	11.7415	147.0557	158.7972	1.2184	0.0300	198.1907
<b>Total</b>	<b>6.5171</b>	<b>3.4910</b>	<b>26.8736</b>	<b>0.0481</b>	<b>4.3598</b>	<b>0.1218</b>	<b>4.4815</b>	<b>1.1635</b>	<b>0.1195</b>	<b>1.2829</b>	<b>216.0255</b>	<b>6,286.6199</b>	<b>6,502.6455</b>	<b>13.7332</b>	<b>0.2636</b>	<b>6,924.5126</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	3.8609	0.1332	4.5349	7.6000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	101.4841	101.4841	8.8800e-003	1.7300e-003	102.2205
Energy	0.0828	0.7195	0.3889	4.5200e-003		0.0572	0.0572		0.0572	0.0572	0.0000	1,880.6306	1,880.6306	0.1053	0.0259	1,890.9746
Mobile	2.5734	2.6384	21.9498	0.0428	4.3598	0.0331	4.3929	1.1635	0.0308	1.1942	0.0000	3,996.8125	3,996.8125	0.3142	0.2043	4,065.5562
Waste						0.0000	0.0000		0.0000	0.0000	204.2840	0.0000	204.2840	12.0728	0.0000	506.1050
Water						0.0000	0.0000		0.0000	0.0000	11.7415	147.0557	158.7972	1.2184	0.0300	198.1907
<b>Total</b>	<b>6.5171</b>	<b>3.4910</b>	<b>26.8736</b>	<b>0.0481</b>	<b>4.3598</b>	<b>0.1218</b>	<b>4.4815</b>	<b>1.1635</b>	<b>0.1195</b>	<b>1.2829</b>	<b>216.0255</b>	<b>6,125.9830</b>	<b>6,342.0085</b>	<b>13.7196</b>	<b>0.2619</b>	<b>6,763.0469</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>0.00</b>	<b>2.56</b>	<b>2.47</b>	<b>0.10</b>	<b>0.62</b>	<b>2.33</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	Site Preparation	Site Preparation	11/1/2022	12/16/2022	5	34	
2	Grading	Grading	11/16/2022	2/3/2023	5	58	
3	Building Construction	Building Construction	2/6/2023	12/27/2023	5	495	

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

4	Paving	Paving	7/15/2024	12/27/2024	5	120
5	Architectural Coating	Architectural Coating	7/15/2024	12/27/2024	5	120

**Acres of Grading (Site Preparation Phase): 119**

**Acres of Grading (Grading Phase): 232**

**Acres of Paving: 48.3**

**Residential Indoor: 1,470,555; Residential Outdoor: 490,185; Non-Residential Indoor: 264,000; Non-Residential Outdoor: 88,000; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Crawler Tractors	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Crawler Tractors	2	8.00	97	0.37
Grading	Crawler Tractors	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Cranes	2	8.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	8.00	97	0.37
Building Construction	Welders	2	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
Architectural Coating	Air Compressors	1	8.00	78	0.48

**Trips and VMT**

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

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	17	1,247.00	467.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	249.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area  
Clean Paved Roads

**3.2 Site Preparation - 2022**

**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					0.3702	0.0000	0.3702	0.1756	0.0000	0.1756	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0685	0.6680	0.3516	6.5000e-004		0.0388	0.0388		0.0357	0.0357	0.0000	56.8518	56.8518	0.0184	0.0000	57.3115
<b>Total</b>	<b>0.0685</b>	<b>0.6680</b>	<b>0.3516</b>	<b>6.5000e-004</b>	<b>0.3702</b>	<b>0.0388</b>	<b>0.4091</b>	<b>0.1756</b>	<b>0.0357</b>	<b>0.2114</b>	<b>0.0000</b>	<b>56.8518</b>	<b>56.8518</b>	<b>0.0184</b>	<b>0.0000</b>	<b>57.3115</b>

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

**3.2 Site Preparation - 2022**

**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	1.0300e-003	8.3000e-004	0.0109	3.0000e-005	3.3600e-003	2.0000e-005	3.3800e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.7321	2.7321	8.0000e-005	7.0000e-005	2.7558
<b>Total</b>	<b>1.0300e-003</b>	<b>8.3000e-004</b>	<b>0.0109</b>	<b>3.0000e-005</b>	<b>3.3600e-003</b>	<b>2.0000e-005</b>	<b>3.3800e-003</b>	<b>8.9000e-004</b>	<b>2.0000e-005</b>	<b>9.1000e-004</b>	<b>0.0000</b>	<b>2.7321</b>	<b>2.7321</b>	<b>8.0000e-005</b>	<b>7.0000e-005</b>	<b>2.7558</b>

**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					0.0963	0.0000	0.0963	0.0457	0.0000	0.0457	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0685	0.6680	0.3516	6.5000e-004		0.0388	0.0388		0.0357	0.0357	0.0000	56.8518	56.8518	0.0184	0.0000	57.3114
<b>Total</b>	<b>0.0685</b>	<b>0.6680</b>	<b>0.3516</b>	<b>6.5000e-004</b>	<b>0.0963</b>	<b>0.0388</b>	<b>0.1351</b>	<b>0.0457</b>	<b>0.0357</b>	<b>0.0814</b>	<b>0.0000</b>	<b>56.8518</b>	<b>56.8518</b>	<b>0.0184</b>	<b>0.0000</b>	<b>57.3114</b>

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

**3.2 Site Preparation - 2022**

**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	1.0300e-003	8.3000e-004	0.0109	3.0000e-005	2.0200e-003	2.0000e-005	2.0400e-003	5.6000e-004	2.0000e-005	5.8000e-004	0.0000	2.7321	2.7321	8.0000e-005	7.0000e-005	2.7558
<b>Total</b>	<b>1.0300e-003</b>	<b>8.3000e-004</b>	<b>0.0109</b>	<b>3.0000e-005</b>	<b>2.0200e-003</b>	<b>2.0000e-005</b>	<b>2.0400e-003</b>	<b>5.6000e-004</b>	<b>2.0000e-005</b>	<b>5.8000e-004</b>	<b>0.0000</b>	<b>2.7321</b>	<b>2.7321</b>	<b>8.0000e-005</b>	<b>7.0000e-005</b>	<b>2.7558</b>

**3.3 Grading - 2022**

**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					0.2224	0.0000	0.2224	0.0679	0.0000	0.0679	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0738	0.7673	0.4940	1.0200e-003		0.0372	0.0372		0.0342	0.0342	0.0000	89.9647	89.9647	0.0291	0.0000	90.6921
<b>Total</b>	<b>0.0738</b>	<b>0.7673</b>	<b>0.4940</b>	<b>1.0200e-003</b>	<b>0.2224</b>	<b>0.0372</b>	<b>0.2595</b>	<b>0.0679</b>	<b>0.0342</b>	<b>0.1021</b>	<b>0.0000</b>	<b>89.9647</b>	<b>89.9647</b>	<b>0.0291</b>	<b>0.0000</b>	<b>90.6921</b>

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

**3.3 Grading - 2022**

**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	1.1100e-003	8.9000e-004	0.0117	3.0000e-005	3.6200e-003	2.0000e-005	3.6400e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	2.9464	2.9464	8.0000e-005	8.0000e-005	2.9719
<b>Total</b>	<b>1.1100e-003</b>	<b>8.9000e-004</b>	<b>0.0117</b>	<b>3.0000e-005</b>	<b>3.6200e-003</b>	<b>2.0000e-005</b>	<b>3.6400e-003</b>	<b>9.6000e-004</b>	<b>2.0000e-005</b>	<b>9.8000e-004</b>	<b>0.0000</b>	<b>2.9464</b>	<b>2.9464</b>	<b>8.0000e-005</b>	<b>8.0000e-005</b>	<b>2.9719</b>

**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					0.0578	0.0000	0.0578	0.0177	0.0000	0.0177	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0738	0.7673	0.4940	1.0200e-003		0.0372	0.0372		0.0342	0.0342	0.0000	89.9646	89.9646	0.0291	0.0000	90.6920
<b>Total</b>	<b>0.0738</b>	<b>0.7673</b>	<b>0.4940</b>	<b>1.0200e-003</b>	<b>0.0578</b>	<b>0.0372</b>	<b>0.0950</b>	<b>0.0177</b>	<b>0.0342</b>	<b>0.0518</b>	<b>0.0000</b>	<b>89.9646</b>	<b>89.9646</b>	<b>0.0291</b>	<b>0.0000</b>	<b>90.6920</b>



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

**3.3 Grading - 2022**

**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	1.1100e-003	8.9000e-004	0.0117	3.0000e-005	2.1800e-003	2.0000e-005	2.2000e-003	6.1000e-004	2.0000e-005	6.3000e-004	0.0000	2.9464	2.9464	8.0000e-005	8.0000e-005	2.9719
<b>Total</b>	<b>1.1100e-003</b>	<b>8.9000e-004</b>	<b>0.0117</b>	<b>3.0000e-005</b>	<b>2.1800e-003</b>	<b>2.0000e-005</b>	<b>2.2000e-003</b>	<b>6.1000e-004</b>	<b>2.0000e-005</b>	<b>6.3000e-004</b>	<b>0.0000</b>	<b>2.9464</b>	<b>2.9464</b>	<b>8.0000e-005</b>	<b>8.0000e-005</b>	<b>2.9719</b>

**3.3 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					0.1983	0.0000	0.1983	0.0547	0.0000	0.0547	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0510	0.5179	0.3606	7.8000e-004		0.0248	0.0248		0.0228	0.0228	0.0000	68.1532	68.1532	0.0220	0.0000	68.7042
<b>Total</b>	<b>0.0510</b>	<b>0.5179</b>	<b>0.3606</b>	<b>7.8000e-004</b>	<b>0.1983</b>	<b>0.0248</b>	<b>0.2231</b>	<b>0.0547</b>	<b>0.0228</b>	<b>0.0775</b>	<b>0.0000</b>	<b>68.1532</b>	<b>68.1532</b>	<b>0.0220</b>	<b>0.0000</b>	<b>68.7042</b>

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

**3.3 Grading - 2023**

**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	7.8000e-004	6.0000e-004	8.1800e-003	2.0000e-005	2.7400e-003	2.0000e-005	2.7600e-003	7.3000e-004	1.0000e-005	7.4000e-004	0.0000	2.1734	2.1734	6.0000e-005	6.0000e-005	2.1912
<b>Total</b>	<b>7.8000e-004</b>	<b>6.0000e-004</b>	<b>8.1800e-003</b>	<b>2.0000e-005</b>	<b>2.7400e-003</b>	<b>2.0000e-005</b>	<b>2.7600e-003</b>	<b>7.3000e-004</b>	<b>1.0000e-005</b>	<b>7.4000e-004</b>	<b>0.0000</b>	<b>2.1734</b>	<b>2.1734</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>2.1912</b>

**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					0.0516	0.0000	0.0516	0.0142	0.0000	0.0142	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0510	0.5179	0.3606	7.8000e-004		0.0248	0.0248		0.0228	0.0228	0.0000	68.1531	68.1531	0.0220	0.0000	68.7041
<b>Total</b>	<b>0.0510</b>	<b>0.5179</b>	<b>0.3606</b>	<b>7.8000e-004</b>	<b>0.0516</b>	<b>0.0248</b>	<b>0.0764</b>	<b>0.0142</b>	<b>0.0228</b>	<b>0.0370</b>	<b>0.0000</b>	<b>68.1531</b>	<b>68.1531</b>	<b>0.0220</b>	<b>0.0000</b>	<b>68.7041</b>

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

**3.3 Grading - 2023**

**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	7.8000e-004	6.0000e-004	8.1800e-003	2.0000e-005	1.6500e-003	2.0000e-005	1.6600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	2.1734	2.1734	6.0000e-005	6.0000e-005	2.1912
<b>Total</b>	<b>7.8000e-004</b>	<b>6.0000e-004</b>	<b>8.1800e-003</b>	<b>2.0000e-005</b>	<b>1.6500e-003</b>	<b>2.0000e-005</b>	<b>1.6600e-003</b>	<b>4.6000e-004</b>	<b>1.0000e-005</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>2.1734</b>	<b>2.1734</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>2.1912</b>

**3.4 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	0.3933	3.6279	4.0679	6.7800e-003		0.1758	0.1758		0.1652	0.1652	0.0000	583.7426	583.7426	0.1422	0.0000	587.2976
<b>Total</b>	<b>0.3933</b>	<b>3.6279</b>	<b>4.0679</b>	<b>6.7800e-003</b>		<b>0.1758</b>	<b>0.1758</b>		<b>0.1652</b>	<b>0.1652</b>	<b>0.0000</b>	<b>583.7426</b>	<b>583.7426</b>	<b>0.1422</b>	<b>0.0000</b>	<b>587.2976</b>

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

**3.4 Building Construction - 2023**

**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	0.0593	2.0904	0.7959	9.9900e-003	0.3461	0.0116	0.3577	0.0999	0.0111	0.1110	0.0000	976.5748	976.5748	0.0327	0.1415	1,019.5595
Worker	0.4570	0.3513	4.7941	0.0137	1.6075	9.2200e-003	1.6168	0.4269	8.4900e-003	0.4354	0.0000	1,273.7923	1,273.7923	0.0323	0.0324	1,284.2465
<b>Total</b>	<b>0.5163</b>	<b>2.4417</b>	<b>5.5900</b>	<b>0.0237</b>	<b>1.9536</b>	<b>0.0208</b>	<b>1.9744</b>	<b>0.5268</b>	<b>0.0196</b>	<b>0.5464</b>	<b>0.0000</b>	<b>2,250.3671</b>	<b>2,250.3671</b>	<b>0.0651</b>	<b>0.1739</b>	<b>2,303.8060</b>

**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	0.3933	3.6279	4.0679	6.7800e-003		0.1758	0.1758		0.1652	0.1652	0.0000	583.7419	583.7419	0.1422	0.0000	587.2969
<b>Total</b>	<b>0.3933</b>	<b>3.6279</b>	<b>4.0679</b>	<b>6.7800e-003</b>		<b>0.1758</b>	<b>0.1758</b>		<b>0.1652</b>	<b>0.1652</b>	<b>0.0000</b>	<b>583.7419</b>	<b>583.7419</b>	<b>0.1422</b>	<b>0.0000</b>	<b>587.2969</b>

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

**3.4 Building Construction - 2023**

**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	0.0593	2.0904	0.7959	9.9900e-003	0.2334	0.0116	0.2450	0.0722	0.0111	0.0833	0.0000	976.5748	976.5748	0.0327	0.1415	1,019.5595
Worker	0.4570	0.3513	4.7941	0.0137	0.9665	9.2200e-003	0.9757	0.2696	8.4900e-003	0.2781	0.0000	1,273.7923	1,273.7923	0.0323	0.0324	1,284.2465
<b>Total</b>	<b>0.5163</b>	<b>2.4417</b>	<b>5.5900</b>	<b>0.0237</b>	<b>1.1999</b>	<b>0.0208</b>	<b>1.2207</b>	<b>0.3418</b>	<b>0.0196</b>	<b>0.3614</b>	<b>0.0000</b>	<b>2,250.3671</b>	<b>2,250.3671</b>	<b>0.0651</b>	<b>0.1739</b>	<b>2,303.8060</b>

**3.4 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	0.4074	3.7505	4.4790	7.5000e-003		0.1707	0.1707		0.1603	0.1603	0.0000	645.9747	645.9747	0.1565	0.0000	649.8874
<b>Total</b>	<b>0.4074</b>	<b>3.7505</b>	<b>4.4790</b>	<b>7.5000e-003</b>		<b>0.1707</b>	<b>0.1707</b>		<b>0.1603</b>	<b>0.1603</b>	<b>0.0000</b>	<b>645.9747</b>	<b>645.9747</b>	<b>0.1565</b>	<b>0.0000</b>	<b>649.8874</b>

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

**3.4 Building Construction - 2024**

**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	0.0640	2.3234	0.8661	0.0109	0.3829	0.0129	0.3958	0.1105	0.0123	0.1228	0.0000	1,064.9356	1,064.9356	0.0362	0.1545	1,111.8870
Worker	0.4726	0.3472	4.9498	0.0147	1.7786	9.7800e-003	1.7883	0.4723	9.0000e-003	0.4813	0.0000	1,379.0200	1,379.0200	0.0324	0.0333	1,389.7612
<b>Total</b>	<b>0.5366</b>	<b>2.6706</b>	<b>5.8159</b>	<b>0.0256</b>	<b>2.1614</b>	<b>0.0227</b>	<b>2.1841</b>	<b>0.5828</b>	<b>0.0213</b>	<b>0.6042</b>	<b>0.0000</b>	<b>2,443.9555</b>	<b>2,443.9555</b>	<b>0.0687</b>	<b>0.1878</b>	<b>2,501.6482</b>

**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	0.4074	3.7505	4.4790	7.5000e-003		0.1707	0.1707		0.1603	0.1603	0.0000	645.9739	645.9739	0.1565	0.0000	649.8866
<b>Total</b>	<b>0.4074</b>	<b>3.7505</b>	<b>4.4790</b>	<b>7.5000e-003</b>		<b>0.1707</b>	<b>0.1707</b>		<b>0.1603</b>	<b>0.1603</b>	<b>0.0000</b>	<b>645.9739</b>	<b>645.9739</b>	<b>0.1565</b>	<b>0.0000</b>	<b>649.8866</b>

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

**3.4 Building Construction - 2024**

**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	0.0640	2.3234	0.8661	0.0109	0.2582	0.0129	0.2711	0.0799	0.0123	0.0922	0.0000	1,064.9356	1,064.9356	0.0362	0.1545	1,111.8870
Worker	0.4726	0.3472	4.9498	0.0147	1.0693	9.7800e-003	1.0791	0.2983	9.0000e-003	0.3073	0.0000	1,379.0200	1,379.0200	0.0324	0.0333	1,389.7612
<b>Total</b>	<b>0.5366</b>	<b>2.6706</b>	<b>5.8159</b>	<b>0.0256</b>	<b>1.3275</b>	<b>0.0227</b>	<b>1.3502</b>	<b>0.3781</b>	<b>0.0213</b>	<b>0.3995</b>	<b>0.0000</b>	<b>2,443.9555</b>	<b>2,443.9555</b>	<b>0.0687</b>	<b>0.1878</b>	<b>2,501.6482</b>

**3.5 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	0.0593	0.5715	0.8776	1.3700e-003		0.0281	0.0281		0.0259	0.0259	0.0000	120.1592	120.1592	0.0389	0.0000	121.1307
Paving	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>0.0593</b>	<b>0.5715</b>	<b>0.8776</b>	<b>1.3700e-003</b>		<b>0.0281</b>	<b>0.0281</b>		<b>0.0259</b>	<b>0.0259</b>	<b>0.0000</b>	<b>120.1592</b>	<b>120.1592</b>	<b>0.0389</b>	<b>0.0000</b>	<b>121.1307</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 Paving - 2024**

**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	2.6200e-003	1.9300e-003	0.0275	8.0000e-005	9.8700e-003	5.0000e-005	9.9300e-003	2.6200e-003	5.0000e-005	2.6700e-003	0.0000	7.6560	7.6560	1.8000e-004	1.9000e-004	7.7157
<b>Total</b>	<b>2.6200e-003</b>	<b>1.9300e-003</b>	<b>0.0275</b>	<b>8.0000e-005</b>	<b>9.8700e-003</b>	<b>5.0000e-005</b>	<b>9.9300e-003</b>	<b>2.6200e-003</b>	<b>5.0000e-005</b>	<b>2.6700e-003</b>	<b>0.0000</b>	<b>7.6560</b>	<b>7.6560</b>	<b>1.8000e-004</b>	<b>1.9000e-004</b>	<b>7.7157</b>

**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	0.0593	0.5715	0.8775	1.3700e-003		0.0281	0.0281		0.0259	0.0259	0.0000	120.1591	120.1591	0.0389	0.0000	121.1306
Paving	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>0.0593</b>	<b>0.5715</b>	<b>0.8775</b>	<b>1.3700e-003</b>		<b>0.0281</b>	<b>0.0281</b>		<b>0.0259</b>	<b>0.0259</b>	<b>0.0000</b>	<b>120.1591</b>	<b>120.1591</b>	<b>0.0389</b>	<b>0.0000</b>	<b>121.1306</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 Paving - 2024**

**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	2.6200e-003	1.9300e-003	0.0275	8.0000e-005	5.9400e-003	5.0000e-005	5.9900e-003	1.6600e-003	5.0000e-005	1.7100e-003	0.0000	7.6560	7.6560	1.8000e-004	1.9000e-004	7.7157
<b>Total</b>	<b>2.6200e-003</b>	<b>1.9300e-003</b>	<b>0.0275</b>	<b>8.0000e-005</b>	<b>5.9400e-003</b>	<b>5.0000e-005</b>	<b>5.9900e-003</b>	<b>1.6600e-003</b>	<b>5.0000e-005</b>	<b>1.7100e-003</b>	<b>0.0000</b>	<b>7.6560</b>	<b>7.6560</b>	<b>1.8000e-004</b>	<b>1.9000e-004</b>	<b>7.7157</b>

**3.6 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	3.0878					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0145	0.0975	0.1448	2.4000e-004		4.8700e-003	4.8700e-003		4.8700e-003	4.8700e-003	0.0000	20.4260	20.4260	1.1500e-003	0.0000	20.4548
<b>Total</b>	<b>3.1022</b>	<b>0.0975</b>	<b>0.1448</b>	<b>2.4000e-004</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>	<b>0.0000</b>	<b>20.4260</b>	<b>20.4260</b>	<b>1.1500e-003</b>	<b>0.0000</b>	<b>20.4548</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0320	0.4562	1.3600e-003	0.1639	9.0000e-004	0.1648	0.0435	8.3000e-004	0.0444	0.0000	127.0900	127.0900	2.9900e-003	3.0700e-003	128.0799
<b>Total</b>	<b>0.0436</b>	<b>0.0320</b>	<b>0.4562</b>	<b>1.3600e-003</b>	<b>0.1639</b>	<b>9.0000e-004</b>	<b>0.1648</b>	<b>0.0435</b>	<b>8.3000e-004</b>	<b>0.0444</b>	<b>0.0000</b>	<b>127.0900</b>	<b>127.0900</b>	<b>2.9900e-003</b>	<b>3.0700e-003</b>	<b>128.0799</b>

**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	3.0878					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0145	0.0975	0.1448	2.4000e-004		4.8700e-003	4.8700e-003		4.8700e-003	4.8700e-003	0.0000	20.4260	20.4260	1.1500e-003	0.0000	20.4548
<b>Total</b>	<b>3.1022</b>	<b>0.0975</b>	<b>0.1448</b>	<b>2.4000e-004</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>	<b>0.0000</b>	<b>20.4260</b>	<b>20.4260</b>	<b>1.1500e-003</b>	<b>0.0000</b>	<b>20.4548</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**3.6 Architectural Coating - 2024**

**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	0.0436	0.0320	0.4562	1.3600e-003	0.0986	9.0000e-004	0.0995	0.0275	8.3000e-004	0.0283	0.0000	127.0900	127.0900	2.9900e-003	3.0700e-003	128.0799
<b>Total</b>	<b>0.0436</b>	<b>0.0320</b>	<b>0.4562</b>	<b>1.3600e-003</b>	<b>0.0986</b>	<b>9.0000e-004</b>	<b>0.0995</b>	<b>0.0275</b>	<b>8.3000e-004</b>	<b>0.0283</b>	<b>0.0000</b>	<b>127.0900</b>	<b>127.0900</b>	<b>2.9900e-003</b>	<b>3.0700e-003</b>	<b>128.0799</b>

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

Keller Crossing - South Coast AQMD Air District, Annual

**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	2.5734	2.6384	21.9498	0.0428	4.3598	0.0331	4.3929	1.1635	0.0308	1.1942	0.0000	3,996.8125	3,996.8125	0.3142	0.2043	4,065.5562
Unmitigated	2.5734	2.6384	21.9498	0.0428	4.3598	0.0331	4.3929	1.1635	0.0308	1.1942	0.0000	3,996.8125	3,996.8125	0.3142	0.2043	4,065.5562

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	93.99	236.21	263.90	398,770	398,770
Fast Food Restaurant with Drive Thru	1,424.01	1,862.91	1428.95	1,565,337	1,565,337
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Pharmacy/Drugstore w/o Drive Thru	440.02	586.18	498.68	642,235	642,235
Retirement Community	84.80	72.00	68.80	275,715	275,715
Single Family Housing	968.32	979.00	875.76	3,268,926	3,268,926
Strip Mall	1,748.85	1,659.53	805.91	3,046,778	3,046,778
Supermarket	1,538.00	2,558.50	2397.50	2,383,718	2,383,718
<b>Total</b>	<b>6,297.99</b>	<b>7,954.33</b>	<b>6,339.50</b>	<b>11,581,479</b>	<b>11,581,479</b>

**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
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Fast Food Restaurant with Drive	16.60	8.40	6.90	2.20	78.80	19.00	29	21	50
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Pharmacy/Drugstore w/o Drive	16.60	8.40	6.90	7.40	73.60	<b>74</b> 19.00	41	6	53

Keller Crossing - South Coast AQMD Air District, Annual

**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
Retirement Community	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791
Fast Food Restaurant with Drive Thru	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791
Other Non-Asphalt Surfaces	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791
Pharmacy/Drugstore w/o Drive Thru	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791
Retirement Community	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791
Single Family Housing	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791
Strip Mall	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791
Supermarket	0.543139	0.060749	0.184760	0.130258	0.023830	0.006353	0.011718	0.009137	0.000812	0.000509	0.024193	0.000750	0.003791

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Kilowatt Hours of Renewable Electricity Generated

Keller Crossing - South Coast AQMD Air District, Annual

**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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,061.2959	1,061.2959	0.0896	0.0109	1,066.7709
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,221.9328	1,221.9328	0.1031	0.0125	1,228.2366
Natural Gas Mitigated	0.0828	0.7195	0.3889	4.5200e-003		0.0572	0.0572		0.0572	0.0572	0.0000	819.3348	819.3348	0.0157	0.0150	824.2037
Natural Gas Unmitigated	0.0828	0.7195	0.3889	4.5200e-003		0.0572	0.0572		0.0572	0.0572	0.0000	819.3348	819.3348	0.0157	0.0150	824.2037

Keller Crossing - South Coast AQMD Air District, Annual

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

**5.2 Energy by Land Use - Natural Gas**

**Unmitigated**

	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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	2.86293e+006	0.0154	0.1403	0.1179	8.4000e-004		0.0107	0.0107		0.0107	0.0107	0.0000	152.7769	152.7769	2.9300e-003	2.8000e-003	153.6847
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	30800	1.7000e-004	1.5100e-003	1.2700e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	1.6436	1.6436	3.0000e-005	3.0000e-005	1.6534
Retirement Community	1.21007e+006	6.5200e-003	0.0558	0.0237	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003	0.0000	64.5741	64.5741	1.2400e-003	1.1800e-003	64.9578
Single Family Housing	1.00702e+007	0.0543	0.4640	0.1975	2.9600e-003		0.0375	0.0375		0.0375	0.0375	0.0000	537.3816	537.3816	0.0103	9.8500e-003	540.5750
Strip Mall	223300	1.2000e-003	0.0110	9.1900e-003	7.0000e-005		8.3000e-004	8.3000e-004		8.3000e-004	8.3000e-004	0.0000	11.9161	11.9161	2.3000e-004	2.2000e-004	11.9870
Supermarket	956500	5.1600e-003	0.0469	0.0394	2.8000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	51.0425	51.0425	9.8000e-004	9.4000e-004	51.3458
<b>Total</b>		<b>0.0828</b>	<b>0.7195</b>	<b>0.3889</b>	<b>4.5200e-003</b>		<b>0.0572</b>	<b>0.0572</b>		<b>0.0572</b>	<b>0.0572</b>	<b>0.0000</b>	<b>819.3348</b>	<b>819.3348</b>	<b>0.0157</b>	<b>0.0150</b>	<b>824.2036</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**5.2 Energy by Land Use - Natural Gas**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	2.86293e+006	0.0154	0.1403	0.1179	8.4000e-004		0.0107	0.0107		0.0107	0.0107	0.0000	152.7769	152.7769	2.9300e-003	2.8000e-003	153.6847
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	30800	1.7000e-004	1.5100e-003	1.2700e-003	1.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	1.6436	1.6436	3.0000e-005	3.0000e-005	1.6534
Retirement Community	1.21007e+006	6.5200e-003	0.0558	0.0237	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003	0.0000	64.5741	64.5741	1.2400e-003	1.1800e-003	64.9578
Single Family Housing	1.00702e+007	0.0543	0.4640	0.1975	2.9600e-003		0.0375	0.0375		0.0375	0.0375	0.0000	537.3816	537.3816	0.0103	9.8500e-003	540.5750
Strip Mall	223300	1.2000e-003	0.0110	9.1900e-003	7.0000e-005		8.3000e-004	8.3000e-004		8.3000e-004	8.3000e-004	0.0000	11.9161	11.9161	2.3000e-004	2.2000e-004	11.9870
Supermarket	956500	5.1600e-003	0.0469	0.0394	2.8000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	51.0425	51.0425	9.8000e-004	9.4000e-004	51.3458
<b>Total</b>		<b>0.0828</b>	<b>0.7195</b>	<b>0.3889</b>	<b>4.5200e-003</b>		<b>0.0572</b>	<b>0.0572</b>		<b>0.0572</b>	<b>0.0572</b>	<b>0.0000</b>	<b>819.3348</b>	<b>819.3348</b>	<b>0.0157</b>	<b>0.0150</b>	<b>824.2036</b>



Keller Crossing - South Coast AQMD Air District, Annual

**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			
City Park	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	484680	85.9558	7.2500e-003	8.8000e-004	86.3993
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	169960	30.1417	2.5400e-003	3.1000e-004	30.2971
Retirement Community	348855	61.8679	5.2200e-003	6.3000e-004	62.1871
Single Family Housing	2.83542e+006	502.8489	0.0424	5.1400e-003	505.4430
Strip Mall	1.23221e+006	218.5270	0.0184	2.2400e-003	219.6543
Supermarket	1.819e+006	322.5916	0.0272	3.3000e-003	324.2557
<b>Total</b>		<b>1,221.9328</b>	<b>0.1031</b>	<b>0.0125</b>	<b>1,228.2366</b>

Keller Crossing - South Coast AQMD Air District, Annual

**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			
City Park	-113223	-20.0796	-0.0017	-0.0002	-20.1832
Fast Food Restaurant with Drive Thru	371457	65.8762	5.5600e-003	6.7000e-004	66.2161
Other Non-Asphalt Surfaces	-113223	-20.0796	-0.0017	-0.0002	-20.1832
Pharmacy/Drugstore w/o Drive Thru	56736.9	10.0620	8.5000e-004	1.0000e-004	10.1139
Retirement Community	235632	41.7883	3.5300e-003	4.3000e-004	42.0039
Single Family Housing	2.7222e+006	482.7693	0.0408	4.9400e-003	485.2598
Strip Mall	1.11899e+006	198.4473	0.0168	2.0300e-003	199.4711
Supermarket	1.70578e+006	302.5119	0.0255	3.0900e-003	304.0725
<b>Total</b>		<b>1,061.2959</b>	<b>0.0896</b>	<b>0.0108</b>	<b>1,066.7710</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	3.8609	0.1332	4.5349	7.6000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	101.4841	101.4841	8.8800e-003	1.7300e-003	102.2205
Unmitigated	3.8609	0.1332	4.5349	7.6000e-004		0.0315	0.0315		0.0315	0.0315	0.0000	101.4841	101.4841	8.8800e-003	1.7300e-003	102.2205

**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	0.3363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.3793					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1338	94.1338	1.8000e-003	1.7300e-003	94.6932
Landscaping	0.1358	0.0519	4.5003	2.4000e-004		0.0249	0.0249		0.0249	0.0249	0.0000	7.3504	7.3504	7.0800e-003	0.0000	7.5273
<b>Total</b>	<b>3.8609</b>	<b>0.1332</b>	<b>4.5349</b>	<b>7.6000e-004</b>		<b>0.0315</b>	<b>0.0315</b>		<b>0.0315</b>	<b>0.0315</b>	<b>0.0000</b>	<b>101.4842</b>	<b>101.4842</b>	<b>8.8800e-003</b>	<b>1.7300e-003</b>	<b>102.2205</b>

Keller Crossing - South Coast AQMD Air District, Annual

**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	0.3363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.3793					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1338	94.1338	1.8000e-003	1.7300e-003	94.6932
Landscaping	0.1358	0.0519	4.5003	2.4000e-004		0.0249	0.0249		0.0249	0.0249	0.0000	7.3504	7.3504	7.0800e-003	0.0000	7.5273
<b>Total</b>	<b>3.8609</b>	<b>0.1332</b>	<b>4.5349</b>	<b>7.6000e-004</b>		<b>0.0315</b>	<b>0.0315</b>		<b>0.0315</b>	<b>0.0315</b>	<b>0.0000</b>	<b>101.4842</b>	<b>101.4842</b>	<b>8.8800e-003</b>	<b>1.7300e-003</b>	<b>102.2205</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

Keller Crossing - South Coast AQMD Air District, Annual

**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	158.7972	1.2184	0.0300	198.1907
Unmitigated	158.7972	1.2184	0.0300	198.1907

Keller Crossing - South Coast AQMD Air District, Annual

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

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 7.74463	15.2593	1.2900e-003	1.6000e-004	15.3380
Fast Food Restaurant with Drive Thru	2.54968 / 0.203432	7.0975	0.0836	2.0300e-003	9.7916
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	0.789012 / 0.604485	3.2633	0.0260	6.4000e-004	4.1025
Retirement Community	4.16986 / 3.28603	17.4265	0.1372	3.3700e-003	21.8625
Single Family Housing	18.5559 / 14.6228	77.5479	0.6107	0.0150	97.2882
Strip Mall	6.01469 / 4.60803	24.8766	0.1979	4.8600e-003	31.2739
Supermarket	4.93073 / 0.190621	13.3260	0.1617	3.9100e-003	18.5339
<b>Total</b>		<b>158.7972</b>	<b>1.2184</b>	<b>0.0300</b>	<b>198.1907</b>

Keller Crossing - South Coast AQMD Air District, Annual

**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			
City Park	0 / 7.74463	15.2593	1.2900e-003	1.6000e-004	15.3380
Fast Food Restaurant with Drive Thru	2.54968 / 0.203432	7.0975	0.0836	2.0300e-003	9.7916
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	0.789012 / 0.604485	3.2633	0.0260	6.4000e-004	4.1025
Retirement Community	4.16986 / 3.28603	17.4265	0.1372	3.3700e-003	21.8625
Single Family Housing	18.5559 / 14.6228	77.5479	0.6107	0.0150	97.2882
Strip Mall	6.01469 / 4.60803	24.8766	0.1979	4.8600e-003	31.2739
Supermarket	4.93073 / 0.190621	13.3260	0.1617	3.9100e-003	18.5339
<b>Total</b>		<b>158.7972</b>	<b>1.2184</b>	<b>0.0300</b>	<b>198.1907</b>

**8.0 Waste Detail**

**8.1 Mitigation Measures Waste**

Keller Crossing - South Coast AQMD Air District, Annual

**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	204.2840	12.0728	0.0000	506.1050
Unmitigated	204.2840	12.0728	0.0000	506.1050



Keller Crossing - South Coast AQMD Air District, Annual

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

**8.2 Waste by Land Use**

**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.56	0.1137	6.7200e-003	0.0000	0.2816
Fast Food Restaurant with Drive Thru	120.95	24.5518	1.4510	0.0000	60.8259
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	42.1	8.5459	0.5051	0.0000	21.1722
Retirement Community	36.8	7.4701	0.4415	0.0000	18.5068
Single Family Housing	417.38	84.7244	5.0071	0.0000	209.9010
Strip Mall	106.58	21.6348	1.2786	0.0000	53.5992
Supermarket	282	57.2435	3.3830	0.0000	141.8182
<b>Total</b>		<b>204.2840</b>	<b>12.0729</b>	<b>0.0000</b>	<b>506.1050</b>

Keller Crossing - South Coast AQMD Air District, Annual

**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			
City Park	0.56	0.1137	6.7200e-003	0.0000	0.2816
Fast Food Restaurant with Drive Thru	120.95	24.5518	1.4510	0.0000	60.8259
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	42.1	8.5459	0.5051	0.0000	21.1722
Retirement Community	36.8	7.4701	0.4415	0.0000	18.5068
Single Family Housing	417.38	84.7244	5.0071	0.0000	209.9010
Strip Mall	106.58	21.6348	1.2786	0.0000	53.5992
Supermarket	282	57.2435	3.3830	0.0000	141.8182
<b>Total</b>		<b>204.2840</b>	<b>12.0729</b>	<b>0.0000</b>	<b>506.1050</b>

**9.0 Operational Offroad**

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

**10.0 Stationary Equipment**

Fire Pumps and Emergency Generators

Keller Crossing - South Coast AQMD Air District, Annual

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

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

**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## **APPENDIX 3.2:**

### **2017 PROJECT CALEEMOD EMISSIONS MODEL OUTPUTS**

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Keller Crossing - South Coast AQMD Air District, Annual

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

**Keller Crossing  
South Coast AQMD Air District, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Pharmacy/Drugstore w/o Drive Thru	14.00	1000sqft	0.32	14,000.00	0
Other Non-Asphalt Surfaces	48.30	Acre	48.30	2,103,948.00	0
City Park	6.50	Acre	6.50	283,140.00	0
Fast Food Restaurant with Drive Thru	10.50	1000sqft	0.24	10,500.00	0
Retirement Community	80.00	Dwelling Unit	16.00	80,000.00	229
Single Family Housing	356.00	Dwelling Unit	115.58	640,800.00	1018
Strip Mall	101.50	1000sqft	3.31	101,500.00	0
Supermarket	50.00	1000sqft	1.15	50,000.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	10			<b>Operational Year</b>	2017
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	548.42	<b>CH4 Intensity (lb/MWhr)</b>	0.022	<b>N2O Intensity (lb/MWhr)</b>	0.005

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

Project Characteristics - 2017 RPS Intensity factors based on percentage of renewables in 2017

Land Use - Acres of retail increased to match site plan acreage of 191.4

Construction Phase - Based on developed time frame

Off-road Equipment - Standard 8-hour day

Off-road Equipment - Doble Equipmnet for construction duration and standard 8-hour day

Keller Crossing - South Coast AQMD Air District, Annual

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

Off-road Equipment - Tractor/Backhoe/Loaders and Excavators replaced with crawler tractor for dust generation. HP and LF from Tractor/Backhoe/Loaders and Excavators used to simulate original equipment

Off-road Equipment -

Off-road Equipment - Tractor/Backhoe/Loaders replaced with crawler tractor for dust generation. HP and LF from Tractor/Backhoe/Loaders used to simulate original equipment

Trips and VMT -

Grading - No import or export

Vehicle Trips - Trip rate apportioned based on traffic report and ratio of weekday to weekend trip

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - Rule 445

Area Coating -

Water And Wastewater - 20% reduction in indoor water use based on CALGreen plumbing fixture flow rates as compared to CalEEMod 2000 data set.

Solid Waste -

Construction Off-road Equipment Mitigation - Rule 403 watering 3x/day and trackout device

Energy Mitigation - Based on Title 24 requirements

Fleet Mix -

Energy Use - Based on Title 24 2016 as taken from CalEEMod 2016.3.2

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Residential_Exterior	486,540.00	490,185.00
tblArchitecturalCoating	ConstArea_Residential_Interior	1,459,620.00	1,470,555.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	46
tblConstructionPhase	NumDays	220.00	120.00
tblConstructionPhase	NumDays	3,100.00	495.00
tblConstructionPhase	NumDays	310.00	58.00
tblConstructionPhase	NumDays	220.00	120.00
tblConstructionPhase	NumDays	120.00	34.00
tblEnergyUse	T24E	11.06	12.38



Keller Crossing - South Coast AQMD Air District, Annual

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

tblEnergyUse	T24E	4.09	4.58
tblEnergyUse	T24E	186.83	877.14
tblEnergyUse	T24E	199.85	951.67
tblEnergyUse	T24E	4.09	4.58
tblEnergyUse	T24E	5.42	6.07
tblEnergyUse	T24NG	76.89	77.67
tblEnergyUse	T24NG	1.90	1.92
tblEnergyUse	T24NG	9,095.91	9,544.50
tblEnergyUse	T24NG	22,256.94	24,566.15
tblEnergyUse	T24NG	1.90	1.92
tblEnergyUse	T24NG	12.52	12.65
tblFireplaces	NumberGas	68.00	72.00
tblFireplaces	NumberGas	302.60	320.00
tblFireplaces	NumberNoFireplace	35.60	36.00
tblFireplaces	NumberWood	4.00	0.00
tblFireplaces	NumberWood	17.80	0.00
tblLandUse	LotAcreage	2.33	3.31
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	158.00
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.38
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00

Keller Crossing - South Coast AQMD Air District, Annual

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

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CH4IntensityFactor	0.033	0.022
tblProjectCharacteristics	CO2IntensityFactor	390.98	548.42
tblProjectCharacteristics	N2OIntensityFactor	0.004	0.005
tblTripsAndVMT	WorkerTripNumber	1,246.00	1,247.00
tblVehicleTrips	ST_TR	1.96	36.34
tblVehicleTrips	ST_TR	616.12	177.42
tblVehicleTrips	ST_TR	90.08	41.87
tblVehicleTrips	ST_TR	2.03	0.90
tblVehicleTrips	ST_TR	9.54	2.75
tblVehicleTrips	ST_TR	42.04	16.35
tblVehicleTrips	ST_TR	177.62	51.17
tblVehicleTrips	SU_TR	2.19	40.60
tblVehicleTrips	SU_TR	472.58	136.09
tblVehicleTrips	SU_TR	90.08	35.62
tblVehicleTrips	SU_TR	1.95	0.86
tblVehicleTrips	SU_TR	8.55	2.46
tblVehicleTrips	SU_TR	20.43	7.94
tblVehicleTrips	SU_TR	166.47	47.95
tblVehicleTrips	WD_TR	0.78	14.46
tblVehicleTrips	WD_TR	470.95	135.62
tblVehicleTrips	WD_TR	90.08	31.43
tblVehicleTrips	WD_TR	2.40	1.06
tblVehicleTrips	WD_TR	9.44	2.72
tblVehicleTrips	WD_TR	44.32	17.23
tblVehicleTrips	WD_TR	106.78	30.76
tblWater	IndoorWaterUseRate	3,187,103.98	2,549,683.18
tblWater	IndoorWaterUseRate	96,265.32	789,012.26

Keller Crossing - South Coast AQMD Air District, Annual

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

tblWater	IndoorWaterUseRate	5,212,322.05	4,169,857.64
tblWater	IndoorWaterUseRate	23,194,833.12	18,555,866.50
tblWater	IndoorWaterUseRate	7,518,360.93	6,014,688.74
tblWater	IndoorWaterUseRate	6,163,410.74	4,930,728.59
tblWoodstoves	NumberCatalytic	4.00	0.00
tblWoodstoves	NumberCatalytic	17.80	0.00
tblWoodstoves	NumberNoncatalytic	4.00	0.00
tblWoodstoves	NumberNoncatalytic	17.80	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

**2.0 Emissions Summary**

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Keller Crossing - South Coast AQMD Air District, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	0.1445	1.4370	0.8681	1.7300e-003	0.5996	0.0760	0.6756	0.2454	0.0700	0.3154	0.0000	152.4584	152.4584	0.0476	1.5000e-004	153.6947
2023	0.9611	6.5878	10.0137	0.0313	2.1546	0.2215	2.3761	0.5822	0.2076	0.7898	0.0000	2,888.6410	2,888.6410	0.2294	0.1739	2,946.2038
2024	4.4438	7.1235	11.7772	0.0362	2.3352	0.2272	2.5624	0.6290	0.2132	0.8422	0.0000	3,334.7259	3,334.7259	0.2684	0.1911	3,398.3811
<b>Maximum</b>	<b>4.4438</b>	<b>7.1235</b>	<b>11.7772</b>	<b>0.0362</b>	<b>2.3352</b>	<b>0.2272</b>	<b>2.5624</b>	<b>0.6290</b>	<b>0.2132</b>	<b>0.8422</b>	<b>0.0000</b>	<b>3,334.7259</b>	<b>3,334.7259</b>	<b>0.2684</b>	<b>0.1911</b>	<b>3,398.3811</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					
2022	0.1445	1.4370	0.8681	1.7300e-003	0.2353	0.0760	0.3114	0.0962	0.0700	0.1661	0.0000	152.4582	152.4582	0.0476	1.5000e-004	153.6946
2023	0.9611	6.5878	10.0137	0.0313	1.2788	0.2215	1.5003	0.3636	0.2076	0.5712	0.0000	2,888.6402	2,888.6402	0.2294	0.1739	2,946.2030
2024	4.4438	7.1235	11.7772	0.0362	1.4320	0.2272	1.6592	0.4073	0.2132	0.6205	0.0000	3,334.7249	3,334.7249	0.2684	0.1911	3,398.3801
<b>Maximum</b>	<b>4.4438</b>	<b>7.1235</b>	<b>11.7772</b>	<b>0.0362</b>	<b>1.4320</b>	<b>0.2272</b>	<b>1.6592</b>	<b>0.4073</b>	<b>0.2132</b>	<b>0.6205</b>	<b>0.0000</b>	<b>3,334.7249</b>	<b>3,334.7249</b>	<b>0.2684</b>	<b>0.1911</b>	<b>3,398.3801</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	42.11	0.00	38.18	40.48	0.00	30.28	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	11-1-2022	1-31-2023	2.0583	2.0583
2	2-1-2023	4-30-2023	1.8241	1.8241
3	5-1-2023	7-31-2023	1.9170	1.9170
4	8-1-2023	10-31-2023	1.9313	1.9313
5	11-1-2023	1-31-2024	1.9289	1.9289
6	2-1-2024	4-30-2024	1.8148	1.8148
7	5-1-2024	7-31-2024	2.2526	2.2526
8	8-1-2024	9-30-2024	2.7369	2.7369
		Highest	2.7369	2.7369

Keller Crossing - South Coast AQMD Air District, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	3.8668	0.1343	4.5792	7.6000e-004		0.0312	0.0312		0.0312	0.0312	0.0000	101.4842	101.4842	9.1900e-003	1.7300e-003	102.2282
Energy	0.0875	0.7598	0.4064	4.7700e-003		0.0605	0.0605		0.0605	0.0605	0.0000	2,685.9361	2,685.9361	0.0896	0.0325	2,697.8521
Mobile	3.7036	5.0156	32.2227	0.0509	4.3611	0.0711	4.4322	1.1640	0.0669	1.2310	0.0000	4,700.3290	4,700.3290	0.4484	0.2790	4,794.6651
Waste						0.0000	0.0000		0.0000	0.0000	204.2840	0.0000	204.2840	12.0728	0.0000	506.1050
Water						0.0000	0.0000		0.0000	0.0000	11.7415	206.2721	218.0137	1.2142	0.0304	257.4158
<b>Total</b>	<b>7.6580</b>	<b>5.9096</b>	<b>37.2083</b>	<b>0.0564</b>	<b>4.3611</b>	<b>0.1628</b>	<b>4.5239</b>	<b>1.1640</b>	<b>0.1586</b>	<b>1.3227</b>	<b>216.0255</b>	<b>7,694.0213</b>	<b>7,910.0469</b>	<b>13.8342</b>	<b>0.3435</b>	<b>8,358.2662</b>

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	3.8668	0.1343	4.5792	7.6000e-004		0.0312	0.0312		0.0312	0.0312	0.0000	101.4842	101.4842	9.1900e-003	1.7300e-003	102.2282
Energy	0.0875	0.7598	0.4064	4.7700e-003		0.0605	0.0605		0.0605	0.0605	0.0000	2,460.6138	2,460.6138	0.0806	0.0304	2,471.6917
Mobile	3.7036	5.0156	32.2227	0.0509	4.3611	0.0711	4.4322	1.1640	0.0669	1.2310	0.0000	4,700.3290	4,700.3290	0.4484	0.2790	4,794.6651
Waste						0.0000	0.0000		0.0000	0.0000	204.2840	0.0000	204.2840	12.0728	0.0000	506.1050
Water						0.0000	0.0000		0.0000	0.0000	11.7415	206.2721	218.0137	1.2142	0.0304	257.4158
<b>Total</b>	<b>7.6580</b>	<b>5.9096</b>	<b>37.2083</b>	<b>0.0564</b>	<b>4.3611</b>	<b>0.1628</b>	<b>4.5239</b>	<b>1.1640</b>	<b>0.1586</b>	<b>1.3227</b>	<b>216.0255</b>	<b>7,468.6990</b>	<b>7,684.7246</b>	<b>13.8252</b>	<b>0.3415</b>	<b>8,132.1058</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>0.00</b>	<b>2.93</b>	<b>2.85</b>	<b>0.07</b>	<b>0.60</b>	<b>2.71</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	Site Preparation	Site Preparation	11/1/2022	12/16/2022	5	34	
2	Grading	Grading	11/16/2022	2/3/2023	5	58	
3	Building Construction	Building Construction	2/6/2023	12/27/2023	5	495	

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

4	Paving	Paving	7/15/2024	12/27/2024	5	120
5	Architectural Coating	Architectural Coating	7/15/2024	12/27/2024	5	120

**Acres of Grading (Site Preparation Phase): 119**

**Acres of Grading (Grading Phase): 232**

**Acres of Paving: 48.3**

**Residential Indoor: 1,470,555; Residential Outdoor: 490,185; Non-Residential Indoor: 264,000; Non-Residential Outdoor: 88,000; Striped Parking Area: 126,237 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Crawler Tractors	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Crawler Tractors	2	8.00	97	0.37
Grading	Crawler Tractors	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Cranes	2	8.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	8.00	97	0.37
Building Construction	Welders	2	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
Architectural Coating	Air Compressors	1	8.00	78	0.48

**Trips and VMT**



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

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	1,247.00	467.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	249.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area  
Clean Paved Roads

**3.2 Site Preparation - 2022**

**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					0.3702	0.0000	0.3702	0.1756	0.0000	0.1756	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0685	0.6680	0.3516	6.5000e-004		0.0388	0.0388		0.0357	0.0357	0.0000	56.8518	56.8518	0.0184	0.0000	57.3115
<b>Total</b>	<b>0.0685</b>	<b>0.6680</b>	<b>0.3516</b>	<b>6.5000e-004</b>	<b>0.3702</b>	<b>0.0388</b>	<b>0.4091</b>	<b>0.1756</b>	<b>0.0357</b>	<b>0.2114</b>	<b>0.0000</b>	<b>56.8518</b>	<b>56.8518</b>	<b>0.0184</b>	<b>0.0000</b>	<b>57.3115</b>

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

**3.2 Site Preparation - 2022**

**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	1.0300e-003	8.3000e-004	0.0108	3.0000e-005	3.3600e-003	2.0000e-005	3.3800e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.7145	2.7145	8.0000e-005	7.0000e-005	2.7382
<b>Total</b>	<b>1.0300e-003</b>	<b>8.3000e-004</b>	<b>0.0108</b>	<b>3.0000e-005</b>	<b>3.3600e-003</b>	<b>2.0000e-005</b>	<b>3.3800e-003</b>	<b>8.9000e-004</b>	<b>2.0000e-005</b>	<b>9.1000e-004</b>	<b>0.0000</b>	<b>2.7145</b>	<b>2.7145</b>	<b>8.0000e-005</b>	<b>7.0000e-005</b>	<b>2.7382</b>

**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					0.1444	0.0000	0.1444	0.0685	0.0000	0.0685	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0685	0.6680	0.3516	6.5000e-004		0.0388	0.0388		0.0357	0.0357	0.0000	56.8518	56.8518	0.0184	0.0000	57.3114
<b>Total</b>	<b>0.0685</b>	<b>0.6680</b>	<b>0.3516</b>	<b>6.5000e-004</b>	<b>0.1444</b>	<b>0.0388</b>	<b>0.1832</b>	<b>0.0685</b>	<b>0.0357</b>	<b>0.1042</b>	<b>0.0000</b>	<b>56.8518</b>	<b>56.8518</b>	<b>0.0184</b>	<b>0.0000</b>	<b>57.3114</b>

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

**3.2 Site Preparation - 2022**

**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	1.0300e-003	8.3000e-004	0.0108	3.0000e-005	2.0200e-003	2.0000e-005	2.0400e-003	5.6000e-004	2.0000e-005	5.8000e-004	0.0000	2.7145	2.7145	8.0000e-005	7.0000e-005	2.7382
<b>Total</b>	<b>1.0300e-003</b>	<b>8.3000e-004</b>	<b>0.0108</b>	<b>3.0000e-005</b>	<b>2.0200e-003</b>	<b>2.0000e-005</b>	<b>2.0400e-003</b>	<b>5.6000e-004</b>	<b>2.0000e-005</b>	<b>5.8000e-004</b>	<b>0.0000</b>	<b>2.7145</b>	<b>2.7145</b>	<b>8.0000e-005</b>	<b>7.0000e-005</b>	<b>2.7382</b>

**3.3 Grading - 2022**

**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					0.2224	0.0000	0.2224	0.0679	0.0000	0.0679	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0738	0.7673	0.4940	1.0200e-003		0.0372	0.0372		0.0342	0.0342	0.0000	89.9647	89.9647	0.0291	0.0000	90.6921
<b>Total</b>	<b>0.0738</b>	<b>0.7673</b>	<b>0.4940</b>	<b>1.0200e-003</b>	<b>0.2224</b>	<b>0.0372</b>	<b>0.2595</b>	<b>0.0679</b>	<b>0.0342</b>	<b>0.1021</b>	<b>0.0000</b>	<b>89.9647</b>	<b>89.9647</b>	<b>0.0291</b>	<b>0.0000</b>	<b>90.6921</b>

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

**3.3 Grading - 2022**

**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	1.1100e-003	8.9000e-004	0.0117	3.0000e-005	3.6200e-003	2.0000e-005	3.6400e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	2.9274	2.9274	8.0000e-005	8.0000e-005	2.9530
<b>Total</b>	<b>1.1100e-003</b>	<b>8.9000e-004</b>	<b>0.0117</b>	<b>3.0000e-005</b>	<b>3.6200e-003</b>	<b>2.0000e-005</b>	<b>3.6400e-003</b>	<b>9.6000e-004</b>	<b>2.0000e-005</b>	<b>9.8000e-004</b>	<b>0.0000</b>	<b>2.9274</b>	<b>2.9274</b>	<b>8.0000e-005</b>	<b>8.0000e-005</b>	<b>2.9530</b>

**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					0.0867	0.0000	0.0867	0.0265	0.0000	0.0265	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0738	0.7673	0.4940	1.0200e-003		0.0372	0.0372		0.0342	0.0342	0.0000	89.9646	89.9646	0.0291	0.0000	90.6920
<b>Total</b>	<b>0.0738</b>	<b>0.7673</b>	<b>0.4940</b>	<b>1.0200e-003</b>	<b>0.0867</b>	<b>0.0372</b>	<b>0.1239</b>	<b>0.0265</b>	<b>0.0342</b>	<b>0.0607</b>	<b>0.0000</b>	<b>89.9646</b>	<b>89.9646</b>	<b>0.0291</b>	<b>0.0000</b>	<b>90.6920</b>

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

**3.3 Grading - 2022**

**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	1.1100e-003	8.9000e-004	0.0117	3.0000e-005	2.1800e-003	2.0000e-005	2.2000e-003	6.1000e-004	2.0000e-005	6.3000e-004	0.0000	2.9274	2.9274	8.0000e-005	8.0000e-005	2.9530
<b>Total</b>	<b>1.1100e-003</b>	<b>8.9000e-004</b>	<b>0.0117</b>	<b>3.0000e-005</b>	<b>2.1800e-003</b>	<b>2.0000e-005</b>	<b>2.2000e-003</b>	<b>6.1000e-004</b>	<b>2.0000e-005</b>	<b>6.3000e-004</b>	<b>0.0000</b>	<b>2.9274</b>	<b>2.9274</b>	<b>8.0000e-005</b>	<b>8.0000e-005</b>	<b>2.9530</b>

**3.3 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					0.1983	0.0000	0.1983	0.0547	0.0000	0.0547	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0510	0.5179	0.3606	7.8000e-004		0.0248	0.0248		0.0228	0.0228	0.0000	68.1532	68.1532	0.0220	0.0000	68.7042
<b>Total</b>	<b>0.0510</b>	<b>0.5179</b>	<b>0.3606</b>	<b>7.8000e-004</b>	<b>0.1983</b>	<b>0.0248</b>	<b>0.2231</b>	<b>0.0547</b>	<b>0.0228</b>	<b>0.0775</b>	<b>0.0000</b>	<b>68.1532</b>	<b>68.1532</b>	<b>0.0220</b>	<b>0.0000</b>	<b>68.7042</b>

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**3.3 Grading - 2023**

**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	7.8000e-004	6.0000e-004	8.1600e-003	2.0000e-005	2.7400e-003	2.0000e-005	2.7600e-003	7.3000e-004	1.0000e-005	7.4000e-004	0.0000	2.1465	2.1465	6.0000e-005	6.0000e-005	2.1643
<b>Total</b>	<b>7.8000e-004</b>	<b>6.0000e-004</b>	<b>8.1600e-003</b>	<b>2.0000e-005</b>	<b>2.7400e-003</b>	<b>2.0000e-005</b>	<b>2.7600e-003</b>	<b>7.3000e-004</b>	<b>1.0000e-005</b>	<b>7.4000e-004</b>	<b>0.0000</b>	<b>2.1465</b>	<b>2.1465</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>2.1643</b>

**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					0.0773	0.0000	0.0773	0.0213	0.0000	0.0213	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0510	0.5179	0.3606	7.8000e-004		0.0248	0.0248		0.0228	0.0228	0.0000	68.1531	68.1531	0.0220	0.0000	68.7041
<b>Total</b>	<b>0.0510</b>	<b>0.5179</b>	<b>0.3606</b>	<b>7.8000e-004</b>	<b>0.0773</b>	<b>0.0248</b>	<b>0.1022</b>	<b>0.0213</b>	<b>0.0228</b>	<b>0.0442</b>	<b>0.0000</b>	<b>68.1531</b>	<b>68.1531</b>	<b>0.0220</b>	<b>0.0000</b>	<b>68.7041</b>

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

**3.3 Grading - 2023**

**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	7.8000e-004	6.0000e-004	8.1600e-003	2.0000e-005	1.6500e-003	2.0000e-005	1.6600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	2.1465	2.1465	6.0000e-005	6.0000e-005	2.1643
<b>Total</b>	<b>7.8000e-004</b>	<b>6.0000e-004</b>	<b>8.1600e-003</b>	<b>2.0000e-005</b>	<b>1.6500e-003</b>	<b>2.0000e-005</b>	<b>1.6600e-003</b>	<b>4.6000e-004</b>	<b>1.0000e-005</b>	<b>4.7000e-004</b>	<b>0.0000</b>	<b>2.1465</b>	<b>2.1465</b>	<b>6.0000e-005</b>	<b>6.0000e-005</b>	<b>2.1643</b>

**3.4 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	0.3933	3.6279	4.0679	6.7800e-003		0.1758	0.1758		0.1652	0.1652	0.0000	583.7426	583.7426	0.1422	0.0000	587.2976
<b>Total</b>	<b>0.3933</b>	<b>3.6279</b>	<b>4.0679</b>	<b>6.7800e-003</b>		<b>0.1758</b>	<b>0.1758</b>		<b>0.1652</b>	<b>0.1652</b>	<b>0.0000</b>	<b>583.7426</b>	<b>583.7426</b>	<b>0.1422</b>	<b>0.0000</b>	<b>587.2976</b>

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

**3.4 Building Construction - 2023**

**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	0.0593	2.0904	0.7959	9.9900e-003	0.3461	0.0116	0.3577	0.0999	0.0111	0.1110	0.0000	976.5748	976.5748	0.0327	0.1415	1,019.5595
Worker	0.4567	0.3511	4.7812	0.0137	1.6075	9.1900e-003	1.6167	0.4269	8.4600e-003	0.4354	0.0000	1,258.0240	1,258.0240	0.0323	0.0324	1,268.4782
<b>Total</b>	<b>0.5160</b>	<b>2.4415</b>	<b>5.5771</b>	<b>0.0237</b>	<b>1.9536</b>	<b>0.0208</b>	<b>1.9744</b>	<b>0.5268</b>	<b>0.0196</b>	<b>0.5464</b>	<b>0.0000</b>	<b>2,234.5988</b>	<b>2,234.5988</b>	<b>0.0651</b>	<b>0.1739</b>	<b>2,288.0377</b>

**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	0.3933	3.6279	4.0679	6.7800e-003		0.1758	0.1758		0.1652	0.1652	0.0000	583.7419	583.7419	0.1422	0.0000	587.2969
<b>Total</b>	<b>0.3933</b>	<b>3.6279</b>	<b>4.0679</b>	<b>6.7800e-003</b>		<b>0.1758</b>	<b>0.1758</b>		<b>0.1652</b>	<b>0.1652</b>	<b>0.0000</b>	<b>583.7419</b>	<b>583.7419</b>	<b>0.1422</b>	<b>0.0000</b>	<b>587.2969</b>



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

**3.4 Building Construction - 2023**

**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	0.0593	2.0904	0.7959	9.9900e-003	0.2334	0.0116	0.2450	0.0722	0.0111	0.0833	0.0000	976.5748	976.5748	0.0327	0.1415	1,019.5595
Worker	0.4567	0.3511	4.7812	0.0137	0.9665	9.1900e-003	0.9757	0.2696	8.4600e-003	0.2780	0.0000	1,258.0240	1,258.0240	0.0323	0.0324	1,268.4782
<b>Total</b>	<b>0.5160</b>	<b>2.4415</b>	<b>5.5771</b>	<b>0.0237</b>	<b>1.1999</b>	<b>0.0208</b>	<b>1.2207</b>	<b>0.3418</b>	<b>0.0196</b>	<b>0.3614</b>	<b>0.0000</b>	<b>2,234.5988</b>	<b>2,234.5988</b>	<b>0.0651</b>	<b>0.1739</b>	<b>2,288.0377</b>

**3.4 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	0.4074	3.7505	4.4790	7.5000e-003		0.1707	0.1707		0.1603	0.1603	0.0000	645.9747	645.9747	0.1565	0.0000	649.8874
<b>Total</b>	<b>0.4074</b>	<b>3.7505</b>	<b>4.4790</b>	<b>7.5000e-003</b>		<b>0.1707</b>	<b>0.1707</b>		<b>0.1603</b>	<b>0.1603</b>	<b>0.0000</b>	<b>645.9747</b>	<b>645.9747</b>	<b>0.1565</b>	<b>0.0000</b>	<b>649.8874</b>

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

**3.4 Building Construction - 2024**

**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	0.0640	2.3234	0.8661	0.0109	0.3829	0.0129	0.3958	0.1105	0.0123	0.1228	0.0000	1,064.9356	1,064.9356	0.0362	0.1545	1,111.8870
Worker	0.4721	0.3468	4.9282	0.0147	1.7786	9.7300e-003	1.7883	0.4723	8.9600e-003	0.4813	0.0000	1,351.2025	1,351.2025	0.0324	0.0333	1,361.9437
<b>Total</b>	<b>0.5362</b>	<b>2.6702</b>	<b>5.7943</b>	<b>0.0256</b>	<b>2.1614</b>	<b>0.0226</b>	<b>2.1840</b>	<b>0.5828</b>	<b>0.0213</b>	<b>0.6041</b>	<b>0.0000</b>	<b>2,416.1380</b>	<b>2,416.1380</b>	<b>0.0687</b>	<b>0.1878</b>	<b>2,473.8307</b>

**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	0.4074	3.7505	4.4790	7.5000e-003		0.1707	0.1707		0.1603	0.1603	0.0000	645.9739	645.9739	0.1565	0.0000	649.8866
<b>Total</b>	<b>0.4074</b>	<b>3.7505</b>	<b>4.4790</b>	<b>7.5000e-003</b>		<b>0.1707</b>	<b>0.1707</b>		<b>0.1603</b>	<b>0.1603</b>	<b>0.0000</b>	<b>645.9739</b>	<b>645.9739</b>	<b>0.1565</b>	<b>0.0000</b>	<b>649.8866</b>

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

**3.4 Building Construction - 2024**

**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	0.0640	2.3234	0.8661	0.0109	0.2582	0.0129	0.2711	0.0799	0.0123	0.0922	0.0000	1,064.9356	1,064.9356	0.0362	0.1545	1,111.8870
Worker	0.4721	0.3468	4.9282	0.0147	1.0693	9.7300e-003	1.0790	0.2983	8.9600e-003	0.3072	0.0000	1,351.2025	1,351.2025	0.0324	0.0333	1,361.9437
<b>Total</b>	<b>0.5362</b>	<b>2.6702</b>	<b>5.7943</b>	<b>0.0256</b>	<b>1.3275</b>	<b>0.0226</b>	<b>1.3501</b>	<b>0.3781</b>	<b>0.0213</b>	<b>0.3994</b>	<b>0.0000</b>	<b>2,416.1380</b>	<b>2,416.1380</b>	<b>0.0687</b>	<b>0.1878</b>	<b>2,473.8307</b>

**3.5 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	0.0593	0.5715	0.8776	1.3700e-003		0.0281	0.0281		0.0259	0.0259	0.0000	120.1592	120.1592	0.0389	0.0000	121.1307
Paving	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>0.0593</b>	<b>0.5715</b>	<b>0.8776</b>	<b>1.3700e-003</b>		<b>0.0281</b>	<b>0.0281</b>		<b>0.0259</b>	<b>0.0259</b>	<b>0.0000</b>	<b>120.1592</b>	<b>120.1592</b>	<b>0.0389</b>	<b>0.0000</b>	<b>121.1307</b>

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

**3.5 Paving - 2024**

**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	2.6200e-003	1.9300e-003	0.0274	8.0000e-005	9.8700e-003	5.0000e-005	9.9300e-003	2.6200e-003	5.0000e-005	2.6700e-003	0.0000	7.5016	7.5016	1.8000e-004	1.9000e-004	7.5612
<b>Total</b>	<b>2.6200e-003</b>	<b>1.9300e-003</b>	<b>0.0274</b>	<b>8.0000e-005</b>	<b>9.8700e-003</b>	<b>5.0000e-005</b>	<b>9.9300e-003</b>	<b>2.6200e-003</b>	<b>5.0000e-005</b>	<b>2.6700e-003</b>	<b>0.0000</b>	<b>7.5016</b>	<b>7.5016</b>	<b>1.8000e-004</b>	<b>1.9000e-004</b>	<b>7.5612</b>

**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	0.0593	0.5715	0.8775	1.3700e-003		0.0281	0.0281		0.0259	0.0259	0.0000	120.1591	120.1591	0.0389	0.0000	121.1306
Paving	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>0.0593</b>	<b>0.5715</b>	<b>0.8775</b>	<b>1.3700e-003</b>		<b>0.0281</b>	<b>0.0281</b>		<b>0.0259</b>	<b>0.0259</b>	<b>0.0000</b>	<b>120.1591</b>	<b>120.1591</b>	<b>0.0389</b>	<b>0.0000</b>	<b>121.1306</b>

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

**3.5 Paving - 2024**

**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	2.6200e-003	1.9300e-003	0.0274	8.0000e-005	5.9400e-003	5.0000e-005	5.9900e-003	1.6600e-003	5.0000e-005	1.7100e-003	0.0000	7.5016	7.5016	1.8000e-004	1.9000e-004	7.5612
<b>Total</b>	<b>2.6200e-003</b>	<b>1.9300e-003</b>	<b>0.0274</b>	<b>8.0000e-005</b>	<b>5.9400e-003</b>	<b>5.0000e-005</b>	<b>5.9900e-003</b>	<b>1.6600e-003</b>	<b>5.0000e-005</b>	<b>1.7100e-003</b>	<b>0.0000</b>	<b>7.5016</b>	<b>7.5016</b>	<b>1.8000e-004</b>	<b>1.9000e-004</b>	<b>7.5612</b>

**3.6 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	3.3803					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0145	0.0975	0.1448	2.4000e-004		4.8700e-003	4.8700e-003		4.8700e-003	4.8700e-003	0.0000	20.4260	20.4260	1.1500e-003	0.0000	20.4548
<b>Total</b>	<b>3.3948</b>	<b>0.0975</b>	<b>0.1448</b>	<b>2.4000e-004</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>	<b>0.0000</b>	<b>20.4260</b>	<b>20.4260</b>	<b>1.1500e-003</b>	<b>0.0000</b>	<b>20.4548</b>

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0435	0.0320	0.4542	1.3600e-003	0.1639	9.0000e-004	0.1648	0.0435	8.3000e-004	0.0444	0.0000	124.5263	124.5263	2.9900e-003	3.0700e-003	125.5163
<b>Total</b>	<b>0.0435</b>	<b>0.0320</b>	<b>0.4542</b>	<b>1.3600e-003</b>	<b>0.1639</b>	<b>9.0000e-004</b>	<b>0.1648</b>	<b>0.0435</b>	<b>8.3000e-004</b>	<b>0.0444</b>	<b>0.0000</b>	<b>124.5263</b>	<b>124.5263</b>	<b>2.9900e-003</b>	<b>3.0700e-003</b>	<b>125.5163</b>

**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	3.3803					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0145	0.0975	0.1448	2.4000e-004		4.8700e-003	4.8700e-003		4.8700e-003	4.8700e-003	0.0000	20.4260	20.4260	1.1500e-003	0.0000	20.4548
<b>Total</b>	<b>3.3948</b>	<b>0.0975</b>	<b>0.1448</b>	<b>2.4000e-004</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>		<b>4.8700e-003</b>	<b>4.8700e-003</b>	<b>0.0000</b>	<b>20.4260</b>	<b>20.4260</b>	<b>1.1500e-003</b>	<b>0.0000</b>	<b>20.4548</b>

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

**3.6 Architectural Coating - 2024**

**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	0.0435	0.0320	0.4542	1.3600e-003	0.0986	9.0000e-004	0.0994	0.0275	8.3000e-004	0.0283	0.0000	124.5263	124.5263	2.9900e-003	3.0700e-003	125.5163
<b>Total</b>	<b>0.0435</b>	<b>0.0320</b>	<b>0.4542</b>	<b>1.3600e-003</b>	<b>0.0986</b>	<b>9.0000e-004</b>	<b>0.0994</b>	<b>0.0275</b>	<b>8.3000e-004</b>	<b>0.0283</b>	<b>0.0000</b>	<b>124.5263</b>	<b>124.5263</b>	<b>2.9900e-003</b>	<b>3.0700e-003</b>	<b>125.5163</b>

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

Keller Crossing - South Coast AQMD Air District, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.7036	5.0156	32.2227	0.0509	4.3611	0.0711	4.4322	1.1640	0.0669	1.2310	0.0000	4,700.3290	4,700.3290	0.4484	0.2790	4,794.6651
Unmitigated	3.7036	5.0156	32.2227	0.0509	4.3611	0.0711	4.4322	1.1640	0.0669	1.2310	0.0000	4,700.3290	4,700.3290	0.4484	0.2790	4,794.6651

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	93.99	236.21	263.90	398,770	398,770
Fast Food Restaurant with Drive Thru	1,424.01	1,862.91	1428.95	1,565,337	1,565,337
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Pharmacy/Drugstore w/o Drive Thru	440.02	586.18	498.68	642,235	642,235
Retirement Community	84.80	72.00	68.80	275,715	275,715
Single Family Housing	968.32	979.00	875.76	3,268,926	3,268,926
Strip Mall	1,748.85	1,659.53	805.91	3,046,778	3,046,778
Supermarket	1,538.00	2,558.50	2397.50	2,383,718	2,383,718
<b>Total</b>	<b>6,297.99</b>	<b>7,954.33</b>	<b>6,339.50</b>	<b>11,581,479</b>	<b>11,581,479</b>

**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
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Fast Food Restaurant with Drive	16.60	8.40	6.90	2.20	78.80	19.00	29	21	50
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Pharmacy/Drugstore w/o Drive	16.60	8.40	6.90	7.40	73.60	118 19.00	41	6	53



Keller Crossing - South Coast AQMD Air District, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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
Retirement Community	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Strip Mall	16.60	8.40	6.90	16.60	64.40	19.00	45	40	15
Supermarket	16.60	8.40	6.90	6.50	74.50	19.00	34	30	36

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327
Fast Food Restaurant with Drive Thru	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327
Other Non-Asphalt Surfaces	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327
Pharmacy/Drugstore w/o Drive Thru	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327
Retirement Community	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327
Single Family Housing	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327
Strip Mall	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327
Supermarket	0.545322	0.055950	0.183978	0.136056	0.024039	0.005597	0.012115	0.008774	0.000884	0.000548	0.021671	0.000738	0.004327

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Kilowatt Hours of Renewable Electricity Generated

Keller Crossing - South Coast AQMD Air District, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,594,587.5	1,594,587.5	0.0640	0.0145	1,600,519.0
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,819,909.8	1,819,909.8	0.0730	0.0166	1,826,679.5
Natural Gas Mitigated	0.0875	0.7598	0.4064	4.7700e-003		0.0605	0.0605		0.0605	0.0605	0.0000	866.0263	866.0263	0.0166	0.0159	871.1726
Natural Gas Unmitigated	0.0875	0.7598	0.4064	4.7700e-003		0.0605	0.0605		0.0605	0.0605	0.0000	866.0263	866.0263	0.0166	0.0159	871.1726

Keller Crossing - South Coast AQMD Air District, Annual

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

**5.2 Energy by Land Use - Natural Gas**

**Unmitigated**

	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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	2.87112e+006	0.0155	0.1407	0.1182	8.4000e-004		0.0107	0.0107		0.0107	0.0107	0.0000	153.2139	153.2139	2.9400e-003	2.8100e-003	154.1244
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	31080	1.7000e-004	1.5200e-003	1.2800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6586	1.6586	3.0000e-005	3.0000e-005	1.6684
Retirement Community	1.24596e+006	6.7200e-003	0.0574	0.0244	3.7000e-004		4.6400e-003	4.6400e-003		4.6400e-003	4.6400e-003	0.0000	66.4892	66.4892	1.2700e-003	1.2200e-003	66.8843
Single Family Housing	1.08922e+007	0.0587	0.5019	0.2136	3.2000e-003		0.0406	0.0406		0.0406	0.0406	0.0000	581.2508	581.2508	0.0111	0.0107	584.7049
Strip Mall	225330	1.2200e-003	0.0111	9.2800e-003	7.0000e-005		8.4000e-004	8.4000e-004		8.4000e-004	8.4000e-004	0.0000	12.0245	12.0245	2.3000e-004	2.2000e-004	12.0959
Supermarket	963000	5.1900e-003	0.0472	0.0397	2.8000e-004		3.5900e-003	3.5900e-003		3.5900e-003	3.5900e-003	0.0000	51.3894	51.3894	9.8000e-004	9.4000e-004	51.6947
<b>Total</b>		<b>0.0875</b>	<b>0.7598</b>	<b>0.4064</b>	<b>4.7700e-003</b>		<b>0.0605</b>	<b>0.0605</b>		<b>0.0605</b>	<b>0.0605</b>	<b>0.0000</b>	<b>866.0263</b>	<b>866.0263</b>	<b>0.0166</b>	<b>0.0159</b>	<b>871.1726</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**5.2 Energy by Land Use - Natural Gas**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	2.87112e+006	0.0155	0.1407	0.1182	8.4000e-004		0.0107	0.0107		0.0107	0.0107	0.0000	153.2139	153.2139	2.9400e-003	2.8100e-003	154.1244
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	31080	1.7000e-004	1.5200e-003	1.2800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6586	1.6586	3.0000e-005	3.0000e-005	1.6684
Retirement Community	1.24596e+006	6.7200e-003	0.0574	0.0244	3.7000e-004		4.6400e-003	4.6400e-003		4.6400e-003	4.6400e-003	0.0000	66.4892	66.4892	1.2700e-003	1.2200e-003	66.8843
Single Family Housing	1.08922e+007	0.0587	0.5019	0.2136	3.2000e-003		0.0406	0.0406		0.0406	0.0406	0.0000	581.2508	581.2508	0.0111	0.0107	584.7049
Strip Mall	225330	1.2200e-003	0.0111	9.2800e-003	7.0000e-005		8.4000e-004	8.4000e-004		8.4000e-004	8.4000e-004	0.0000	12.0245	12.0245	2.3000e-004	2.2000e-004	12.0959
Supermarket	963000	5.1900e-003	0.0472	0.0397	2.8000e-004		3.5900e-003	3.5900e-003		3.5900e-003	3.5900e-003	0.0000	51.3894	51.3894	9.8000e-004	9.4000e-004	51.6947
<b>Total</b>		<b>0.0875</b>	<b>0.7598</b>	<b>0.4064</b>	<b>4.7700e-003</b>		<b>0.0605</b>	<b>0.0605</b>		<b>0.0605</b>	<b>0.0605</b>	<b>0.0000</b>	<b>866.0263</b>	<b>866.0263</b>	<b>0.0166</b>	<b>0.0159</b>	<b>871.1726</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**5.3 Energy by Land Use - Electricity**

**Unmitigated**

Land Use	Electricity Use kWh/yr	Total CO2 MT/yr	CH4 MT/yr	N2O MT/yr	CO2e MT/yr
City Park	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant with Drive Thru	498540	124.0164	4.9700e-003	1.1300e-003	124.4777
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	176820	43.9856	1.7600e-003	4.0000e-004	44.1492
Retirement Community	404080	100.5186	4.0300e-003	9.2000e-004	100.8925
Single Family Housing	3.10307e+006	771.9162	0.0310	7.0400e-003	774.7876
Strip Mall	1.28195e+006	318.8955	0.0128	2.9100e-003	320.0817
Supermarket	1.8515e+006	460.5775	0.0185	4.2000e-003	462.2908
<b>Total</b>		<b>1,819.9098</b>	<b>0.0730</b>	<b>0.0166</b>	<b>1,826.6795</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**5.3 Energy by Land Use - Electricity**

Mitigated

Land Use	Electricity Use kWh/yr	Total CO2 MT/yr	CH4 MT/yr	N2O MT/yr	CO2e MT/yr
City Park	-113223	-28.1653	-0.0011	-0.0003	-28.2701
Fast Food Restaurant with Drive Thru	385317	95.8511	3.8500e-003	8.7000e-004	96.2076
Other Non-Asphalt Surfaces	-113223	-28.1653	-0.0011	-0.0003	-28.2701
Pharmacy/Drugstore w/o Drive Thru	63596.9	15.8203	6.3000e-004	1.4000e-004	15.8792
Retirement Community	290857	72.3533	2.9000e-003	6.6000e-004	72.6224
Single Family Housing	2.98984e+006	743.7509	0.0298	6.7800e-003	746.5175
Strip Mall	1.16872e+006	290.7302	0.0117	2.6500e-003	291.8117
Supermarket	1.73828e+006	432.4122	0.0174	3.9400e-003	434.0207
<b>Total</b>		<b>1,594.5875</b>	<b>0.0640</b>	<b>0.0145</b>	<b>1,600.5190</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Keller Crossing - South Coast AQMD Air District, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.8668	0.1343	4.5792	7.6000e-004		0.0312	0.0312		0.0312	0.0312	0.0000	101.4842	101.4842	9.1900e-003	1.7300e-003	102.2282
Unmitigated	3.8668	0.1343	4.5792	7.6000e-004		0.0312	0.0312		0.0312	0.0312	0.0000	101.4842	101.4842	9.1900e-003	1.7300e-003	102.2282

**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	0.3363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.3793					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1338	94.1338	1.8000e-003	1.7300e-003	94.6932
Landscaping	0.1417	0.0530	4.5446	2.4000e-004		0.0247	0.0247		0.0247	0.0247	0.0000	7.3504	7.3504	7.3900e-003	0.0000	7.5351
<b>Total</b>	<b>3.8668</b>	<b>0.1343</b>	<b>4.5792</b>	<b>7.6000e-004</b>		<b>0.0312</b>	<b>0.0312</b>		<b>0.0312</b>	<b>0.0312</b>	<b>0.0000</b>	<b>101.4842</b>	<b>101.4842</b>	<b>9.1900e-003</b>	<b>1.7300e-003</b>	<b>102.2282</b>

Keller Crossing - South Coast AQMD Air District, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	0.3363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.3793					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1338	94.1338	1.8000e-003	1.7300e-003	94.6932
Landscaping	0.1417	0.0530	4.5446	2.4000e-004		0.0247	0.0247		0.0247	0.0247	0.0000	7.3504	7.3504	7.3900e-003	0.0000	7.5351
<b>Total</b>	<b>3.8668</b>	<b>0.1343</b>	<b>4.5792</b>	<b>7.6000e-004</b>		<b>0.0312</b>	<b>0.0312</b>		<b>0.0312</b>	<b>0.0312</b>	<b>0.0000</b>	<b>101.4842</b>	<b>101.4842</b>	<b>9.1900e-003</b>	<b>1.7300e-003</b>	<b>102.2282</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**



Keller Crossing - South Coast AQMD Air District, Annual

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	218.0137	1.2142	0.0304	257.4158
Unmitigated	218.0137	1.2142	0.0304	257.4158

Keller Crossing - South Coast AQMD Air District, Annual

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

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 7.74463	21.4039	8.6000e-004	2.0000e-004	21.4836
Fast Food Restaurant with Drive Thru	2.54968 / 0.203432	9.6298	0.0834	2.0400e-003	12.3242
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	0.789012 / 0.604485	4.4766	0.0259	6.5000e-004	5.3160
Retirement Community	4.16986 / 3.28603	23.9111	0.1368	3.4100e-003	28.3481
Single Family Housing	18.5559 / 14.6228	106.4044	0.6087	0.0152	126.1489
Strip Mall	6.01469 / 4.60803	34.1256	0.1973	4.9200e-003	40.5242
Supermarket	4.93073 / 0.190621	18.0622	0.1613	3.9400e-003	23.2708
<b>Total</b>		<b>218.0137</b>	<b>1.2143</b>	<b>0.0304</b>	<b>257.4158</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**7.2 Water by Land Use**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 7.74463	21.4039	8.6000e-004	2.0000e-004	21.4836
Fast Food Restaurant with Drive Thru	2.54968 / 0.203432	9.6298	0.0834	2.0400e-003	12.3242
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	0.789012 / 0.604485	4.4766	0.0259	6.5000e-004	5.3160
Retirement Community	4.16986 / 3.28603	23.9111	0.1368	3.4100e-003	28.3481
Single Family Housing	18.5559 / 14.6228	106.4044	0.6087	0.0152	126.1489
Strip Mall	6.01469 / 4.60803	34.1256	0.1973	4.9200e-003	40.5242
Supermarket	4.93073 / 0.190621	18.0622	0.1613	3.9400e-003	23.2708
<b>Total</b>		<b>218.0137</b>	<b>1.2143</b>	<b>0.0304</b>	<b>257.4158</b>

**8.0 Waste Detail**

**8.1 Mitigation Measures Waste**

Keller Crossing - South Coast AQMD Air District, Annual

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

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	204.2840	12.0728	0.0000	506.1050
Unmitigated	204.2840	12.0728	0.0000	506.1050

Keller Crossing - South Coast AQMD Air District, Annual

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

**8.2 Waste by Land Use**

**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.56	0.1137	6.7200e-003	0.0000	0.2816
Fast Food Restaurant with Drive Thru	120.95	24.5518	1.4510	0.0000	60.8259
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	42.1	8.5459	0.5051	0.0000	21.1722
Retirement Community	36.8	7.4701	0.4415	0.0000	18.5068
Single Family Housing	417.38	84.7244	5.0071	0.0000	209.9010
Strip Mall	106.58	21.6348	1.2786	0.0000	53.5992
Supermarket	282	57.2435	3.3830	0.0000	141.8182
<b>Total</b>		<b>204.2840</b>	<b>12.0729</b>	<b>0.0000</b>	<b>506.1050</b>

Keller Crossing - South Coast AQMD Air District, Annual

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

**8.2 Waste by Land Use**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.56	0.1137	6.7200e-003	0.0000	0.2816
Fast Food Restaurant with Drive Thru	120.95	24.5518	1.4510	0.0000	60.8259
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Pharmacy/Drugstore w/o Drive Thru	42.1	8.5459	0.5051	0.0000	21.1722
Retirement Community	36.8	7.4701	0.4415	0.0000	18.5068
Single Family Housing	417.38	84.7244	5.0071	0.0000	209.9010
Strip Mall	106.58	21.6348	1.2786	0.0000	53.5992
Supermarket	282	57.2435	3.3830	0.0000	141.8182
<b>Total</b>		<b>204.2840</b>	<b>12.0729</b>	<b>0.0000</b>	<b>506.1050</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

Keller Crossing - South Coast AQMD Air District, Annual

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

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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