Lakeside Homes

ENERGY ANALYSIS

CITY OF LAKE ELSINORE

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LIST OF ABBREVIATED TERMS

%	Percent
(1)	Reference
AQIA	Lakeside Homes Air Quality Impact Analysis
BTU	British Thermal Unit
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
CTA	core transport agents
EIA	Energy Information Administration
EMFAC	EMissions FACtor model
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
GHG	greenhouse gas
HHDT	Heavy-Heavy-Duty Diesel Truck
IEPR	Integrated Energy Policy Report
ISO	Independent Service Operator
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
LDA	light-duty-auto vehicles
LDT-1	Light Duty Trucks with weight class ranging 0-3750 lbs.
LDT-2	Light Duty Trucks with weight class ranging 3751-5750 lbs.
MHDT	medium-heavy duty trucks
MMcfd	million cubic feet per day
MPOs	Metropolitan Planning Organizations
Project	Lakeside Homes Project
PV	photovoltaic
RPS	California's Renewable Portfolio Standard
SB	Senate Bill
SCE	Southern California Edison
TEA-21	The Transportation Equity Act for the 21st Century
U.S.	United States
VMT	vehicle miles traveled

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Lakeside Homes Energy Analysis* is summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the 2019 California Environmental Quality Act (CEQA) Statute and Guidelines (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for potential energy impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Energy Impact #1: Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	4.6	*Less Than Significant*	*n/a*
Energy Impact #2: Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	4.6	*Less Than Significant*	*n/a*

ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the federal and state agencies that regulate energy use and consumption through various means and programs. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of energy usage include:

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

The Transportation Equity Act for the 21st Century (TEA-21)

Integrated Energy Policy Report (IEPR)

State of California Energy Plan

California Code Title 24, Part 6, Energy Efficiency Standards – Energy Code

California Code Title 24, Part 11, Green Building Standards - CalGreen

AB 1493 Pavley Regulations and Fuel Efficiency Standards

California's Renewable Portfolio Standard (RPS)

Clean Energy and Pollution Reduction Act of 2015 (SB 350)

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1 INTRODUCTION

This report presents the results of the energy analysis prepared by Urban Crossroads, Inc., for the proposed Lakeside Homes Project (Project). The purpose of this report is to quantify anticipated energy demand associated with construction and operation of the proposed Project, determine if the usage of the energy is inefficient, atypical, or wasteful for the land use type.

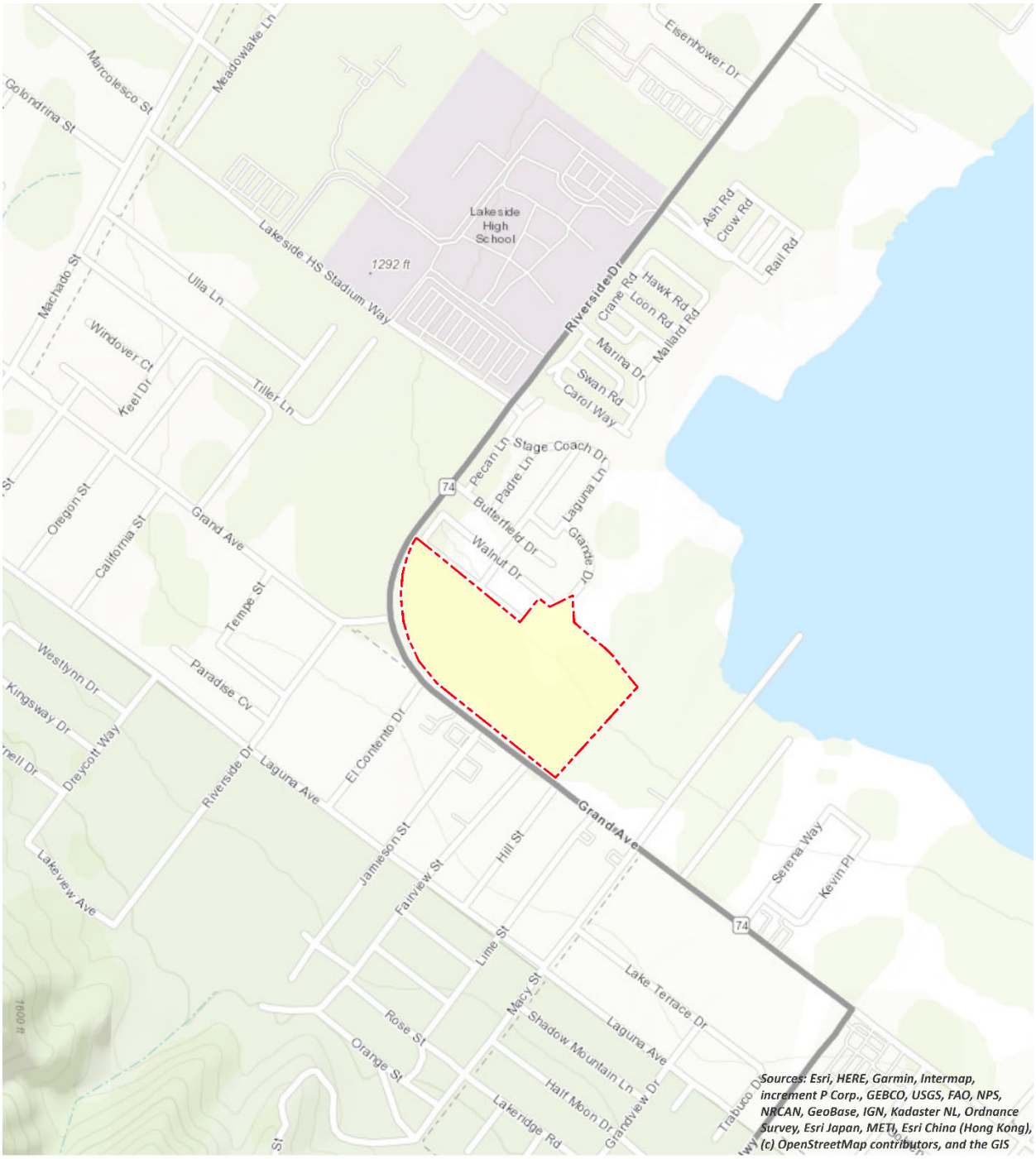
1.1 SITE LOCATION

The proposed project is located northeast of Grand Avenue/Riverside Drive (SR-74) in the City of Lake Elsinore as shown on Exhibit 1-A. The residential land uses are located adjacent to the north and south of the Project site across SR-74. The Lakeside High School is located 1,000 feet north of the Project site.

1.2 PROJECT DESCRIPTION

The Project is to consist of the development of 140 residential dwelling units use within 34.81 acres as shown on Exhibit 1-B. It is anticipated that the Project will be developed in a single phase with an anticipated Opening Year of 2023. Based on the Project traffic impact analysis (TIA), the project would generate 1,322 trip ends per day (2).

EXHIBIT 1-A: LOCATION MAP

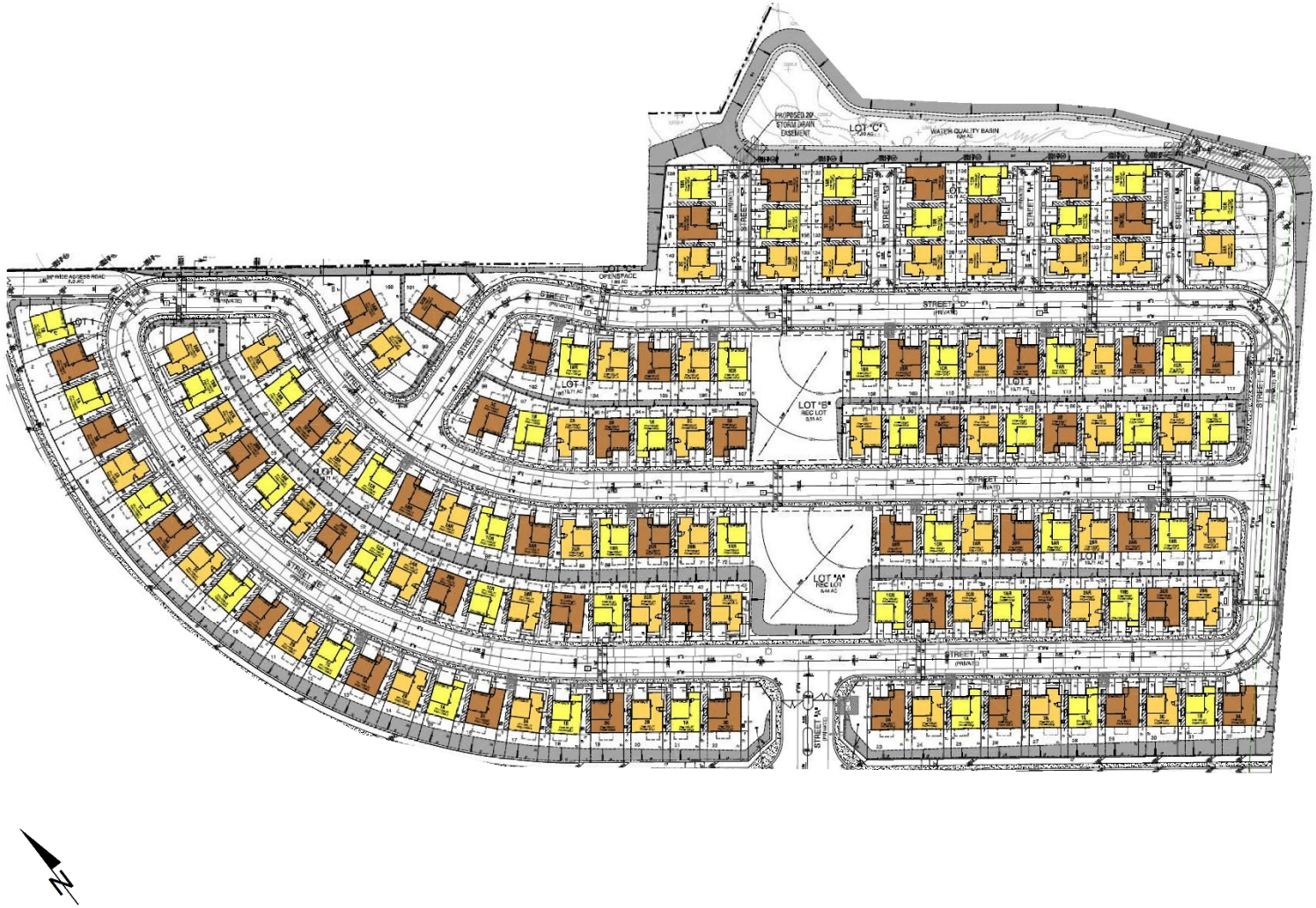


LEGEND:

N

Site Boundary

EXHIBIT 1-B: SITE PLAN



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2 EXISTING CONDITIONS

This section provides an overview of the existing energy conditions in the Project region.

2.1 OVERVIEW

The most recent data for California's estimated total energy consumption and natural gas consumption is from 2018, released by the United States (U.S.) Energy Information Administration's (EIA) California State Profile and Energy Estimates in 2020 and included (3):

- Approximately 7,900 trillion British Thermal Unit (BTU) of energy was consumed;
- Approximately 3,444 trillion BTU of petroleum;
- Approximately 2,210 trillion BTU of natural gas;
- Approximately 33.3 trillion BTU coal (3)

The California Energy Commission's (CEC) Transportation Energy Demand Forecast 2018-2030 was released in order to support the 2017 Integrated Energy Policy Report. The Transportation energy Demand Forecast 2018-2030 lays out graphs and data supporting their projections of California's future transportation energy demand. The projected inputs consider expected variable changes in fuel prices, income, population, and other variables. Predictions regarding fuel demand included:

Gasoline demand in the transportation sector is expected to decline from approximately 15.8 billion gallons in 2017 to between 12.3 billion and 12.7 billion gallons in 2030 (4)

Diesel demand in the transportation sector is expected to rise, increasing from approximately 3.7 billion diesel gallons in 2015 to approximately 4.7 billion in 2030 (4)

- Data from the Department of Energy states that approximately 3.9 billion gallons of diesel fuel were consumed in 2017 (5)

The most recent data provided by the EIA for energy use in California by demand sector is from 2017 and is reported as follows:

Approximately 40.3% transportation;

Approximately 23.1% industrial;

Approximately 18.0% residential; and

Approximately 18.7% commercial (6)

The most recent data provided by the EIA for energy use in California by demand sector is from 2018 and is reported as follows:

- Approximately 39.1% transportation;
- Approximately 23.5% industrial;
- Approximately 18.3% residential; and
- Approximately 19.2% commercial (6)

In 2020, total system electric generation for California was 277,704 gigawatt hours (GWh). California's massive electricity in-state generation system generated approximately 200,475 GWh which accounted for approximately 72.2% of the electricity it uses; the rest was imported from the Pacific Northwest (8.6%) and the U.S. Southwest (19.2%) (7). Natural gas is the main source for electricity generation at 34.23% of the total in-state electric generation system power as shown in Table 2-1. Renewables account for 31.7% of the total electrical system power.

TABLE 2-1: TOTAL ELECTRICITY SYSTEM POWER (CALIFORNIA 2020)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total California Energy Mix (GWh)	Total California Power Mix
Coal	317	0.17%	194	6,963	7,474	2.74%
Natural Gas	92,298	48.35%	70	8,654	101,022	37.06%
Oil	30	0.02%	-	-	30	0.01%
Other	384	0.20%	125	9	518	0.19%
Nuclear	16,280	8.53%	672	8,481	25,434	9.33%
Large Hydro	17,938	9.40%	14,078	1,259	33,275	12.21%
Unspecified	0	0.00%	12,870	1,745	14,615	5.36%
Total Non-Renewables and Unspecified Energy	127,248	66.65%	28,009	27,111	182,368	66.91%
Biomass	5,680	2.97%	975	25	6,679	2.45%
Geothermal	11,345	5.94%	166	1,825	13,336	4.89%
Small Hydro	3,476	1.82%	320	2	3,798	1.39%
Solar	29,456	15.43%	284	6,312	36,052	13.23%
Wind	13,708	7.18%	11,438	5,197	30,343	11.13%
Total Renewables	63,665	33.35%	13,184	13,359	90,208	33.09%
Total System Energy	190,913	100.00%	41,193	40,471	272,576	100.00%

Source: CEC, 2020 Total System Electric Generation

An updated summary of, and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below:

- California was the seventh-largest producer of crude oil among the 50 states in 2018, and, as of January 2019, it ranked third in oil refining capacity.
- California is the largest consumer of jet fuel among the 50 states and accounted for one-fifth of the nation's jet fuel consumption in 2018. (8)
- California's total energy consumption is second highest in the nation, but, in 2018, the state's per capita energy consumption was the fourth-lowest, due in part to its mild climate and its energy efficiency programs. (9)
- In 2018, California ranked first in the nation as a producer of electricity from solar, geothermal, and biomass resources and fourth in the nation in conventional hydroelectric power generation.

- In 2018, large- and small-scale solar photovoltaic (PV) and solar thermal installations provided 19% of California's net electricity generation (10).

As indicated above, California is one of the nation's leading energy-producing states, and California's per capita energy use is among the nation's most efficient. Given the nature of the Project, the remainder of this discussion will focus on the three sources of energy that are most relevant to the Project—namely, electricity, natural gas, and transportation fuel for vehicle trips associated with the uses planned for the Project.

2.2 ELECTRICITY

The usage associated with electricity use were calculated using the California Emissions Estimator Model (CalEEMod) Version 2020.4.0. The Southern California region's electricity reliability has been of concern for the past several years due to the planned retirement of aging facilities that depend upon once-through cooling technologies, as well as the June 2013 retirement of the San Onofre Nuclear Generating Station (San Onofre). While the once-through cooling phase-out has been ongoing since the May 2010 adoption of the State Water Resources Control Board's once-through cooling policy, the retirement of San Onofre complicated the situation. California Independent Service Operator (ISO) studies revealed the extent to which the South California Air Basin and the San Diego Air Basin region were vulnerable to low-voltage and post-transient voltage instability concerns. A preliminary plan to address these issues was detailed in the 2013 Integrative Energy Policy Report (IEPR) after a collaborative process with other energy agencies, utilities, and air districts (11). Similarly, the subsequent 2020 IEPR's identifies broad strategies that are aimed at maintaining electricity system reliability.

Electricity is currently provided to the Project by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons in 15 counties and in 180 incorporated cities, within a service area encompassing approximately 50,000 square miles. Based on SCE's 2019 Power Content Label Mix, SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms (12). SCE also purchases from independent power producers and utilities, including out-of-state suppliers (13).

California's electricity industry is an organization of traditional utilities, private generating companies, and state agencies, each with a variety of roles and responsibilities to ensure that electrical power is provided to consumers. The California Independent Service Operator ISO is a nonprofit public benefit corporation and is the impartial operator of the State's wholesale power grid and is charged with maintaining grid reliability, and to direct uninterrupted electrical energy supplies to California's homes and communities. While utilities still own transmission assets, the ISO routes electrical power along these assets, maximizing the use of the transmission system and its power generation resources. The ISO matches buyers and sellers of electricity to ensure that enough power is available to meet demand. To these ends, every five minutes the ISO forecasts electrical demands, accounts for operating reserves, and assigns the lowest cost power plant unit to meet demands while ensuring adequate system transmission capacities and capabilities (14).

Part of the ISO's charge is to plan and coordinate grid enhancements to ensure that electrical power is provided to California consumers. To this end, transmission file annual transmission expansion/modification plans to accommodate the State's growing electrical needs. The ISO reviews and either approves or denies the proposed additions. In addition, and perhaps most importantly, the ISO works with other areas in the western United States electrical grid to ensure that adequate power supplies are available to the State. In this manner, continuing reliable and affordable electrical power is assured to existing and new consumers throughout the State.

Table 2-2 identifies SCE's specific proportional shares of electricity sources in 2019. As indicated in Table 2-2, the 2019 SCE Power Mix has renewable energy at 35.1% of the overall energy resources. Geothermal resources are at 5.9%, wind power is at 11.5%, large hydroelectric sources are at 7.9%, solar energy is at 16%, and coal is at 0%. (15).

TABLE 2-2: SCE 2019 POWER CONTENT MIX

Energy Resources	2019 SCE Power Mix
Eligible Renewable	**35.10%**
Biomass & waste	0.60%
Geothermal	5.90%
Small Hydroelectric	1.00%
Solar	16.00%
Wind	11.50%
Coal	**0%**
Large Hydroelectric	**7.90%**
Natural Gas	**16.10%**
Nuclear	**8.20%**
Other	**0.10%**
Unspecified Sources of	32.60%
Total	**100%**

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

2.3 NATURAL GAS

The following summary of natural gas customers & volumes, supplies, delivery of supplies, storage, service options, and operations is excerpted from information provided by the California Public Utilities Commission (CPUC).

> *"The CPUC regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller natural gas utilities. The CPUC also regulates independent storage operators: Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.*
>
> *California's natural gas utilities provide service to over 11 million gas meters. SoCalGas and PG&E provide service to about 5.9 million and 4.3 million customers, respectively,*

while SDG&E provides service to over 800, 000 customers. In 2018, California gas utilities forecasted that they would deliver about 4740 million cubic feet per day (MMcfd) of gas to their customers, on average, under normal weather conditions.

The overwhelming majority of natural gas utility customers in California are residential and small commercials customers, referred to as "core" customers. Larger volume gas customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.

A significant amount of gas (about 19%, or 1131 MMcfd, of the total forecasted California consumption in 2018) is also directly delivered to some California large volume consumers, without being transported over the regulated utility pipeline system. Those customers, referred to as "bypass" customers, take service directly from interstate pipelines or directly from California producers.

SDG&E and Southwest Gas' southern division are wholesale customers of SoCalGas, i.e., they receive deliveries of gas from SoCalGas and in turn deliver that gas to their own customers. (Southwest Gas also provides natural gas distribution service in the Lake Tahoe area.) Similarly, West Coast Gas, a small gas utility, is a wholesale customer of PG&E. Some other wholesale customers are municipalities like the cities of Palo Alto, Long Beach, and Vernon, which are not regulated by the CPUC.

Natural gas from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California gas utilities are Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Mojave Pipeline, and Tuscarora. Another pipeline, the North Baja - Baja Norte Pipeline takes gas off the El Paso Pipeline at the California/Arizona border, and delivers that gas through California into Mexico. While the Federal Energy Regulatory Commission (FERC) regulates the transportation of natural gas on the interstate pipelines, and authorizes rates for that service, the California Public Utilities Commission may participate in FERC regulatory proceedings to represent the interests of California natural gas consumers.

The gas transported to California gas utilities via the interstate pipelines, as well as some of the California-produced gas, is delivered into the PG&E and SoCalGas intrastate natural gas transmission pipelines systems (commonly referred to as California's "backbone" pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered to the local transmission and distribution pipeline systems, or to natural gas storage fields. Some large volume noncore customers take natural gas delivery directly off the high-pressure backbone and local transmission pipeline systems, while core customers and other noncore customers take delivery off the utilities' distribution pipeline systems. The state's natural gas utilities operate over 100,000 miles of transmission and distribution pipelines, and thousands more miles of service lines.

Bypass customers take most of their deliveries directly off the Kern/Mojave pipeline system, but they also take a significant amount of gas from California production.

PG&E and SoCalGas own and operate several natural gas storage fields that are located within their service territories in northern and southern California, respectively. These storage fields, and four independently owned storage utilities - Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage - help meet peak seasonal and daily natural gas demand and allow California natural gas customers to secure natural gas supplies more efficiently. PG&E is a 25% owner of the Gill Ranch Storage field. These storage fields provide a significant amount of infrastructure capacity to help meet California's natural gas requirements, and without these storage fields, California would need much more pipeline capacity in order to meet peak gas requirements.

Prior to the late 1980s, California regulated utilities provided virtually all natural gas services to all their customers. Since then, the Commission has gradually restructured the California gas industry in order to give customers more options while assuring regulatory protections for those customers that wish to, or are required to, continue receiving utility-provided services.

The option to purchase natural gas from independent suppliers is one of the results of this restructuring process. Although the regulated utilities procure natural gas supplies for most core customers, core customers have the option to purchase natural gas from independent natural gas marketers, called "core transport agents" (CTA). Contact information for core transport agents can be found on the utilities' web sites. Noncore customers, on the other hand, make natural gas supply arrangements directly with producers or with marketers.

Another option resulting from the restructuring process occurred in 1993, when the Commission removed the utilities' storage service responsibility for noncore customers, along with the cost of this service from noncore customers' transportation rates. The Commission also encouraged the development of independent storage fields, and in subsequent years, all the independent storage fields in California were established. Noncore customers and marketers may now take storage service from the utility or from an independent storage provider (if available), and pay for that service, or may opt to take no storage service at all. For core customers, the Commission assures that the utility has adequate storage capacity set aside to meet core requirements, and core customers pay for that service.

In a 1997 decision, the Commission adopted PG&E's "Gas Accord", which unbundled PG&E's backbone transmission costs from noncore transportation rates. This decision gave customers and marketers the opportunity to obtain pipeline capacity rights on PG&E's backbone transmission pipeline system, if desired, and pay for that service at rates authorized by the Commission. The Gas Accord also required PG&E to set aside a certain amount of backbone transmission capacity in order to deliver gas to its core customers. Subsequent Commission decisions modified and extended the initial terms of the Gas Accord. The "Gas Accord" framework is still in place today for PG&E's backbone

and storage rates and services and is now simply referred to as PG&E Gas Transmission and Storage (GT&S).

In a 2006 decision, the Commission adopted a similar gas transmission framework for Southern California, called the "firm access rights" system. SoCalGas and SDG&E implemented the firm access rights system in 2008, and it is now referred to as the backbone transmission system framework. As under the PG&E backbone transmission system, SoCalGas backbone transmission costs are unbundled from noncore transportation rates. Noncore customers and marketers may obtain, and pay for, firm backbone transmission capacity at various receipt points on the SoCalGas system. A certain amount of backbone transmission capacity is obtained for core customers to assure meeting their requirements.

Many if not most noncore customers now use a marketer to provide for several of the services formerly provided by the utility. That is, a noncore customer may simply arrange for a marketer to procure its supplies, and obtain any needed storage and backbone transmission capacity, in order to assure that it will receive its needed deliveries of natural gas supplies. Core customers still mainly rely on the utilities for procurement service, but they have the option to take procurement service from a CTA. Backbone transmission and storage capacity is either set aside or obtained for core customers in amounts to assure very high levels of service.

In order properly operate their natural gas transmission pipeline and storage systems, PG&E and SoCalGas must balance the amount of gas received into the pipeline system and delivered to customers or to storage fields. Some of these utilities' storage capacity is dedicated to this service, and under most circumstances, customers do not need to precisely match their deliveries with their consumption. However, when too much or too little gas is expected to be delivered into the utilities' systems, relative to the amount being consumed, the utilities require customers to more precisely match up their deliveries with their consumption. And, if customers do not meet certain delivery requirements, they could face financial penalties. The utilities do not profit from these financial penalties - the amounts are then returned to customers as a whole. If the utilities find that they are unable to deliver all the gas that is expected to be consumed, they may even call for a curtailment of some gas deliveries. These curtailments are typically required for just the largest, noncore customers. It has been many years since there has been a significant curtailment of core customers in California." (16)

As indicated in the preceding discussions, natural gas is available from a variety of in-state and out-of-state sources and is provided throughout the state in response to market supply and demand. Complementing available natural gas resources, biogas may soon be available via existing delivery systems, thereby increasing the availability and reliability of resources in total. The CPUC oversees utility purchases and transmission of natural gas to ensure reliable and affordable natural gas deliveries to existing and new consumers throughout the State.

2.4 TRANSPORTATION ENERGY RESOURCES

The Project would generate additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. In March 2019, the Department of Motor Vehicles identified 36.4 million registered vehicles in California (17), and those vehicles consume an estimated 17.8 billion gallons of fuel each year[1]. Gasoline (and other vehicle fuels) are commercially provided commodities and would be available to the Project patrons and employees via commercial outlets.

California's on-road transportation system includes 394,383 land miles, more than 27.5 million passenger vehicles and light trucks, and almost 8.1 million medium- and heavy-duty vehicles (17). While gasoline consumption has been declining since 2008 it is still by far the dominant fuel. Petroleum comprises about 91% of all transportation energy use, excluding fuel consumed for aviation and most marine vessels (18). Nearly 17.8 billion gallons of on-highway fuel are burned each year, including 14.6 billion gallons of gasoline (including ethanol) and 3.2 billion gallons of diesel fuel (including biodiesel and renewable diesel). In 2019, Californians also used 194 million cubic feet of natural gas as a transportation fuel (19), or the equivalent of 183 billion gallons of gasoline.

[1] Fuel consumptions estimated utilizing information from EMFAC2017.

3 REGULATORY BACKGROUND

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States (U.S.) Department of Transportation, the United States Department of Energy, and the U.S. Environmental Protection Agency (EPA) are three federal agencies with substantial influence over energy policies and programs. On the state level, the CPUC and the CEC are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below.

3.1 FEDERAL REGULATIONS

3.1.1 INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT OF 1991 (ISTEA)

The ISTEA promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

3.1.2 THE TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21)

The TEA-21 was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

3.2 CALIFORNIA REGULATIONS

3.2.1 INTEGRATED ENERGY POLICY REPORT (IEPR)

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code § 25301a]). The Energy Commission prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The 2019 IEPR was adopted January 31, 2020, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2019 IEPR focuses on a variety of topics such as including the environmental performance of the electricity generation system, landscape-scale planning, the response to the gas leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues, updates on Southern California electricity reliability, methane leakage, climate adaptation activities for the energy sector, climate and sea level rise scenarios, and the California Energy Demand Forecast (20). The 2020 IEPR Update is currently in progress but is not anticipated to be adopted until February 2021.

3.2.2 STATE OF CALIFORNIA ENERGY PLAN

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

3.2.3 CALIFORNIA CODE TITLE 24, PART 6, ENERGY EFFICIENCY STANDARDS

California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Energy Code), 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 greenhouse gas (GHG) emissions. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020. The 2019 Energy Code is applicable to building permit applications submitted on or after January 1, 2020. The 2019 Energy Code requires solar PV systems for new homes, establishes requirements for newly constructed healthcare facilities, encourages demand responsive technologies for residential buildings, and updates indoor and outdoor lighting standards for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards use approximately 7% less energy compared to the residential homes built under the 2016 Energy Code and 53% more efficient with the installation of solar PV systems. Nonresidential buildings are approximately 30% less energy due to lighting upgrades compared to the 2016 Energy Code (21).

3.2.4 AB 1493 PAVLEY REGULATIONS AND FUEL EFFICIENCY STANDARDS

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. Under this legislation, CARB adopted regulations to reduce GHG emissions from non-commercial passenger vehicles (cars and light-duty trucks). Although aimed at reducing GHG emissions, specifically, a co-benefit

of the Pavley standards is an improvement in fuel efficiency and consequently a reduction in fuel consumption.

3.2.5 CALIFORNIA'S RENEWABLE PORTFOLIO STANDARD (RPS)

First established in 2002 under Senate Bill (SB) 1078, California's Renewable Portfolio Standards (RPS) requires retail sellers of electric services to increase procurement from eligible renewable resources to 33% of total retail sales by 2020 (22).

3.2.6 CLEAN ENERGY AND POLLUTION REDUCTION ACT OF 2015 (SB 350)

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 renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. 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 Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.

Reorganize the Independent System Operator (ISO) 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 (California Leginfo 2015).

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4 PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

4.1 EVALUATION CRITERIA

In compliance with Appendix G of the *State CEQA Guidelines* (1), this report analyzes the Project's anticipated energy use during construction and operations to determine if the Project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

4.2 METHODOLOGY

Appendix F of the *State CEQA Guidelines* (23), provides some guidance for assessing these criteria, which implies that the means of achieving the goal of energy conservation includes decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy sources. Additionally, the CEQA Guidelines state "[a] lead agency may consider the extent to which an energy source serving the project has already undergone environmental review that adequately analyzed and mitigated the effects of energy production."

Information from the CalEEMod Version 2020.4.0 outputs for the *Lakeside Homes Air Quality Impact Analysis* (Urban Crossroads, Inc.) (AQIA) (24) was utilized in this analysis, detailing Project related construction equipment, transportation energy demands, and facility energy demands.

4.2.1 CALEEMOD

In June 2021, the SCAQMD, in conjunction with the California Air Pollution Control Officers Association and other California air districts, released the latest version of the CalEEMod Version 2020.4.0. The purpose of this model is to calculate construction-source and operational-source criteria pollutants and GHG emissions from direct and indirect sources as well as energy usage. (25). Accordingly, the latest version of CalEEMod has been used to determine the proposed Project's anticipated transportation and facility energy demands. Output from the annual CalEEMod runs is provided in Appendix 4.1.

4.2.2 EMISSION FACTORS MODEL

On August 19, 2019, the EPA approved the 2017 version of the EMissions FACtor model (EMFAC) web database for use in State Implementation Plan and transportation conformity analyses. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (26). This energy study utilizes the different fuel types for each vehicle class from the annual EMFAC2017 emission inventory in order to derive the average vehicle fuel economy which is then used to determine the estimated annual fuel consumption associated with vehicle usage during Project construction and operational activities. For purposes of

analysis, the 2022 and 2023 analysis years were utilized to determine the average vehicle fuel economy for construction and operation the Project, respectively. These are conservative years as fuel efficiencies improve each year over the previous year and energy consumption lowers.

4.3 CONSTRUCTION ENERGY DEMANDS

4.3.1 CONSTRUCTION POWER COST AND ELECTRICITY USAGE

The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed Project.

CONSTRUCTION DURATION

Construction is expected to commence in July 2022 and will last through November 2025. The construction schedule utilized in the analysis, shown in Table 4-1, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[2] The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines. The duration of construction activities was based on the Project Applicant's schedule.

+TABLE 4-1: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Site Preparation	7/4/2022	8/12/2022	30
Grading	8/13/2022	11/25/2022	75
Building Construction	11/26/2022	11/10/2025	771
Paving	7/15/2024	11/10/2025	346
Trenching	1/9/2023	6/12/2023	111
Architectural Coating	5/15/2023	11/10/2025	651

Source: CalEEMod, Appendix 4.1.

Based on the *2021 National Construction Estimator*, Richard Pray (2021) (27), the typical power cost per 1,000 sf of construction per month is estimated to be $2.37. Based on the Project plans, the proposed Project includes the development of approximately 252,000 sf residential land uses, 849,420 square feet of open space and park land, and 200,376 square feet of internal roadways. Based on information provided in the AQIA, construction activities are anticipated to occur over the course of 40 months (24). Based on Table 4-2, the total power cost of the on-site electricity usage during the construction of the Project is estimated to be approximately $123,410.26.

[2] As shown in the CalEEMod User's Guide Version 2016.3.2, Section 4.3 "Offroad Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

TABLE 4-2: CONSTRUCTION POWER COST

Land Use	Power Cost (per 1,000 SF of building per month of construction)	Total Building Size (1,000 SF)	Construction Duration (months)	Total Project Construction Power Cost
Residential	$2.37	252.000	40	$23,889.60
Park	$2.37	849.420	40	$80,525.02
Other Asphalt Surfaces	$2.37	200.376	40	$18,995.64
TOTAL PROJECT CONSTRUCTION COST				***$123,410.26***

The SCE's general service rate schedule were used to determine the Project's electrical usage. As of June 1, 2020, SCE's general service rate is $0.11 per kilowatt hours (kWh) of electricity for residential services (28). As shown on Table 4-3, the total electricity usage from on-site Project construction related activities is estimated to be approximately 1,121,911 kWh.

TABLE 4-3: CONSTRUCTION ELECTRICITY USAGE

Land Use	Cost per kWh	Total Project Construction Electricity Usage (kWh)
Residential	$0.11	217,178
Park	$0.11	732,046
Other Asphalt Surfaces	$0.11	172,688
TOTAL PROJECT CONSTRUCTION ELECTRICTY USAGE (kWh)		***1,121,911***

4.3.2 CONSTRUCTION EQUIPMENT FUEL ESTIMATES

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Project construction.

CONSTRUCTION EQUIPMENT

Consistent with industry standards and typical construction practices, each piece of equipment listed in Table 4-4 will operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the code. It should be noted that most pieces of equipment would likely operate for fewer hours per day. A summary of construction equipment assumptions by phase is provided at Table 4-4.

Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in Table 4-5. Eight-hour daily use of all equipment is assumed. The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hour per gallon (hp-hr-gal.), obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines (29).

TABLE 4-4: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase Name	Offroad Equipment Type	Amount	Usage Hours
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	1	8
	Forklifts	3	8
	Generator Sets	2	8
	Tractors/Loaders/Backhoes	3	8
Offsite Sewer	Concrete/Industrial Saws	1	8
	Rubber Tired Loaders	1	8
	Tractors/Loaders/Backhoes	1	8
Architectural Coating	Air Compressors	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8

Source: CalEEMod, Appendix 4.1.

Calculations assume all construction equipment is diesel-powered consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the County. As presented in Table 4-5, Project construction activities would consume an estimated 329,564 gallons of diesel fuel. Project construction would represent a “single-event” diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

TABLE 4-5: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES

Activity/Duration	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
Demolition	84	Concrete/Industrial Saws	81	2	8	0.73	946	4,296
		Excavators	158	5	8	0.38	2,402	10,905
		Rubber Tired Dozers	247	3	8	0.40	2,371	10,767
Site Preparation	125	Crawler Tractors	97	4	8	0.37	1,148	7,760
		Rubber Tired Dozers	247	3	8	0.40	2,371	16,022
Grading	130	Crawler Tractors	97	2	8	0.37	574	4,035
		Excavators	158	3	8	0.38	1,441	10,126
		Graders	187	1	8	0.41	613	4,310
		Rubber Tired Dozers	247	1	8	0.40	790	5,554
Building Construction	865	Scrapers	367	2	8	0.48	2,819	131,787
		Cranes	231	1	8	0.29	536	25,058
		Forklifts	89	3	8	0.20	427	19,974
		Generator Sets	84	1	8	0.74	497	23,251
		Tractors/Loaders/Backhoes	97	3	8	0.37	861	40,274
Paving	125	Welders	46	1	8	0.45	166	1,119
		Pavers	130	2	8	0.42	874	5,903
		Paving Equipment	132	2	8	0.36	760	5,137
Architectural Coating	125	Rollers	80	2	8	0.38	486	3,286
CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)								***329,564***

4.3.3 CONSTRUCTION TRIPS AND VMT

Based on the CalEEMod, the Trip and VMT are the number and length (in terms VMT[3]) of on-road vehicle trips for workers and vendors for each construction phase. The trips identified in Table 4-6 are based on information taken from CalEEMod and adjusted to the overall length of each phase with an completion year of 2025.

TABLE 4-6: CONSTRUCTION TRIPS AND VMT

Phase Name	Worker Trips / Day	Vendor Trips / Day	Hauling Trips / Day	Worker Trip Length	Vendor Trip Length	Hauling Trip Length
Site Preparation	18	0	0	14.7	6.9	20
Grading	20	0	5650	14.7	6.9	20
Building Construction	491	187	0	14.7	6.9	20
Paving	5	0	0	14.7	6.9	20
Trenching	98	0	0	14.7	6.9	20
Architectural Coating	15	0	0	14.7	6.9	20

Source: CalEEMod, Appendix 4.1.

4.3.4 CONSTRUCTION WORKER FUEL ESTIMATES

With respect to estimated VMT for the Project, the construction worker trips would generate an estimated 5,982,488 VMT during the 40 months of construction (24). Based on CalEEMod methodology, emissions from construction worker trips are generated by light-duty-auto vehicles (LDA), light-duty-trucks 1 (LDT1[4]), and light-duty-trucks 2 (LDT2[5]). Based on EMFAC2017 vehicle population data for Year 2022, 70.9% of these vehicles would be LDA, 7.2% would be LDT1, and 21.9% would be LDT2. Data regarding Project related construction worker trips were based on EMFAC2017 inputs utilized within the AQIA.

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2017 version of the EMFAC developed by CARB. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (26). EMFAC2017 was run for the LDA, LDT1, and LDT2 vehicle class within the California sub-area for the 2022 calendar years. Data from EMFAC2017 is shown in Appendix 4.2. Using the static year 2022 is considered conservative for estimating fuel consumption as it does not account for fuel efficiency improvements each year.

[3] For purposes of analysis, VMT is calculated by multiplying to number of trips by the trip length.

[4] Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

[5] Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

As generated by EMFAC2017, an aggregated fuel economy of LDAs ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 32.77 miles per gallon (mpg). Table 4-7 provides an estimated annual fuel consumption resulting from LDAs related to the Project construction worker trips. Based on Table 4-7, it is estimated that 128,705 gallons of fuel will be consumed related to construction worker trips during full construction of the Project.

TABLE 4-7: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (LDA)

Construction Activity	Duration (Days)	Worker LDA Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Site Preparation	30	13	14.7	5,733	32.77	175
Grading	75	15	14.7	16,538	32.77	505
Building Construction	771	349	14.7	3,955,461	32.77	120,707
Paving	346	4	14.7	20,345	32.77	621
Trenching	111	70	14.7	114,219	32.77	3,486
Architectural Coating	651	11	14.7	105,267	32.77	3,212
TOTAL CONSTRUCTION WORKER (LDA) FUEL CONSUMPTION						***128,705***

The EMFAC2017 aggregated fuel economy of LDT1s ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency 27.55 mpg. Table 4-8 provides an estimated annual fuel consumption resulting from LDT1s related to the Project construction worker trips. Based on Table 4-8, it is estimated that 16,306 gallons of fuel will be consumed related to construction worker trips during full construction of the Project.

TABLE 4-8: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (LDT1)

Construction Activity	Duration (Days)	Worker LDT1 Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Site Preparation	30	2	14.7	1,764	27.55	64
Grading	75	2	14.7	2,205	27.55	80
Building Construction	771	36	14.7	408,013	27.55	14,809
Paving	346	1	14.7	5,086	27.55	185
Trenching	111	8	14.7	13,054	27.55	474
Architectural Coating	651	2	14.7	19,139	27.55	695
TOTAL CONSTRUCTION WORKER (LDT1) FUEL CONSUMPTION						***16,306***

The EMFAC2017 aggregated fuel economy of LDT2s ranging from model year 1974 to model years 2022 are estimated to have a fuel efficiency of 26.03 mpg. Table 4-9 provides an estimated annual fuel consumption resulting from LDT2s related to the Project construction worker trips. Based on Table 4-9, it is estimated that 50,543 gallons of fuel will be consumed related to construction worker trips during full construction of the Project.

TABLE 4-9: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (LDT2)

Construction Activity	Duration (Days)	Worker LDT2 Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Site Preparation	30	4	14.7	1,764	26.03	68
Grading	75	5	14.7	5,513	26.03	212
Building Construction	771	108	14.7	1,224,040	26.03	47,023
Paving	346	2	14.7	10,172	26.03	391
Trenching	111	22	14.7	35,897	26.03	1,379
Architectural Coating	651	4	14.7	38,279	26.03	1,471
TOTAL CONSTRUCTION WORKER (LDT2) FUEL CONSUMPTION						***50,543***

It should be noted that construction worker trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

4.3.5 CONSTRUCTION VENDOR AND HAULING FUEL ESTIMATES

Construction vendor trips (vehicles that deliver materials to the site during construction) are estimated to generate 158,769 VMT and hauling is anticipated to generate in 122,500 VMT along area roadways for the Project over the duration of construction activity (30). Based on CalEEMod standard inputs, vehicles associated with vendor trips are limited to medium-heavy duty trucks (MHDT) and heavy-heavy duty trucks (HHDT) (30). Similar to LDA, LDT1, and LDT fuel estimates, vehicle fuel efficiencies for MHDTs and HHDTs for vending trips were estimated using information generated within EMFAC2017. Based on EMFAC2017 vehicle population data for Year 2022, 54.7% of the heavy duty vehicles would be HHDTs and 45.3% would be MDHTs. For debris and soil hauling all trucks were assumed to be HHDT constituent with CalEEMod standard settings. Data from EMFAC2017 is shown in Appendix 4.2.

As generated by EMFAC2017, an aggregated fuel economy of MHDTs ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 10.37 mpg. Based on Table 4-10, it is estimated that 43,601 gallons of fuel will be consumed related to construction vendor trips (MHDTs) during full construction of the Project.

TABLE 4-10: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES (MHDT)

Construction Activity	Duration (Days)	Vendor Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Building Construction	771	85	6.9	452,192	10.37	43,601
TOTAL CONSTRUCTION VENDOR (MHDT) FUEL CONSUMPTION						***43,601***

Tables 4-11 shows the estimated fuel economy of HHDTs accessing the Project site. As generated by EMFAC2017, an aggregated fuel economy of HHDTs ranging from model year 1974 to model

year 2022 are estimated to have a fuel efficiency of 7.06 mpg. Based on Tables 4-11, fuel consumption from construction vendor trips (HHDTs) will total approximately 77,590 gallons.

TABLE 4-11: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES (HHDT)

Construction Activity	Duration (Days)	Vendor Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Building Construction	771	103	6.9	547,950	7.06	77,590
TOTAL CONSTRUCTION VENDOR (HHDT) FUEL CONSUMPTION						***77,590***

As generated by EMFAC2017, HHDTs are estimated to have a fuel efficiency of 7.06 mpg in 2022. Based on Table 4-12, it is estimated that 26, 16,142 gallons of fuel will be consumed related to construction vendor trips (MHDTs) during full construction of the Project.

TABLE 4-12: CONSTRUCTION HAULING FUEL CONSUMPTION ESTIMATES (HHDT)

Construction Activity	Duration (Days)	Hauling Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Grading	75	76	20	114,000	7.06	16,142
TOTAL CONSTRUCTION HAULING (HHDT) FUEL CONSUMPTION						***16,142***

It should be noted that Project construction vendor trips would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

4.3.6 CONSTRUCTION ENERGY EFFICIENCY/CONSERVATION MEASURES

Starting in 2014, CARB adopted the nation's first regulation aimed at cleaning up off-road construction equipment such as bulldozers, graders, and backhoes. These requirements ensure fleets gradually turnover the oldest and dirtiest equipment to newer, cleaner models and prevent fleets from adding older, dirtier equipment. As such, the equipment used for Project construction would conform to CARB regulations and California emissions standards. It should also be noted that there are no unusual Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

Construction contractors would be required to comply with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or

unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additional construction-source energy efficiencies would occur due to required California regulations and best available control measures. For example, CCR Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Section 2449(d)(3) requires that "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are required to be informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

A full analysis related to the energy needed to form construction materials is not included in this analysis due to a lack of detailed Project-specific information on construction materials. At this time, an analysis of the energy needed to create Project-related construction materials would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing, and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

4.4 OPERATIONAL ENERGY DEMANDS

Energy consumption in support of or related to Project operations would include transportation energy demands (energy consumed by passenger car and truck vehicles accessing the Project site) and facilities energy demands (energy consumed by building operations and site maintenance activities).

4.4.1 TRANSPORTATION ENERGY DEMANDS

Energy that would be consumed by Project-generated traffic is a function of total VMT and estimated vehicle fuel economies of vehicles accessing the Project site. As shown in Table 4-13, the Project will result in 4,462,113 annual VMT and an estimated annual fuel consumption of 165,281gallons of fuel. These calculations are conservative as they do not include any TDM measures, which are designed to reduce VMT from vehicles.

TABLE 4-13: TOTAL PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION (ALL VEHICLES)

Vehicle Type	Annual Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
LDA	2,423,550	33.8	71,732
LDT1	271,069	28.4	9,551
LDT2	824,421	27.0	30,511
MDV	581,226	21.5	27,091
LHD1	106,332	14.6	7,293
LHD2	28,348	15.3	1,858
MHD	52,287	10.8	4,853
HHD	40,770	7.4	5,483
OBUS	3,623	6.7	538
UBUS	2,271	6.2	365
MCY	107,952	37.9	2,849
SBUS	3,347	8.1	415
MH	16,916	6.2	2,742
Total (All Vehicles)	4,462,113	NA	**165,281**

4.4.2 FACILITY ENERGY DEMANDS

Project building operations activities would result in the consumption of natural gas and electricity. Natural gas would be supplied to the Project by SoCalGas; electricity would be supplied to the Project by SCE. As previously stated, the analysis herein assumes compliance with the 2019 Title 24 Standards. Annual natural gas and electricity demands of the Project are summarized in Table 4-14 and provided in Appendices 4.1.

TABLE 4-14: PROJECT ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY

Natural Gas Demand	kBTU/year
Residential	3,960,170
City Park	0
Other Asphalt Surfaces	0
TOTAL PROJECT NATURAL GAS DEMAND	***3,960,170***

Electricity Demand	kWh/year
Residential	1,115,050
City Park	0
Other Asphalt Surfaces	0
TOTAL PROJECT ELECTRICITY DEMAND	***1,115,050***

kBTU – kilo-British Thermal Units
kWh – Kilo Watt Hours

4.4.3 Operational Energy Efficiency/Conservation Measures

Energy efficiency/energy conservation attributes of the Project would be complemented by increasingly stringent state and federal regulatory actions addressing vehicle fuel economies and vehicle emissions standards; and enhanced building/utilities energy efficiencies mandated under California building codes (e.g., Title24, California Green Building Standards Code).

Enhanced Vehicle Fuel Efficiencies

Project annual fuel consumption estimates presented previously in Table 4-13 represent likely potential maximums that would occur for the Project. Under subsequent future conditions, average fuel economies of vehicles accessing the Project site can be expected to improve as older, less fuel-efficient vehicles are removed from circulation, and in response to fuel economy and emissions standards imposed on newer vehicles entering the circulation system.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease future gasoline fuel demands per VMT. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands.

4.5 Summary

4.5.1 Construction Energy Demands

The estimated power cost of on-site electricity usage during the construction of the Project is assumed to be approximately $123,410.26. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Project build-out, is calculated to be approximately 1,121,911 kWh.

Construction equipment used by the Project would result in single event consumption of approximately 329,564 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Project's proposed construction process that are unusual or energy-intensive, and Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

CCR Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than 5 minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Project would result in the estimated fuel consumption of 195,553 gallons of fuel. Additionally, fuel consumption from construction vendor and hauling trips (MHDTs and HHDTs) will total approximately 137,333 gallons. Diesel fuel would be supplied by regional commercial vendors. Indirectly, construction energy efficiencies and

energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2020 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements (20). As supported by the preceding discussions, Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

4.5.2 Operational Energy Demands

Transportation Energy Demands

Annual vehicular trips and related VMT generated by the operation of the Project would result in a fuel demand of 165,281 gallons of fuel.

Fuel would be provided by current and future commercial vendors. Trip generation and VMT generated by the Project are consistent with other mixed residential and commercial uses of similar scale and configuration, as reflected respectively in the Institute of Transportation Engineers Trip Generation Manual (10th Ed., 2017); and CalEEMod. As such, Project operations would not result in excessive and wasteful vehicle trips and VMT, nor excess and wasteful vehicle energy consumption compared to other residential developments of similar size.

In addition, enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease future gasoline fuel demands per VMT in the future. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands. The Project would implement sidewalks, facilitating and encouraging pedestrian access. Facilitating pedestrian and bicycle access would reduce VMT and associated energy consumption. In compliance with the California Green Building Standards Code and City requirements, the Project would promote the use of bicycles as an alternative mean of transportation by providing short-term and/or long-term bicycle parking accommodations. As supported by the preceding discussions, Project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

Facility Energy Demands

Project facility operational energy demands are estimated at: 3,960,170 kBTU/year of natural gas; and 1,115,050 kWh/year of electricity. Natural gas would be supplied to the Project by SoCalGas; electricity would be supplied by SCE. The Project proposes conventional residences, retail spaces, and offices that reflect contemporary energy efficient/energy conserving designs and operational programs. The Project does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other residential developments of similar scale and configuration.

Lastly, the Project will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Project energy demands would not be inefficient, wasteful, or otherwise unnecessary.

4.6 ENERGY FINDINGS AND RECOMMENDATIONS

4.6.1 ENERGY IMPACT 1

Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

As supported by the preceding analyses, Project construction and operations would not result in the inefficient, wasteful, or unnecessary consumption of energy. The Project would therefore not cause or result in the need for additional energy producing or transmission facilities. The Project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California.

4.6.2 ENERGY IMPACT 2

Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The Project's consistency with the applicable state and local plans is discussed below.

CONSISTENCY WITH ISTEA

Transportation and access to the Project site is provided by the local and regional roadway systems. The Project would not interfere with, nor otherwise obstruct intermodal transportation plans or projects that may be realized pursuant to the ISTEA because Southern California Association of Governments is not planning for intermodal facilities on or through the Project site.

CONSISTENCY WITH TEA-21

The Project site is located near major transportation corridors with proximate access to the Interstate freeway system. The site selected for the Project facilitates access acts to reduce vehicle miles traveled, takes advantage of existing infrastructure systems, and promotes land use compatibilities through collocation of similar uses. The Project supports the strong planning processes emphasized under TEA-21. The Project is therefore consistent with, and would not otherwise interfere with, nor obstruct implementation of TEA-21.

CONSISTENCY WITH IEPR

Electricity may be provided to the Project by SCE. SCE's *Clean Power and Electrification Pathway* white paper builds on existing state programs and policies. As such, the Project is consistent with, and would not otherwise interfere with, nor obstruct implementation the goals presented in the 2020 IEPR.

CONSISTENCY WITH STATE OF CALIFORNIA ENERGY PLAN

The Project site is located proximate to transportation corridors with access to the Interstate freeway system. The site selected for the Project facilitates access and takes advantage of existing infrastructure systems. The Project therefore supports urban design and planning processes identified under the State of California Energy Plan, is consistent with, and would not otherwise interfere with, nor obstruct implementation of the State of California Energy Plan.

CONSISTENCY WITH CALIFORNIA CODE TITLE 24, PART 6, ENERGY EFFICIENCY STANDARDS

The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2020. It should be noted that the analysis herein assumes compliance with the 2019 Title 24 Standards. It should be noted that according to the CEC non-residential buildings and residential buildings over four stories high are approximately 30% more energy efficient (21).

CONSISTENCY WITH AB 1493

AB 1493 is not applicable to the Project as it is a statewide measure establishing vehicle emissions standards. No feature of the Project would interfere with implementation of the requirements under AB 1493.

CONSISTENCY WITH RPS

California's Renewable Portfolio Standard is not applicable to the Project as it is a statewide measure that establishes a renewable energy mix. No feature of the Project would interfere with implementation of the requirements under RPS.

CONSISTENCY WITH SB 350

The proposed Project would use energy from SCE, which have committed to diversify their portfolio of energy sources by increasing energy from wind and solar sources. No feature of the Project would interfere with implementation of SB 350. Additionally, the Project would be designed and constructed to implement the energy efficiency measures for new residential developments and would include several measures designed to reduce energy consumption.

As shown above, the Project would not conflict with any of the state or local plans. As such, a less than significant impact is expected.

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5 REFERENCES

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6 CERTIFICATIONS

The contents of this energy analysis report represent an accurate depiction of the environmental impacts associated with the proposed Lakeside Homes. The information contained in this energy analysis report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 778-1971.

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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 4.1:

CALEEMOD PROJECT ANNUAL EMISSIONS MODEL OUTPUTS

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Lakeside Neighboorhood JN 14075 - South Coast AQMD Air District, Annual

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

Lakeside Neighboorhood JN 14075

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.60	Acre	4.60	200,376.00	0
City Park	19.50	Acre	19.50	849,420.00	0
Condo/Townhouse	138.00	Dwelling Unit	10.71	138,000.00	395

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	531.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - No Change

Land Use - Site Plan Acreage

Construction Phase - Applicant Input

Off-road Equipment - standard 8-hour day

Off-road Equipment - wood construction, no welders needed replaced with genset, all equipment except cranes increased for shorter consrruction period standard 8-hour day

Off-road Equipment - backhoe/loaders repalced crawler tractor, HP and LF repalced on crawler tractor with backhoe/loader HP and LF

Off-road Equipment -

Off-road Equipment - backhoe/loaders repalced crawler tractor, HP and LF repalced on crawler tractor with backhoe/loader HP and LF

Grading - Applicant Input

Lakeside Neighboorhood JN 14075 - South Coast AQMD Air District, Annual

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

Vehicle Trips - No trips associated

Woodstoves - units would not have fireplaces

Area Coating - No change

Water And Wastewater - CalGreen indoor reduction 20%

Construction Off-road Equipment Mitigation - SCAQMD ule 403

Off-road Equipment - Demolition is for a single small structure

Demolition -

Fleet Mix - No Change

Road Dust - No CHange

Consumer Products - no CHange

Landscape Equipment - No Change

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	0	12023
tblAreaCoating	Area_Residential_Exterior	0	93150
tblAreaCoating	Area_Residential_Interior	0	279450
tblConstructionPhase	NumDays	30.00	10.00
tblConstructionPhase	NumDays	75.00	60.00
tblConstructionPhase	NumDays	740.00	396.00
tblConstructionPhase	NumDays	50.00	4.00
tblConsumerProducts	ROG_EF	0	1.98E-05
tblConsumerProducts	ROG_EF_Degreaser	0	3.542E-07
tblConsumerProducts	ROG_EF_PesticidesFertilizers	0	5.152E-08
tblFireplaces	NumberGas	117.30	0.00
tblFireplaces	NumberNoFireplace	13.80	138.00
tblFireplaces	NumberWood	6.90	0.00
tblFleetMix	HHD	0.00	9.2090e-003
tblFleetMix	HHD	0.00	9.2090e-003
tblFleetMix	HHD	0.00	9.2090e-003

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

tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDA	0.00	0.54
tblFleetMix	LDT1	0.00	0.06
tblFleetMix	LDT1	0.00	0.06
tblFleetMix	LDT1	0.00	0.06
tblFleetMix	LDT2	0.00	0.19
tblFleetMix	LDT2	0.00	0.19
tblFleetMix	LDT2	0.00	0.19
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD2	0.00	6.4480e-003
tblFleetMix	LHD2	0.00	6.4480e-003
tblFleetMix	LHD2	0.00	6.4480e-003
tblFleetMix	MCY	0.00	0.02
tblFleetMix	MCY	0.00	0.02
tblFleetMix	MCY	0.00	0.02
tblFleetMix	MDV	0.00	0.13
tblFleetMix	MDV	0.00	0.13
tblFleetMix	MDV	0.00	0.13
tblFleetMix	MH	0.00	3.7210e-003
tblFleetMix	MH	0.00	3.7210e-003
tblFleetMix	MH	0.00	3.7210e-003
tblFleetMix	MHD	0.00	0.01
tblFleetMix	MHD	0.00	0.01
tblFleetMix	MHD	0.00	0.01
tblFleetMix	OBUS	0.00	8.1000e-004
tblFleetMix	OBUS	0.00	8.1000e-004

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

tblFleetMix	OBUS	0.00	8.1000e-004
tblFleetMix	SBUS	0.00	7.5100e-004
tblFleetMix	SBUS	0.00	7.5100e-004
tblFleetMix	SBUS	0.00	7.5100e-004
tblFleetMix	UBUS	0.00	5.0300e-004
tblFleetMix	UBUS	0.00	5.0300e-004
tblFleetMix	UBUS	0.00	5.0300e-004
tblGrading	MaterialImported	0.00	45,200.00
tblLandscapeEquipment	NumberSummerDays	0	250
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	HorsePower	212.00	97.00
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CH4IntensityFactor	0	0.033
tblProjectCharacteristics	CO2IntensityFactor	0	531.98
tblProjectCharacteristics	N2OIntensityFactor	0	0.004
tblProjectCharacteristics	PrecipitationFrequency	0	31
tblProjectCharacteristics	WindSpeed	0	2.2
tblRoadDust	MaterialMoistureContent	0	0.5
tblRoadDust	MaterialSiltContent	0	4.3
tblRoadDust	MeanVehicleSpeed	0	40
tblRoadDust	MobileAverageVehicleWeight	0	2.4

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

tblRoadDust	RoadPercentPave	0	100
tblRoadDust	RoadSiltLoading	0	0.1
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	WD_TR	0.78	0.00
tblWater	IndoorWaterUseRate	8,991,255.54	7,193,004.43

2.0 Emissions Summary

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	0.4455	3.9267	4.0073	0.0123	0.9915	0.1472	1.1387	0.3194	0.1370	0.4564	0.0000	1,141.9314	1,141.9314	0.1306	0.0733	1,167.0382
2023	0.9584	3.3301	5.3083	0.0153	0.9286	0.1200	1.0486	0.2500	0.1126	0.3626	0.0000	1,412.4157	1,412.4157	0.1240	0.0762	1,438.2343
Maximum	**0.9584**	**3.9267**	**5.3083**	**0.0153**	**0.9915**	**0.1472**	**1.1387**	**0.3194**	**0.1370**	**0.4564**	**0.0000**	**1,412.4157**	**1,412.4157**	**0.1306**	**0.0762**	**1,438.2343**

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	0.4455	3.9267	4.0073	0.0123	0.5162	0.1472	0.6634	0.1648	0.1370	0.3018	0.0000	1,141.9309	1,141.9309	0.1306	0.0733	1,167.0378
2023	0.9584	3.3301	5.3083	0.0153	0.5691	0.1200	0.6891	0.1618	0.1126	0.2744	0.0000	1,412.4152	1,412.4152	0.1240	0.0762	1,438.2339
Maximum	**0.9584**	**3.9267**	**5.3083**	**0.0153**	**0.5691**	**0.1472**	**0.6891**	**0.1648**	**0.1370**	**0.3018**	**0.0000**	**1,412.4152**	**1,412.4152**	**0.1306**	**0.0762**	**1,438.2339**

Lakeside Neighboorhood JN 14075 - 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	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**43.48**	**0.00**	**38.17**	**42.64**	**0.00**	**29.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-3-2022**	**4-2-2022**	0.4899	0.4899
2	**4-3-2022**	**7-2-2022**	1.7284	1.7284
3	**7-3-2022**	**10-2-2022**	1.0122	1.0122
4	**10-3-2022**	**1-2-2023**	1.0285	1.0285
5	**1-3-2023**	**4-2-2023**	0.8842	0.8842
6	**4-3-2023**	**7-2-2023**	0.8771	0.8771
7	**7-3-2023**	**9-30-2023**	0.8675	0.8675
		Highest	1.7284	1.7284

Lakeside Neighboorhood JN 14075 - South Coast AQMD Air District, Annual

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6549	0.0233	1.8457	1.4500e-003		0.0769	0.0769		0.0769	0.0769	9.2354	2.3253	11.5607	0.0454	0.0000	12.6959
Energy	0.0157	0.1342	0.0571	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	321.0092	321.0092	0.0133	4.0900e-003	322.5605
Mobile	0.5150	0.6301	5.3759	0.0121	1.2939	8.8600e-003	1.3028	0.3453	8.2400e-003	0.3536	0.0000	1,138.5542	1,138.5542	0.0718	0.0495	1,155.1067
Waste						0.0000	0.0000		0.0000	0.0000	13.2269	0.0000	13.2269	0.7817	0.0000	32.7691
Water						0.0000	0.0000		0.0000	0.0000	2.2820	100.0835	102.3655	0.2406	6.2900e-003	110.2538
Total	**1.1856**	**0.7876**	**7.2786**	**0.0144**	**1.2939**	**0.0966**	**1.3905**	**0.3453**	**0.0960**	**0.4413**	**24.7443**	**1,561.9722**	**1,586.7165**	**1.1527**	**0.0599**	**1,633.3860**

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6549	0.0233	1.8457	1.4500e-003		0.0769	0.0769		0.0769	0.0769	9.2354	2.3253	11.5607	0.0454	0.0000	12.6959
Energy	0.0157	0.1342	0.0571	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	321.0092	321.0092	0.0133	4.0900e-003	322.5605
Mobile	0.5150	0.6301	5.3759	0.0121	1.2939	8.8600e-003	1.3028	0.3453	8.2400e-003	0.3536	0.0000	1,138.5542	1,138.5542	0.0718	0.0495	1,155.1067
Waste						0.0000	0.0000		0.0000	0.0000	13.2269	0.0000	13.2269	0.7817	0.0000	32.7691
Water						0.0000	0.0000		0.0000	0.0000	2.2820	100.0835	102.3655	0.2406	6.2900e-003	110.2538
Total	**1.1856**	**0.7876**	**7.2786**	**0.0144**	**1.2939**	**0.0966**	**1.3905**	**0.3453**	**0.0960**	**0.4413**	**24.7443**	**1,561.9722**	**1,586.7165**	**1.1527**	**0.0599**	**1,633.3860**

	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	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/1/2022	3/4/2022	5	4	
2	Site Preparation	Site Preparation	3/7/2022	3/18/2022	5	10	
3	Grading	Grading	3/21/2022	6/10/2022	5	60	

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

4	Building Construction	Building Construction	6/13/2022	12/18/2023	5	396	
5	Paving	Paving	10/3/2023	12/18/2023	5	55	
6	Architectural Coating	Architectural Coating	10/3/2023	12/18/2023	5	55	

Acres of Grading (Site Preparation Phase): 35

Acres of Grading (Grading Phase): 240

Acres of Paving: 4.6

Residential Indoor: 279,450; Residential Outdoor: 93,150; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 12,023 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Crawler Tractors	4	8.00	97	0.37
Grading	Excavators	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
Grading	Crawler Tractors	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48
Demolition	Excavators	1	8.00	158	0.38

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

Demolition	Rubber Tired Dozers	1	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
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	5,650.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	540.00	187.00	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	108.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	2	5.00	0.00	7.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 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					7.4000e-004	0.0000	7.4000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0800e-003	0.0211	0.0137	3.0000e-005		1.0100e-003	1.0100e-003		9.3000e-004	9.3000e-004	0.0000	2.4078	2.4078	7.8000e-004	0.0000	2.4272
Total	**2.0800e-003**	**0.0211**	**0.0137**	**3.0000e-005**	**7.4000e-004**	**1.0100e-003**	**1.7500e-003**	**1.1000e-004**	**9.3000e-004**	**1.0400e-003**	**0.0000**	**2.4078**	**2.4078**	**7.8000e-004**	**0.0000**	**2.4272**

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

3.2 Demolition - 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	1.0000e-005	5.8000e-004	1.3000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2108	0.2108	1.0000e-005	3.0000e-005	0.2211
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	3.0000e-005	3.5000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0893	0.0893	0.0000	0.0000	0.0901
Total	**4.0000e-005**	**6.1000e-004**	**4.8000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.3001**	**0.3001**	**1.0000e-005**	**3.0000e-005**	**0.3111**

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					2.9000e-004	0.0000	2.9000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0800e-003	0.0211	0.0137	3.0000e-005		1.0100e-003	1.0100e-003		9.3000e-004	9.3000e-004	0.0000	2.4078	2.4078	7.8000e-004	0.0000	2.4272
Total	**2.0800e-003**	**0.0211**	**0.0137**	**3.0000e-005**	**2.9000e-004**	**1.0100e-003**	**1.3000e-003**	**4.0000e-005**	**9.3000e-004**	**9.7000e-004**	**0.0000**	**2.4078**	**2.4078**	**7.8000e-004**	**0.0000**	**2.4272**

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

3.2 Demolition - 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	1.0000e-005	5.8000e-004	1.3000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.2108	0.2108	1.0000e-005	3.0000e-005	0.2211
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	3.0000e-005	3.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0893	0.0893	0.0000	0.0000	0.0901
Total	**4.0000e-005**	**6.1000e-004**	**4.8000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.3001**	**0.3001**	**1.0000e-005**	**3.0000e-005**	**0.3111**

3.3 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					0.1089	0.0000	0.1089	0.0517	0.0000	0.0517	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0202	0.1965	0.1034	1.9000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	16.7211	16.7211	5.4100e-003	0.0000	16.8563
Total	**0.0202**	**0.1965**	**0.1034**	**1.9000e-004**	**0.1089**	**0.0114**	**0.1203**	**0.0517**	**0.0105**	**0.0622**	**0.0000**	**16.7211**	**16.7211**	**5.4100e-003**	**0.0000**	**16.8563**

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

3.3 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	3.0000e-004	2.4000e-004	3.1900e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8036	0.8036	2.0000e-005	2.0000e-005	0.8105
Total	**3.0000e-004**	**2.4000e-004**	**3.1900e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**9.9000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8036**	**0.8036**	**2.0000e-005**	**2.0000e-005**	**0.8105**

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					0.0425	0.0000	0.0425	0.0202	0.0000	0.0202	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0202	0.1965	0.1034	1.9000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	16.7211	16.7211	5.4100e-003	0.0000	16.8563
Total	**0.0202**	**0.1965**	**0.1034**	**1.9000e-004**	**0.0425**	**0.0114**	**0.0539**	**0.0202**	**0.0105**	**0.0307**	**0.0000**	**16.7211**	**16.7211**	**5.4100e-003**	**0.0000**	**16.8563**

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

3.3 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	3.0000e-004	2.4000e-004	3.1900e-003	1.0000e-005	5.9000e-004	1.0000e-005	6.0000e-004	1.7000e-004	1.0000e-005	1.7000e-004	0.0000	0.8036	0.8036	2.0000e-005	2.0000e-005	0.8105
Total	**3.0000e-004**	**2.4000e-004**	**3.1900e-003**	**1.0000e-005**	**5.9000e-004**	**1.0000e-005**	**6.0000e-004**	**1.7000e-004**	**1.0000e-005**	**1.7000e-004**	**0.0000**	**0.8036**	**0.8036**	**2.0000e-005**	**2.0000e-005**	**0.8105**

3.4 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					0.3105	0.0000	0.3105	0.1134	0.0000	0.1134	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1217	1.2585	0.8860	1.8600e-003		0.0591	0.0591		0.0544	0.0544	0.0000	163.6081	163.6081	0.0529	0.0000	164.9309
Total	**0.1217**	**1.2585**	**0.8860**	**1.8600e-003**	**0.3105**	**0.0591**	**0.3696**	**0.1134**	**0.0544**	**0.1678**	**0.0000**	**163.6081**	**163.6081**	**0.0529**	**0.0000**	**164.9309**

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

3.4 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	0.0118	0.4643	0.1061	1.7100e-003	0.0486	3.6900e-003	0.0523	0.0134	3.5300e-003	0.0169	0.0000	170.1552	170.1552	9.1300e-003	0.0270	178.4332
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	2.0100e-003	1.6300e-003	0.0213	6.0000e-005	6.5800e-003	4.0000e-005	6.6200e-003	1.7500e-003	4.0000e-005	1.7900e-003	0.0000	5.3570	5.3570	1.5000e-004	1.4000e-004	5.4035
Total	**0.0138**	**0.4659**	**0.1274**	**1.7700e-003**	**0.0552**	**3.7300e-003**	**0.0589**	**0.0151**	**3.5700e-003**	**0.0187**	**0.0000**	**175.5122**	**175.5122**	**9.2800e-003**	**0.0272**	**183.8367**

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					0.1211	0.0000	0.1211	0.0442	0.0000	0.0442	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1217	1.2585	0.8860	1.8600e-003		0.0591	0.0591		0.0544	0.0544	0.0000	163.6079	163.6079	0.0529	0.0000	164.9307
Total	**0.1217**	**1.2585**	**0.8860**	**1.8600e-003**	**0.1211**	**0.0591**	**0.1802**	**0.0442**	**0.0544**	**0.0986**	**0.0000**	**163.6079**	**163.6079**	**0.0529**	**0.0000**	**164.9307**

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

3.4 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	0.0118	0.4643	0.1061	1.7100e-003	0.0318	3.6900e-003	0.0355	9.2200e-003	3.5300e-003	0.0128	0.0000	170.1552	170.1552	9.1300e-003	0.0270	178.4332
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	2.0100e-003	1.6300e-003	0.0213	6.0000e-005	3.9600e-003	4.0000e-005	4.0000e-003	1.1000e-003	4.0000e-005	1.1400e-003	0.0000	5.3570	5.3570	1.5000e-004	1.4000e-004	5.4035
Total	**0.0138**	**0.4659**	**0.1274**	**1.7700e-003**	**0.0358**	**3.7300e-003**	**0.0395**	**0.0103**	**3.5700e-003**	**0.0139**	**0.0000**	**175.5122**	**175.5122**	**9.2800e-003**	**0.0272**	**183.8367**

3.5 Building Construction - 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					
Off-Road	0.1316	1.2156	1.2643	2.0900e-003		0.0627	0.0627		0.0589	0.0589	0.0000	180.0249	180.0249	0.0441	0.0000	181.1284
Total	**0.1316**	**1.2156**	**1.2643**	**2.0900e-003**		**0.0627**	**0.0627**		**0.0589**	**0.0589**	**0.0000**	**180.0249**	**180.0249**	**0.0441**	**0.0000**	**181.1284**

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

3.5 Building Construction - 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	0.0245	0.6620	0.2198	2.5900e-003	0.0855	6.6100e-003	0.0921	0.0247	6.3200e-003	0.0310	0.0000	253.0095	253.0095	8.4700e-003	0.0367	264.1615
Worker	0.1315	0.1062	1.3889	3.7900e-003	0.4295	2.6200e-003	0.4321	0.1141	2.4100e-003	0.1165	0.0000	349.5441	349.5441	9.6100e-003	9.3700e-003	352.5756
Total	**0.1559**	**0.7682**	**1.6087**	**6.3800e-003**	**0.5150**	**9.2300e-003**	**0.5243**	**0.1387**	**8.7300e-003**	**0.1475**	**0.0000**	**602.5536**	**602.5536**	**0.0181**	**0.0461**	**616.7371**

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	0.1316	1.2156	1.2643	2.0900e-003		0.0627	0.0627		0.0589	0.0589	0.0000	180.0247	180.0247	0.0441	0.0000	181.1281
Total	**0.1316**	**1.2156**	**1.2643**	**2.0900e-003**		**0.0627**	**0.0627**		**0.0589**	**0.0589**	**0.0000**	**180.0247**	**180.0247**	**0.0441**	**0.0000**	**181.1281**

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

3.5 Building Construction - 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	0.0245	0.6620	0.2198	2.5900e-003	0.0577	6.6100e-003	0.0643	0.0178	6.3200e-003	0.0242	0.0000	253.0095	253.0095	8.4700e-003	0.0367	264.1615
Worker	0.1315	0.1062	1.3889	3.7900e-003	0.2582	2.6200e-003	0.2609	0.0720	2.4100e-003	0.0744	0.0000	349.5441	349.5441	9.6100e-003	9.3700e-003	352.5756
Total	**0.1559**	**0.7682**	**1.6087**	**6.3800e-003**	**0.3159**	**9.2300e-003**	**0.3251**	**0.0899**	**8.7300e-003**	**0.0986**	**0.0000**	**602.5536**	**602.5536**	**0.0181**	**0.0461**	**616.7371**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2100	1.9374	2.1724	3.6200e-003		0.0939	0.0939		0.0882	0.0882	0.0000	311.7434	311.7434	0.0759	0.0000	313.6419
Total	**0.2100**	**1.9374**	**2.1724**	**3.6200e-003**		**0.0939**	**0.0939**		**0.0882**	**0.0882**	**0.0000**	**311.7434**	**311.7434**	**0.0759**	**0.0000**	**313.6419**

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

3.5 Building Construction - 2023

Unmitigated Construction 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	0.0254	0.8941	0.3404	4.2700e-003	0.1480	4.9700e-003	0.1530	0.0427	4.7600e-003	0.0475	0.0000	417.6727	417.6727	0.0140	0.0605	436.0569
Worker	0.2114	0.1625	2.2174	6.3500e-003	0.7435	4.2700e-003	0.7478	0.1975	3.9300e-003	0.2014	0.0000	589.1580	589.1580	0.0150	0.0150	593.9933
Total	**0.2367**	**1.0566**	**2.5578**	**0.0106**	**0.8915**	**9.2400e-003**	**0.9008**	**0.2402**	**8.6900e-003**	**0.2489**	**0.0000**	**1,006.8307**	**1,006.8307**	**0.0290**	**0.0755**	**1,030.0502**

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	0.2100	1.9374	2.1724	3.6200e-003		0.0939	0.0939		0.0882	0.0882	0.0000	311.7430	311.7430	0.0759	0.0000	313.6415
Total	**0.2100**	**1.9374**	**2.1724**	**3.6200e-003**		**0.0939**	**0.0939**		**0.0882**	**0.0882**	**0.0000**	**311.7430**	**311.7430**	**0.0759**	**0.0000**	**313.6415**

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

3.5 Building Construction - 2023

Mitigated Construction 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	0.0254	0.8941	0.3404	4.2700e-003	0.0998	4.9700e-003	0.1048	0.0309	4.7600e-003	0.0356	0.0000	417.6727	417.6727	0.0140	0.0605	436.0569
Worker	0.2114	0.1625	2.2174	6.3500e-003	0.4470	4.2700e-003	0.4513	0.1247	3.9300e-003	0.1286	0.0000	589.1580	589.1580	0.0150	0.0150	593.9933
Total	**0.2367**	**1.0566**	**2.5578**	**0.0106**	**0.5468**	**9.2400e-003**	**0.5561**	**0.1556**	**8.6900e-003**	**0.1642**	**0.0000**	**1,006.8307**	**1,006.8307**	**0.0290**	**0.0755**	**1,030.0502**

3.6 Paving - 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	0.0284	0.2803	0.4011	6.3000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	55.0739	55.0739	0.0178	0.0000	55.5192
Paving	6.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0344**	**0.2803**	**0.4011**	**6.3000e-004**		**0.0140**	**0.0140**		**0.0129**	**0.0129**	**0.0000**	**55.0739**	**55.0739**	**0.0178**	**0.0000**	**55.5192**

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

3.6 Paving - 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	1.2900e-003	9.9000e-004	0.0135	4.0000e-005	4.5300e-003	3.0000e-005	4.5500e-003	1.2000e-003	2.0000e-005	1.2300e-003	0.0000	3.5861	3.5861	9.0000e-005	9.0000e-005	3.6155
Total	**1.2900e-003**	**9.9000e-004**	**0.0135**	**4.0000e-005**	**4.5300e-003**	**3.0000e-005**	**4.5500e-003**	**1.2000e-003**	**2.0000e-005**	**1.2300e-003**	**0.0000**	**3.5861**	**3.5861**	**9.0000e-005**	**9.0000e-005**	**3.6155**

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	0.0284	0.2803	0.4011	6.3000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	55.0738	55.0738	0.0178	0.0000	55.5191
Paving	6.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0344**	**0.2803**	**0.4011**	**6.3000e-004**		**0.0140**	**0.0140**		**0.0129**	**0.0129**	**0.0000**	**55.0738**	**55.0738**	**0.0178**	**0.0000**	**55.5191**

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

3.6 Paving - 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	1.2900e-003	9.9000e-004	0.0135	4.0000e-005	2.7200e-003	3.0000e-005	2.7500e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	3.5861	3.5861	9.0000e-005	9.0000e-005	3.6155
Total	**1.2900e-003**	**9.9000e-004**	**0.0135**	**4.0000e-005**	**2.7200e-003**	**3.0000e-005**	**2.7500e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**3.5861**	**3.5861**	**9.0000e-005**	**9.0000e-005**	**3.6155**

3.7 Architectural Coating - 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					
Archit. Coating	0.4596					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.0300e-003	0.0478	0.0664	1.1000e-004		2.6000e-003	2.6000e-003		2.6000e-003	2.6000e-003	0.0000	9.3619	9.3619	5.6000e-004	0.0000	9.3759
Total	**0.4666**	**0.0478**	**0.0664**	**1.1000e-004**		**2.6000e-003**	**2.6000e-003**		**2.6000e-003**	**2.6000e-003**	**0.0000**	**9.3619**	**9.3619**	**5.6000e-004**	**0.0000**	**9.3759**

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

3.7 Architectural Coating - 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	9.2600e-003	7.1200e-003	0.0972	2.8000e-004	0.0326	1.9000e-004	0.0328	8.6500e-003	1.7000e-004	8.8300e-003	0.0000	25.8197	25.8197	6.6000e-004	6.6000e-004	26.0316
Total	**9.2600e-003**	**7.1200e-003**	**0.0972**	**2.8000e-004**	**0.0326**	**1.9000e-004**	**0.0328**	**8.6500e-003**	**1.7000e-004**	**8.8300e-003**	**0.0000**	**25.8197**	**25.8197**	**6.6000e-004**	**6.6000e-004**	**26.0316**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4596					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.0300e-003	0.0478	0.0664	1.1000e-004		2.6000e-003	2.6000e-003		2.6000e-003	2.6000e-003	0.0000	9.3619	9.3619	5.6000e-004	0.0000	9.3759
Total	**0.4666**	**0.0478**	**0.0664**	**1.1000e-004**		**2.6000e-003**	**2.6000e-003**		**2.6000e-003**	**2.6000e-003**	**0.0000**	**9.3619**	**9.3619**	**5.6000e-004**	**0.0000**	**9.3759**

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

3.7 Architectural Coating - 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	9.2600e-003	7.1200e-003	0.0972	2.8000e-004	0.0196	1.9000e-004	0.0198	5.4600e-003	1.7000e-004	5.6400e-003	0.0000	25.8197	25.8197	6.6000e-004	6.6000e-004	26.0316
Total	**9.2600e-003**	**7.1200e-003**	**0.0972**	**2.8000e-004**	**0.0196**	**1.9000e-004**	**0.0198**	**5.4600e-003**	**1.7000e-004**	**5.6400e-003**	**0.0000**	**25.8197**	**25.8197**	**6.6000e-004**	**6.6000e-004**	**26.0316**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Lakeside Neighboorhood JN 14075 - 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	0.5150	0.6301	5.3759	0.0121	1.2939	8.8600e-003	1.3028	0.3453	8.2400e-003	0.3536	0.0000	1,138.5542	1,138.5542	0.0718	0.0495	1,155.1067
Unmitigated	0.5150	0.6301	5.3759	0.0121	1.2939	8.8600e-003	1.3028	0.3453	8.2400e-003	0.3536	0.0000	1,138.5542	1,138.5542	0.0718	0.0495	1,155.1067

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	1,010.16	1,123.32	866.64	3,437,050	3,437,050
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	1,010.16	1,123.32	866.64	3,437,050	3,437,050

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.542450	0.061470	0.185138	0.129299	0.023799	0.006448	0.011958	0.009209	0.000810	0.000503	0.024446	0.000751	0.003721
Condo/Townhouse	0.542450	0.061470	0.185138	0.129299	0.023799	0.006448	0.011958	0.009209	0.000810	0.000503	0.024446	0.000751	0.003721

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

Other Asphalt Surfaces	0.542450	0.061470	0.185138	0.129299	0.023799	0.006448	0.011958	0.009209	0.000810	0.000503	0.024446	0.000751	0.003721

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	165.6246	165.6246	0.0103	1.2500e-003	166.2526
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	165.6246	165.6246	0.0103	1.2500e-003	166.2526
NaturalGas Mitigated	0.0157	0.1342	0.0571	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.3845	155.3845	2.9800e-003	2.8500e-003	156.3079
NaturalGas Unmitigated	0.0157	0.1342	0.0571	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.3845	155.3845	2.9800e-003	2.8500e-003	156.3079

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
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
Condo/Townhouse	2.9118e+006	0.0157	0.1342	0.0571	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.3845	155.3845	2.9800e-003	2.8500e-003	156.3079
Other 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
Total		**0.0157**	**0.1342**	**0.0571**	**8.6000e-004**		**0.0109**	**0.0109**		**0.0109**	**0.0109**	**0.0000**	**155.3845**	**155.3845**	**2.9800e-003**	**2.8500e-003**	**156.3079**

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
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
Condo/Townhouse	2.9118e+006	0.0157	0.1342	0.0571	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.3845	155.3845	2.9800e-003	2.8500e-003	156.3079
Other 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
Total		**0.0157**	**0.1342**	**0.0571**	**8.6000e-004**		**0.0109**	**0.0109**		**0.0109**	**0.0109**	**0.0000**	**155.3845**	**155.3845**	**2.9800e-003**	**2.8500e-003**	**156.3079**

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
Condo/Townhouse	686379	165.6246	0.0103	1.2500e-003	166.2526
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**165.6246**	**0.0103**	**1.2500e-003**	**166.2526**

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	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	686379	165.6246	0.0103	1.2500e-003	166.2526
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**165.6246**	**0.0103**	**1.2500e-003**	**166.2526**

6.0 Area Detail

6.1 Mitigation Measures Area

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6549	0.0233	1.8457	1.4500e-003		0.0769	0.0769		0.0769	0.0769	9.2354	2.3253	11.5607	0.0454	0.0000	12.6959
Unmitigated	0.6549	0.0233	1.8457	1.4500e-003		0.0769	0.0769		0.0769	0.0769	9.2354	2.3253	11.5607	0.0454	0.0000	12.6959

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	0.0460					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0466	6.9000e-003	0.4228	1.3800e-003		0.0690	0.0690		0.0690	0.0690	9.2354	0.0000	9.2354	0.0432	0.0000	10.3148
Landscaping	0.0428	0.0164	1.4229	8.0000e-005		7.8900e-003	7.8900e-003		7.8900e-003	7.8900e-003	0.0000	2.3253	2.3253	2.2300e-003	0.0000	2.3811
Total	**0.6549**	**0.0233**	**1.8457**	**1.4600e-003**		**0.0769**	**0.0769**		**0.0769**	**0.0769**	**9.2354**	**2.3253**	**11.5607**	**0.0454**	**0.0000**	**12.6959**

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

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0460					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0466	6.9000e-003	0.4228	1.3800e-003		0.0690	0.0690		0.0690	0.0690	9.2354	0.0000	9.2354	0.0432	0.0000	10.3148
Landscaping	0.0428	0.0164	1.4229	8.0000e-005		7.8900e-003	7.8900e-003		7.8900e-003	7.8900e-003	0.0000	2.3253	2.3253	2.2300e-003	0.0000	2.3811
Total	**0.6549**	**0.0233**	**1.8457**	**1.4600e-003**		**0.0769**	**0.0769**		**0.0769**	**0.0769**	**9.2354**	**2.3253**	**11.5607**	**0.0454**	**0.0000**	**12.6959**

7.0 Water Detail

7.1 Mitigation Measures Water

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	102.3655	0.2406	6.2900e-003	110.2538
Unmitigated	102.3655	0.2406	6.2900e-003	110.2538

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 23.2339	62.2869	3.8600e-003	4.7000e-004	62.5231
Condo/Townhouse	7.193 / 5.6684	40.0786	0.2367	5.8200e-003	47.7307
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**102.3656**	**0.2406**	**6.2900e-003**	**110.2538**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 23.2339	62.2869	3.8600e-003	4.7000e-004	62.5231
Condo/Townhouse	7.193 / 5.6684	40.0786	0.2367	5.8200e-003	47.7307
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**102.3656**	**0.2406**	**6.2900e-003**	**110.2538**

8.0 Waste Detail

8.1 Mitigation Measures Waste

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	13.2269	0.7817	0.0000	32.7691
Unmitigated	13.2269	0.7817	0.0000	32.7691

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.68	0.3410	0.0202	0.0000	0.8449
Condo/Townhouse	63.48	12.8859	0.7615	0.0000	31.9242
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**13.2269**	**0.7817**	**0.0000**	**32.7691**

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	1.68	0.3410	0.0202	0.0000	0.8449
Condo/Townhouse	63.48	12.8859	0.7615	0.0000	31.9242
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**13.2269**	**0.7817**	**0.0000**	**32.7691**

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

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

11.0 Vegetation

APPENDIX 4.2:

EMFAC2017

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Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calenc	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel_Consumption	Total Fuel	VMT	Total VMT	Miles per Gallon	Vehicle Class
Riverside (SC)	2022	HHDT	Aggregate	Aggregate	Gasol	6.576938112	469.290096	131.5914	111.263246	276720.944	469.290096	1954241.273	7.06	HHDT
Riverside (SC)	2022	HHDT	Aggregate	Aggregate	Diese	15714.36952	1943053.846	165079.1	272096.2785		1943053.846			
Riverside (SC)	2022	HHDT	Aggregate	Aggregate	Natur	263.7933161	10718.13672	1028.794	4513.402274		10718.13672			
Riverside (SC)	2022	LDA	Aggregate	Aggregate	Gasol	581991.6725	23700815.4	2755730	737396.3282	741995.8718	23700815.4	24314627.74	32.77	LDA
Riverside (SC)	2022	LDA	Aggregate	Aggregate	Diese	5627.648407	239612.1354	26937.89	4599.543626		239612.1354			
Riverside (SC)	2022	LDA	Aggregate	Aggregate	Electr	9519.079074	374200.2044	47839.25	0		374200.2044			
Riverside (SC)	2022	LDT1	Aggregate	Aggregate	Gasol	60037.51621	2261929.707	273557.5	82622.73159	82646.09985	2261929.707	2277084.362	27.55	LDT1
Riverside (SC)	2022	LDT1	Aggregate	Aggregate	Diese	27.76404389	601.6680241	91.61243	23.36826688		601.6680241			
Riverside (SC)	2022	LDT1	Aggregate	Aggregate	Electr	356.2042589	14552.98677	1810.859	0		14552.98677			
Riverside (SC)	2022	LDT2	Aggregate	Aggregate	Gasol	182118.8677	7165411.096	853062.8	277891.5039	279116.8158	7165411.096	7265624.392	26.03	LDT2
Riverside (SC)	2022	LDT2	Aggregate	Aggregate	Diese	1054.483634	48028.55818	5205.89	1225.311901		48028.55818			
Riverside (SC)	2022	LDT2	Aggregate	Aggregate	Electr	1677.633962	52184.73813	8507.233	0		52184.73813			
Riverside (SC)	2022	LHDT1	Aggregate	Aggregate	Gasol	15417.55767	499086.0807	229698.6	46202.19857	71521.2169	499086.0807	1029280.982	14.39	LHDT1
Riverside (SC)	2022	LHDT1	Aggregate	Aggregate	Diese	15837.49513	530194.9018	199215.8	25319.01832		530194.9018			
Riverside (SC)	2022	LHDT2	Aggregate	Aggregate	Gasol	2252.42518	73474.64451	33557.78	7773.72894	18506.82986	73474.64451	279062.9473	15.08	LHDT2
Riverside (SC)	2022	LHDT2	Aggregate	Aggregate	Diese	6123.275766	205588.3028	77023.11	10733.10092		205588.3028			
Riverside (SC)	2022	MCY	Aggregate	Aggregate	Gasol	28171.90267	180969.5918	56343.81	4771.14182	4771.14182	180969.5918	180969.5918	37.93	MCY
Riverside (SC)	2022	MDV	Aggregate	Aggregate	Gasol	154199.5457	5597389.871	706482.9	273167.7758	277942.5828	5597389.871	5763801.187	20.74	MDV
Riverside (SC)	2022	MDV	Aggregate	Aggregate	Diese	3261.4865	137165.9419	15860.64	4774.807066		137165.9419			
Riverside (SC)	2022	MDV	Aggregate	Aggregate	Electr	916.717804	29245.37498	4686.481	0		29245.37498			
Riverside (SC)	2022	MH	Aggregate	Aggregate	Gasol	4849.122996	37965.37359	485.1063	7358.586255	8794.495605	37965.37359	53583.34508	6.09	MH
Riverside (SC)	2022	MH	Aggregate	Aggregate	Diese	1986.085476	15617.97149	198.6085	1435.90935		15617.97149			
Riverside (SC)	2022	MHDT	Aggregate	Aggregate	Gasol	1326.926938	54049.91102	26549.15	10273.53802	76587.82765	54049.91102	794309.7864	10.37	MHDT
Riverside (SC)	2022	MHDT	Aggregate	Aggregate	Diese	11907.6705	740259.8754	118276.6	66314.28963		740259.8754			
Riverside (SC)	2022	OBUS	Aggregate	Aggregate	Gasol	438.8357563	15270.69972	8780.226	2957.8564	4724.84948	15270.69972	31059.30019	6.57	OBUS
Riverside (SC)	2022	OBUS	Aggregate	Aggregate	Diese	222.2197269	15788.60048	2124.34	1766.993079		15788.60048			
Riverside (SC)	2022	SBUS	Aggregate	Aggregate	Gasol	417.9532809	14725.72528	1671.813	1664.498557	5223.410044	14725.72528	41715.56692	7.99	SBUS
Riverside (SC)	2022	SBUS	Aggregate	Aggregate	Diese	852.548169	26989.84164	9838.288	3558.911487		26989.84164			
Riverside (SC)	2022	UBUS	Aggregate	Aggregate	Gasol	164.4551683	23154.43353	657.8207	3756.059553	3762.625899	23154.43353	23214.25714	6.17	UBUS
Riverside (SC)	2022	UBUS	Aggregate	Aggregate	Diese	1.105797941	58.57190354	4.423192	6.56634569		58.57190354			
Riverside (SC)	2022	UBUS	Aggregate	Aggregate	Electr	0.058469431	1.251702935	0.233878	0		1.251702935			
Riverside (SC)	2022	UBUS	Aggregate	Aggregate	Natur	204.1188773	26855.73191	816.4755						

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calenc	Vehicle Cat	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel_Consumption	Total Fuel	VMT	Total VMT	Miles per Gallon	Vehicle Class
Riverside (SC)	2023	HHDT	Aggregate	Aggregate	Gasol	6.287048944	470.7572646	125.7913	108.7168293	269084.7531	470.7572646	2000831.243	7.44	HHDT
Riverside (SC)	2023	HHDT	Aggregate	Aggregate	Diese	15994.29576	1988254.022	167972.9	263953.2757		1988254.022			
Riverside (SC)	2023	HHDT	Aggregate	Aggregate	Natur	297.8339277	12106.46352	1161.552	5022.760484		12106.46352			
Riverside (SC)	2023	LDA	Aggregate	Aggregate	Gasol	600073.2625	24106871.96	2840578	730230.9972	734950.915	24106871.96	24831107.93	33.79	LDA
Riverside (SC)	2023	LDA	Aggregate	Aggregate	Diese	6022.455725	252078.6078	28799.31	4719.917791		252078.6078			
Riverside (SC)	2023	LDA	Aggregate	Aggregate	Electr	11812.58063	472157.3583	59231.08	0		472157.3583			
Riverside (SC)	2023	LDT1	Aggregate	Aggregate	Gasol	61620.9911	2305410.758	281506.9	81958.23074	81979.79872	2305410.758	2326765.882	28.38	LDT1
Riverside (SC)	2023	LDT1	Aggregate	Aggregate	Diese	25.82294405	564.5507588	85.51712	21.5679801		564.5507588			
Riverside (SC)	2023	LDT1	Aggregate	Aggregate	Electr	500.2265064	20790.57268	2538.375	0		20790.57268			
Riverside (SC)	2023	LDT2	Aggregate	Aggregate	Gasol	186844.1926	7271356.285	875598	272220.1339	273519.5233	7271356.285	7390732.737	27.02	LDT2
Riverside (SC)	2023	LDT2	Aggregate	Aggregate	Diese	1179.189513	52389.15473	5802.531	1299.389383		52389.15473			
Riverside (SC)	2023	LDT2	Aggregate	Aggregate	Electr	2202.047417	66987.29664	11134.27	0		66987.29664			
Riverside (SC)	2023	LHDT1	Aggregate	Aggregate	Gasol	15202.19219	489408.3926	226490	44787.94149	69458.64379	489408.3926	1012657.526	14.58	LHDT1
Riverside (SC)	2023	LHDT1	Aggregate	Aggregate	Diese	15878.17916	523249.1337	199727.5	24670.70229		523249.1337			
Riverside (SC)	2023	LHDT2	Aggregate	Aggregate	Gasol	2254.447347	72843.78455	33587.91	7620.327883	18120.43735	72843.78455	276453.3551	15.26	LHDT2
Riverside (SC)	2023	LHDT2	Aggregate	Aggregate	Diese	6182.746468	203609.5705	77771.17	10500.10946		203609.5705			
Riverside (SC)	2023	MCY	Aggregate	Aggregate	Gasol	28475.24545	179075.0601	56950.49	4725.448328	4725.448328	179075.0601	179075.0601	37.90	MCY
Riverside (SC)	2023	MDV	Aggregate	Aggregate	Gasol	154204.1049	5532730.192	706420.9	261618.9822	266481.7348	5532730.192	5717270.278	21.45	MDV
Riverside (SC)	2023	MDV	Aggregate	Aggregate	Diese	3492.231312	143624.7637	16925.23	4862.752584		143624.7637			
Riverside (SC)	2023	MDV	Aggregate	Aggregate	Electr	1314.447545	40915.32239	6695.937	0		40915.32239			
Riverside (SC)	2023	MH	Aggregate	Aggregate	Gasol	4646.002839	36045.00319	464.7861	6920.030798	8307.842208	36045.00319	51245.8412	6.17	MH
Riverside (SC)	2023	MH	Aggregate	Aggregate	Diese	1979.944695	15200.83801	197.9945	1387.81141		15200.83801			
Riverside (SC)	2023	MHDT	Aggregate	Aggregate	Gasol	1361.919314	55522.81781	27249.28	10399.79838	74626.43474	55522.81781	804084.1257	10.77	MHDT
Riverside (SC)	2023	MHDT	Aggregate	Aggregate	Diese	11600.10675	748561.3079	115156.8	64226.63636		748561.3079			
Riverside (SC)	2023	OBUS	Aggregate	Aggregate	Gasol	437.8068702	14961.4141	8759.64	2859.206488	4613.197055	14961.4141	31071.97019	6.74	OBUS
Riverside (SC)	2023	OBUS	Aggregate	Aggregate	Diese	221.7033657	16110.5561	2113.001	1753.990567		16110.5561			
Riverside (SC)	2023	SBUS	Aggregate	Aggregate	Gasol	428.8888994	14909.41731	1715.556	1679.727113	5282.154427	14909.41731	42556.73324	8.06	SBUS
Riverside (SC)	2023	SBUS	Aggregate	Aggregate	Diese	872.8772386	27647.31593	10072.88	3602.427315		27647.31593			
Riverside (SC)	2023	UBUS	Aggregate	Aggregate	Gasol	165.4254964	23291.05069	661.702	3744.875418	3746.130052	23291.05069	23303.98009	6.22	UBUS
Riverside (SC)	2023	UBUS	Aggregate	Aggregate	Diese	0.141961099	11.67769301	0.567844	1.254634181		11.67769301			
Riverside (SC)	2023	UBUS	Aggregate	Aggregate	Electr	0.058469431	1.251702935	0.233878	0		1.251702935			
Riverside (SC)	2023	UBUS	Aggregate	Aggregate	Natur	206.2939379	27061.43488	825.1758						