APPENDIX 4

Tentative Parcel Map No. 30394

ENERGY ANALYSIS

CITY OF MURRIETA

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LIST OF ABBREVIATED TERMS

(1)	Reference
AQIA	Air Quality Impact Analysis
ARB	Air Resources Board
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEC	California Energy Commission
CEUS	California Commercial End Use Survey
CITY	City of Murrieta
CPUC	California Public Utilities Commission
EIR	Environmental Impact Report
EMFAC	Emissions Factor
EVs	Electric Vehicles
FERC	Federal Energy Regulatory Commission
GPA	General Plan Amendment
GWh	Gigawatt Hour
HHD	Heavy-Heavy Duty
ISO	Independent Service Operator
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
LHD	Light-Heavy Duty
MHD	Medium-Heavy Duty
MPG	Miles Per Gallon
MPO	Metropolitan Planning Organization
Project	Tentative Parcel Map No. 30394
SCAG	Southern California Association of Governments
SF	Square Feet
SoCalGas	Southern California Gas
SP	Specific Plan
TEA-21	Transportation Equity Act for the 21st Century
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

This report provides a comprehensive update to and replaces the December 21, 2016 *Tentative Parcel Map No. 30394 Energy Analysis Report.* This update incorporates updated regulatory requirements, the latest emissions modeling tools, updated project description, and updated traffic data.

ES.1 SUMMARY OF FINDINGS

The results of this *Tentative Parcel Map No. 30394 Energy Analysis* is summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for potential energy impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Energy Impact #1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	4.5	*Less Than Significant*	*n/a*
Energy Impact #2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	4.5	*Less Than Significant*	*n/a*

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1 INTRODUCTION

This report presents the results of the energy analysis prepared by Urban Crossroads, Inc., for the proposed Tentative Parcel Map No. 30394 (referred to as Project). The purpose of this report is to ensure that energy implication is considered by the City of Murrieta, as the lead agency, and to quantify anticipated energy usage associated with construction and operation of the proposed Project, determine if the usage amounts are efficient, typical, or wasteful for the land use type, and to emphasize avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

1.1 SITE LOCATION

The proposed Tentative Parcel Map No. 30394 Project is located on the northeast corner of Washington Avenue and Nutmeg Street in the City of Murrieta, as shown on Exhibit 1-A.

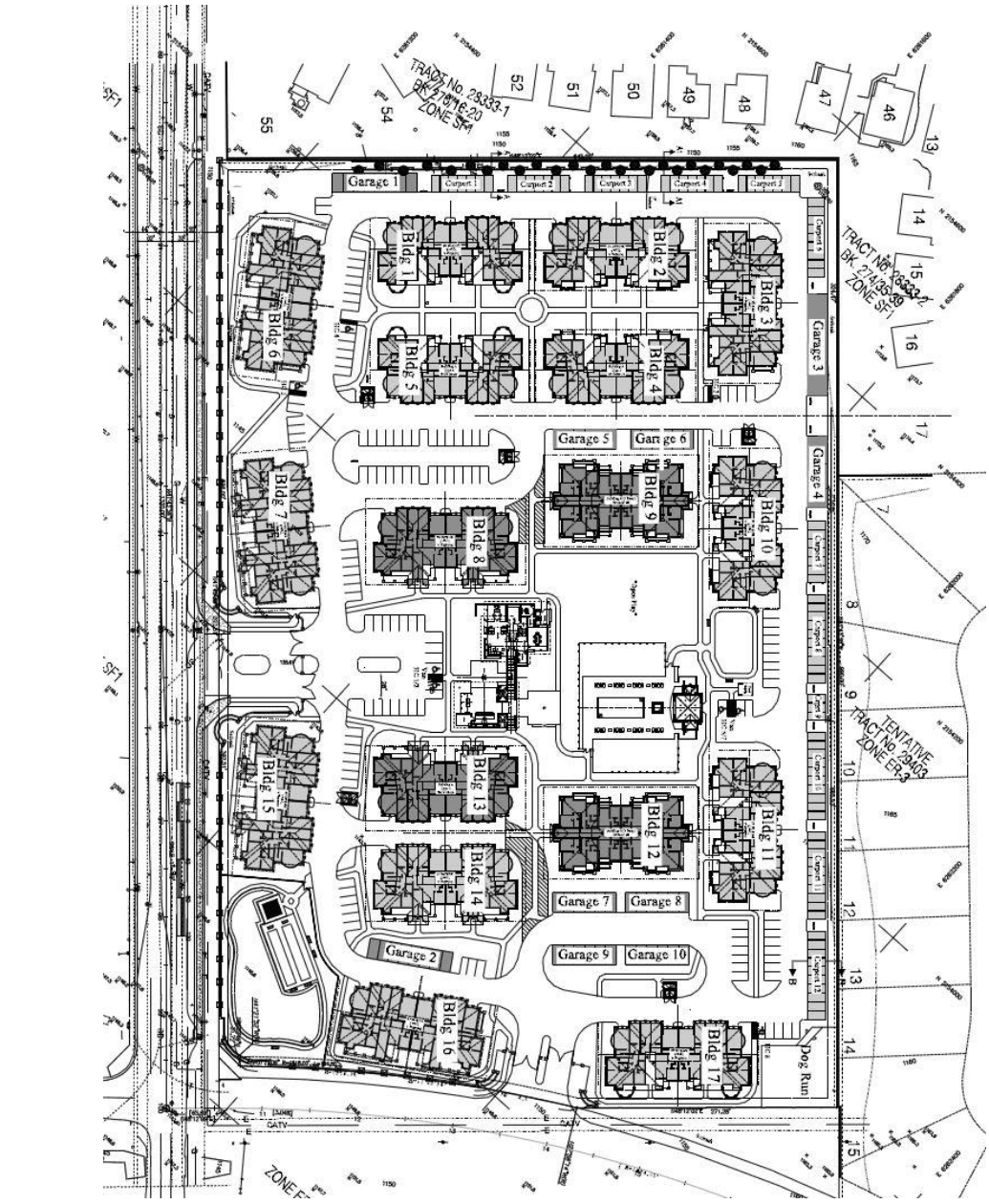
Existing land uses near the site include residential homes east and west of the Project site; a commercial use located south of the Project site; and a vacant land designated for single-family residential use to the south of the Project site. Interstate 15 (I-15) is located approximately 0.50 miles northeast of the Project site. The Project site is currently vacant and is designated for Multiple-Family Residential (MFR) land uses. The MFR designation provides for attached and detached apartments and condominiums. Typical development consists of townhomes, condominiums, apartments, senior housing, and stacked flats. MFR encourages the development of integrated projects that provide complementary open spaces and amenities on-site (2).

1.2 PROJECT DESCRIPTION

The site plan for the proposed Project is shown on Exhibit 1-B. The Project is to consist of 210 market rate apartments. It is anticipated that the Project would be developed in a single phase with an anticipated Opening Year of 2022.

EXHIBIT 1-A: LOCATION MAP

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 area and region.

2.1 OVERVIEW

The most recent data for California's estimated annual energy use is from 2019 and included:

- Approximately 7,881 trillion British Thermal Unit (BTU) of energy was consumed; (3);
- Approximately 2,115 billion cubic feet of natural gas (3); and
- Approximately 15.8 billion gallons of transportation fuel (for the year 2017) (4)

The most recent data provided by the United States Energy Information Administration (EIA) for energy use in California by demand sector is from 2017 and is reported as follows:

- Approximately 40.3 percent transportation;
- Approximately 23.1 percent industrial;
- Approximately 18.0 percent residential; and
- Approximately 18.7 percent commercial (5)

In 2018, total system electric generation for California was 285,488 gigawatt hours (GWh). California's massive electricity in-state generation system generated approximately 194,842 GWh which accounted for approximately 68% of the electricity it uses; the rest was imported from the Pacific Northwest (14%) and the U.S. Southwest (18%) (6). Natural gas is the main source for electricity generation at 47% of the total in-state electric generation system power as shown in Table 2-1.

TABLE 2-1: TOTAL ELECTRICITY SYSTEM POWER (CALIFORNIA 2018)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	California Power Mix (GWh)	Percent California Power Mix
Coal	294	0.15%	399	8,740	9,433	3.30%
Large Hydro	22,096	11.34%	7,418	985	30,499	10.68%
Natural Gas	90,691	46.54%	49	8,904	99,644	34.91%
Nuclear	18,268	9.38%	0	7,573	25,841	9.05%
Oil	35	0.02%	0	0	35	0.01%
Other	430	0.22%	0	9	439	0.15%
Renewables	63,028	32.35%	14,074	12,400	89,502	31.36%
Biomass	5,909	3.03%	772	26	6,707	2.35%
Geothermal	11,528	5.92%	171	1,269	12,968	4.54%
Small Hydro	4,248	2.18%	334	1	4,583	1.61%
Solar	27,265	13.99%	174	5,094	32,533	11.40%
Wind	14,078	7.23%	12,623	6,010	32,711	11.46%
Unspecified Sources of Power	N/A	N/A	17,576	12,519	30,095	10.54%
Total	**194,842**	**100%**	**39,517**	**51,130**	**285,488**	**100%**

Source: https://www.energy.ca.gov/almanac/electricity_data/total_system_power.html

A 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 fourth-largest producer of crude oil among the 50 states in 2017, after Texas, North Dakota, and Alaska, and, as of January 2018, third in oil refining capacity after Texas and Louisiana.
- 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 2016.
- California's total energy consumption is second-highest in the nation, but, in 2016, the state's per capita energy consumption ranked 48th, due in part to its mild climate and its energy efficiency programs.
- In 2017, California ranked second in the nation in conventional hydroelectric generation and first as a producer of electricity from solar, geothermal, and biomass resources.
- In 2017, solar PV and solar thermal installations provided about 16% of California's net electricity generation (7).

As indicated above, California is one of the nation's leading energy-producing states, and California per capita energy use is among the nation's most efficient. Given the nature of the proposed Project being of residential use, 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 residential use planned for the Project.

2.2 ELECTRICITY

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. 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 ISO studies had revealed the extent to which the Southern California Air Basin (SCAB) 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 (2013 IEPR) after a collaborative process with other energy agencies, utilities, and air districts (8). If the resource development outlined in the preliminary plan continues as detailed, reliability in Southern California would likely be assured; however, tight resource margins have led energy agencies and the ARB to develop a contingency plan. This contingency plan was discussed at a public workshop in Los Angeles on August 20, 2014 and is detailed within this Section (9).

Electricity is 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. SCE derives electricity from varied energy resources including fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers (10).

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 (such as SCE) 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 sufficient 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 (11).

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 owners (investor-owned utilities such as SCE) 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 2017. As indicated in Table 2-2, the 2017 SCE Power Mix has renewable energy at 32% of the overall energy resources. Geothermal resources are at 8%, wind power is at 10%, large hydroelectric sources are at 8%, solar energy is at 13%, and coal is at 0%. Biomass and waste sources have decreased to 0% from 1% in 2016. Natural gas is at 20% having decreased from 19% in 2016 (12).

TABLE 2-2: SCE 2017 POWER CONTENT MIX

Energy Resources	2017 SCE Power Mix
Eligible Renewable	**32%**
Biomass & waste	0%
Geothermal	8%
Small Hydroelectric	1%
Solar	13%
Wind	10%
Coal	**0%**
Large Hydroelectric	**8%**
Natural Gas	**20%**
Nuclear	**6%**
Other	**0%**
Unspecified Sources of power*	34%
Total	**100%**

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

2.3 NATURAL GAS

The usage associated with natural gas use were calculated using the California Emissions Estimator Model (CalEEMod). The following summary of natural gas resources and service providers, delivery systems, and associated regulation 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.*
>
> *The vast majority of California's natural gas customers are residential and small commercial customers, referred to as "core" customers, who accounted for approximately 32% of the natural gas delivered by California utilities in 2012. Large consumers, like electric generators and industrial customers, referred to as "noncore" customers,*

accounted for approximately 68% of the natural gas delivered by California utilities in 2012.

The CPUC regulates the California utilities' natural gas rates and natural gas services, including in-state transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. In 2012, California customers received 35% of their natural gas supply from basins located in the Southwest, 16% from Canada, 40% from the Rocky Mountains, and 9% from basins located within California. California gas utilities may soon also begin receiving biogas into their pipeline systems.

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 consumers are the Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Questar Southern Trails and Mojave Pipeline. 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, the CPUC often participates in FERC regulatory proceedings to represent the interests of California natural gas consumers.

Most of the natural gas transported via the interstate pipelines, as well as some of the California-produced natural gas, is delivered into the PG&E and SoCalGas intrastate natural gas transmission pipeline systems (commonly referred to as California's "backbone" natural gas pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered into the local transmission and distribution pipeline systems, or to natural gas storage fields. Some large noncore customers take natural gas directly off the high-pressure backbone pipeline systems, while core customers and other noncore customers take natural gas off the utilities' distribution pipeline systems. The CPUC has regulatory jurisdiction over 150,000 miles of utility-owned natural gas pipelines, which transported 82% of the total amount of natural gas delivered to California's gas consumers in 2012.

SDG&E and Southwest Gas' southern division are wholesale customers of SoCalGas, and currently receive all of their natural gas from the SoCalGas system (Southwest Gas also provides natural gas distribution service in the Lake Tahoe area). Some other municipal wholesale customers are the cities of Palo Alto, Long Beach, and Vernon, which are not regulated by the CPUC.

Some of the natural gas delivered to California customers may be delivered directly to them without being transported over the regulated utility systems. For example, the Kern River/Mojave pipeline system can deliver natural gas directly to some large customers, "bypassing" the utilities' systems. Much of California-produced natural gas is also delivered directly to large consumers.

> *PG&E and SoCalGas own and operate several natural gas storage fields that are located in northern and southern California. 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 natural gas demand and allow California natural gas customers to secure natural gas supplies more efficiently. (A portion of the Gill Ranch facility is owned by PG&E).*
>
> *California's regulated utilities do not own any natural gas production facilities. All of the natural gas sold by these utilities must be purchased from suppliers and/or marketers. The price of natural gas sold by suppliers and marketers was deregulated by the FERC in the mid-1980's and is determined by "market forces." However, the CPUC decides whether California's utilities have taken reasonable steps in order to minimize the cost of natural gas purchased on behalf of their core customers."* (13)

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 2018, the Department of Motor Vehicles (DMV) identified 35 million registered vehicles in California (14), and those vehicles (as noted previously) consume an estimated 19 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 170,000 miles of highways and major roadways, more than 27 million passenger vehicles and light trucks, and almost 8 million medium- and heavy-duty vehicles (14). While gasoline consumption has been declining since 2008 it is still by far the dominant fuel. Petroleum comprises about 92 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels (15). Nearly 19 billion gallons of on-highway fuel are burned each year, including 15.1 billion gallons of gasoline (including ethanol) and 3.9 billion gallons of diesel fuel (including biodiesel and renewable diesel). In 2016, Californians also used 194 million therms of natural gas as a transportation fuel (16), or the equivalent of 155 million gallons of gasoline.

[1] Fuel consumptions estimated utilizing information from EMFAC2014.

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3 REGULATORY BACKGROUND

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. On the state level, the CPUC and the California Energy Commissions (CEC) are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below. Project consistency with applicable federal and state regulations is also presented in *italicized* text.

3.1 FEDERAL REGULATIONS

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 (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. *Transportation and access to the Project site is provided primarily 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 (SCAG) is not planning for intermodal facilities on or through the Project site.*

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

The Transportation Equity Act for the 21st Century (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*. The Project site is located along 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 (VMT), 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.*

3.2 CALIFORNIA REGULATIONS

Integrated Energy Policy Report

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 2018 Integrated Energy Policy Report (2018 IEPR) was adopted February 20, 2019, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2018 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 (17). *Electricity would be provided to the Project by SCE and natural gas is provided by SoCalGas. SCE's Clean Power and Electrification Pathway (CPEP) white paper and SoCalGas 2018 Corporate Sustainability Report 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 2018 IEPR*.

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 a number of strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce VMT and accommodate pedestrian and bicycle access. *The Project site is located along major transportation corridors with proximate access to the Interstate freeway system. The site selected for the Project facilitates access, acts to reduce VMT, takes advantage of existing infrastructure systems, and promotes land use compatibilities through the introduction of multifamily housing uses on a multiple family residential- designated site. 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.*

California Code Title 24, Part 6, Energy Efficiency Standards

California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2019 version of Title 24 was adopted by the CEC and will become effective on January 1, 2020. The 2019 Title 24 standards go into effect on January 1, 2020 and are applicable to building permit applications submitted on or after that date. The 2019 Title 24 standards require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, update indoor and outdoor lighting for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7 percent less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will about 53 percent less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30 percent less energy due to lighting upgrades (18). *The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and will become effective on January 1, 2020. It should be noted that the analysis herein assumes compliance with the 2019 Title 24 Standards.*

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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 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

In addition, Appendix F of the *State CEQA Guidelines* (19), states that the means of achieving the goal of energy conservation includes the following:

- 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.

4.2 METHODOLOGY

Information from the CalEEMod 2016.3.2 outputs for the *Tentative Parcel Map No. 30394 Air Quality Impact Analysis* (Urban Crossroads, Inc., 2019) (AQIA) (20) was utilized in this analysis, detailing Project related construction equipment, transportation energy demands, and facility energy demands. These outputs can be referenced in Appendices 3.1 through 3.3.

4.2.1 CALIFORNIA EMISSIONS ESTIMATOR MODEL

On October 17, 2017, the SCAQMD, in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the CalEEMod 2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) and GHG emissions from direct and indirect sources as well as energy usage. (21). 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 construction model runs are provided in Appendix 3.1.

4.2.2 LAND USES MODELED IN CALEEMOD

The Project is located on 14.4 acres. The total development is proposed to consist of 210 market rate apartments.

CalEEMod does not provide an extensive selection of land use subtype categories, land uses that most closely fit the Project will be utilized (22). For purposes of analysis, the following land uses were modeled consistent with the *Tentative Parcel Map No. 30394 Traffic Impact Analysis* (Urban Crossroads, Inc., 2019) (TIA) (23):

- 210 DU Apartments Low Rise[2]
- 446 Space Parking Lot[3]

4.2.3 CONSTRUCTION DURATION

Construction is expected to commence in April 2021 and will last through September 2022. 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.[4] 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 activity was based on the 2022 opening year.

TABLE 4-1: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Site Preparation	04/12/2021	04/23/2021	10
Grading	04/24/2021	06/04/2021	30
Building Construction	06/05/2021	07/29/2022	300
Paving	07/30/2022	08/26/2022	20
Architectural Coating	08/27/2022	09/23/2022	20

Source: Construction activity based on the 2022 opening year.

4.2.4 CONSTRUCTION EQUIPMENT

Site specific construction fleet may vary due to specific project needs at the time of construction. The associated construction equipment was generally based on CalEEMod 2016.3.2 defaults. A detailed summary of construction equipment assumptions by phase is provided at Table 4-2. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.1 of this energy study.

[2] The User's Guide defines Apartments Low Rise as apartment units located in rental buildings that have 1 to 2 levels. As the building or unit area has not been provided, the CalEEMod default lot acreage and floor surface area of 10.39 acres and 210,000 square feet will be used.

[3] The total Project will provide 446 parking spaces. For purposes of analysis, the remaining 4.01 acres will be used to analyze the 466 parking spaces.

[4] 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 EQUIPMENT ASSUMPTIONS

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

Source: CalEEMod model output, See Appendix 3.1 detailed model outputs.

4.3 CONSTRUCTION ENERGY DEMANDS

4.3.1 CONSTRUCTION EQUIPMENT ELECTRICITY USAGE ESTIMATES

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. Based on the *2017 National Construction Estimator*, Richard Pray (2017) (24), the typical power cost per 1,000 square feet (sf) of building construction per month is estimated to be $2.32. For the Tentative Parcel Map No. 30394 development, the Project includes the development of 210 market rate apartments. As no information regarding unit size is readily available, it is assumed that each unit is approximately 1,000 sf. As such, a total of 21,000 sf of building has been analyzed. As previously stated, the Project is anticipated to be developed in one phase within a 17-month period. Based on Table 4-3, the total power cost of the on-site electricity usage during the construction of the proposed Project is estimated to be approximately $8,282.40. Additionally, as of July 26, 2019, SCE's domestic service rate schedule for multiple family residential uses is $0.09 per kilowatt hour (kWh) of electricity (25). As shown on Table 4-4, the total electricity usage from on-site Project construction related activities is estimated to be approximately 87,543 kWh.

TABLE 4-3: PROJECT CONSTRUCTION POWER COST

Power Cost (per 1,000 sf of building per month of construction)	**Total Building Size** (1,000 sf)	**Construction Duration** (months)	**Project Construction Power Cost**
$2.32	210	17	$8,282.40
TOTAL PROJECT CONSTRUCTION POWER COST			***$8,282.20***

TABLE 4-4: PROJECT CONSTRUCTION ELECTRICITY USAGE

Cost per kWh	**Project Construction Electricity Usage (kWh)**
$0.09	87,543
TOTAL PROJECT CONSTRUCTION ELECTRICTY USAGE (kWh)	***87,543***

[1]Assumes the Project will be under the domestic service rate under SCE

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. 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 hp-hr-gal., obtained from California Air Resources Board (CARB) 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines (26). For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is standard practice consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the City and region.

As presented in Table 4-5, Project construction activities would consume an estimated 83,461 gallons of diesel fuel during Project construction. 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: PROJECT CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES

Activity/Duration	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
Site Preparation (10 days)	Crawler Tractors	212	4	8	0.43	2,917	1,577
	Rubber Tired Dozers	247	3	8	0.40	2,371	1,282
Grading (30 days)	Crawler Tractors	212	2	8	0.43	1,459	2,365
	Excavators	158	2	8	0.38	961	1,558
	Graders	187	1	8	0.41	613	995
	Rubber Tired Dozers	247	1	8	0.40	790	1,282
	Scrapers	367	2	8	0.48	2,819	4,571
Building Construction (300 days)	Cranes	231	1	8	0.29	536	8,691
	Crawler Tractors	212	3	8	0.43	2,188	35,478
	Forklifts	89	3	8	0.20	427	6,928
	Generator Sets	84	1	8	0.74	497	8,064
	Welders	46	3	8	0.45	497	8,056
Paving (20 days)	Pavers	130	2	8	0.42	874	944
	Paving Equipment	132	2	8	0.36	760	822
	Rollers	80	2	8	0.38	486	526
Architectural Coating (20 days)	Air Compressors	78	1	8	0.48	300	324
CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)							***83,461***

4.3.3 CONSTRUCTION WORKER FUEL ESTIMATES

It is assumed that all construction worker trips are from light duty autos (LDA) along area roadways. With respect to estimated VMT, the construction worker trips would generate an estimated 1,025,766 VMT (20). Data regarding Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA. Outputs from the model runs for construction activity are provided in Appendix 3.1.

As previously stated, vehicle fuel efficiencies for LDAs were estimated using information generated within the 2017 version of the EMFAC developed by the CARB. EMFAC2014 was run for the LDA vehicle class within the California sub-area for a 2022 calendar year. Data from EMFAC2014 is shown in Appendix 3.2.

As generated by EMFAC2014, an aggregated fuel economy of LDAs ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 33.25 miles per gallon (mpg). Table 4-6 provides an estimated annual fuel consumption resulting from the Project generated by LDAs related to construction worker trips. Based on Table 4-6, it is estimated that 30,853 gallons of fuel will be consumed related to worker trips during construction. Project 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.

TABLE 4-6: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES

Construction Activity	Worker Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Site Preparation (10 days)	18	14.7	2,646	33.25	80
Grading (30 days)	20	14.7	8,820	33.25	265
Building Construction (300 days)	226	14.7	996,660	33.25	29,978
Paving (20 days)	15	14.7	4,410	33.25	133
Architectural Coating (20 days)	45	14.7	13,230	33.25	398
TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION					***30,853***

4.3.4 CONSTRUCTION VENDOR/HAULING FUEL ESTIMATES

With respect to estimated VMT, the construction vendor/hauling trips during construction would generate an estimated 207,180 VMT along area roadways (20). It is assumed that 50% of all vendor trips are from Medium-Heavy-Duty-Trucks (MHDT) and 50% are from Heavy-Heavy-Duty Trucks (HHDT). These assumptions are consistent with the 2016.3.2 CalEEMod defaults utilized within the within the AQIA (20). Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2014. For purposes of this analysis, EMFAC2014 was

run for the MHDT and HHDT vehicle class within the California sub-area for a 2022 calendar year. Data from EMFAC2014 is shown in Appendix 3.2.

As generated by EMFAC2014, an aggregated fuel economy of MHDTs ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 9.17 mpg. Additionally, HHDTs are estimated to have a fuel efficiency of 6.53 mpg. Based on Table 4-7, it is estimated that 5,870 gallons of fuel will be consumed related to construction vendor trips (MHDTs) during full construction of the proposed Project. Table 4-8 shows the estimated fuel economy of HHDTs accessing the Project site. Based on Table 4-8, fuel consumption from construction vendor and hauling trips (HHDTs) will total approximately 23,484 gallons. The total fuel consumption from construction vendor trips (MHDTs and HHDTs) is 29,354 gallons. 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.

TABLE 4-7: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES (MHDT)

Construction Activity	Vendor Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Vendor					
Building Construction (300 days)	26	6.9	53,820	9.17	5,870
				PROJECT MHDT TOTAL	***5,870***

TABLE 4-8: CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION ESTIMATES (HHDT)

Construction Activity	Vendor Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Vendor					
Building Construction (300 days)	26	6.9	53,820	6.53	8,241
Hauling					
Grading (30 days)	4977	20	99,540	6.53	15,243
				PROJECT HHDT TOTAL	***23,484***

4.3.5 CONSTRUCTION ENERGY EFFICIENCY/CONSERVATION MEASURES

The equipment used for Project construction would conform to CARB regulations and California emissions standards. 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.

The Project would utilize construction contractors which practice compliance 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 (TAC). 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.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and best available control measures (BACM). More specifically, California Code of Regulations 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. To this end, "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 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 City building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

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 employee and patron 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 traffic is a function of total VMT and estimated vehicle fuel economies of vehicles accessing the Project site.

With respect to estimated VMT, and based on the trip frequency and trip length methodologies cited in the Project's AQIA, the Project would generate an estimated 5,230,293 annual VMT along area roadways for all LDAs with full build-out of the Project (20). As generated by EMFAC2014, an aggregated fuel economy of LDAs ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 33.25 mpg. Table 4-9 provides an estimated range of annual fuel consumption resulting from Project generated LDAs. Based on Table 4-9, it is estimated that 157,317 gallons of fuel will be consumed from Project generated LDA trips.

TABLE 4-9: PROJECT-GENERATED LDA VEHICLE TRAFFIC ANNUAL FUEL CONSUMPTION

Annual VMT	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
5,230,293	33.25	157,317

4.4.2 FACILITY ENERGY DEMANDS

Project building operations and Project site maintenance 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. Annual natural gas and electricity demands of the Project are summarized in Table 4-10.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, the California Building Standards Code Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting (27). Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, appliances, etc.).

TABLE 4-10: PROJECT ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY

Natural Gas Demand	kBTU/yr
Multifamily Housing (Low Rise) Apartments	3,130,340
Parking Lot	0
TOTAL PROJECT NATURAL GAS DEMAND	***3,130,340***
Electricity Demand	**kBTU/yr**
Multifamily Housing (Low Rise) Apartments	995,848
Parking Lot	62,440
TOTAL PROJECT ELECTRICITY DEMAND	***1,058,288***

kBTU/yr – Kilo-British Thermal Units Per Year

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).

It should also be noted that the Project would not result in a substantial increase in demand or transmission service, resulting in the need for new or expanded sources of energy supply or new or expanded energy delivery systems or infrastructure because it would be served by the existing electric utility lines in the Project vicinity.

Enhanced Vehicle Fuel Efficiencies

Project annual fuel consumption estimates presented previously in Tables 4-9 and 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.

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.

4.5 SUMMARY

4.5.1 CONSTRUCTION ENERGY DEMANDS

The estimated power cost of on-site electricity usage during the construction of the proposed Project is assumed to be around $8,282,40. 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 around 87,543 kWh.

Construction equipment used by the Project would result in single event consumption of approximately 83,461 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. Best available control measures inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by City building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the proposed Project would result in the estimated fuel consumption of 30,853 gallons of fuel. Additionally, fuel consumption from construction vendor trips (MHDTs and HHDTs) will total approximately 29,354 gallons. Diesel fuel would be supplied by City and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved through the use of bulk purchases, transport and use of construction materials. The 2018 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 (17). 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 operational of the Project would result in an estimated 157,317 gallons of fuel consumption per year for LDAs for the year 2022.

Fuel would be provided by current and future commercial vendors. Trip generation and VMT generated by the Project are consistent with other residential uses of similar scale and configuration, as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Ed., 2017); and CalEEMod. That is, the Project does not propose uses or operations that would inherently result in excessive and wasteful vehicle trips and VMT, nor associated excess and wasteful vehicle energy consumption.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of LDAs 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. 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, 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: 3,130,340 kBTU/year of natural gas; and 1,058,288 kWh/year of electricity. Natural gas would be supplied to the Project by SoCalGas; electricity would be supplied by SCE. The Project proposes conventional residential uses reflecting contemporary energy efficient/energy conserving designs and operational programs. Uses proposed by the Project are not inherently energy intensive, and the Project energy demands in total would be comparable to, or less than, other residential projects of similar scale and configuration.

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5 CONCLUSIONS

***Impact Energy-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, the Proposed Project or the Residential Option Project operations would not result in the inefficient, wasteful or unnecessary consumption of energy. Further, the energy demands of either the Proposed Project and Residential Option Project can be accommodated within the context of available resources and energy delivery systems. As such, neither the Proposed Project nor the Residential Option Project scenario would cause or result in the need for additional energy producing or transmission facilities. Additionally, neither scenario proposed by the Project would engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California.

***Impact Energy-2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency*.**

The proposed Project is subject to California Building Code requirements. New buildings must achieve the 2019 Building and Energy Efficiency Standards and the 2019 California Green Building Standards requirements.

The Project would provide for, and promote, energy efficiencies beyond those required under other applicable federal and State of California standards and regulations, and in so doing would meet or exceed all California Building Standards Code Title 24 standards. Moreover, energy consumed by the Project's operation is calculated to be comparable to, or less than, energy consumed by other residential, commercial, and recreational uses of similar scale and intensity that are constructed and operating in California. On this basis, the Project would not result in the inefficient, wasteful, or unnecessary consumption of energy. Further, the Project would not cause or result in the need for additional energy producing facilities or energy delivery systems.

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6 REFERENCES

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7 CERTIFICATION

The contents of this energy report represent an accurate depiction of the environmental impacts associated with the proposed Tentative Parcel Map No. 30394 Project. The information contained in this energy report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

Bachelor of Arts in Environmental Analysis and Design
University of California, Irvine • June, 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

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APPENDIX 3.1:

CALEEMOD ANNUAL CONSTRUCTION EMISSIONS MODEL OUTPUTS

Tentative Parcel Map No. 30394 (Mitigated)

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	446.00	Space	4.01	178,400.00	0
Apartments Low Rise	210.00	Dwelling Unit	10.39	210,000.00	697

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	513.5	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Tentative Parcel Map No. 30394 (Mitigated) - Riverside-South Coast County, Annual

Project Characteristics - 2022 Intensity Factor based on RPS

Land Use - Parking and residential data obtained from Initial Study (density of 14.6 units per acre on 14.4-acres. anticipated pop will be 697.2 residents based on 3.32 residents per unit and construction of 210 units, default sq. ft.)

Construction Phase -

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes.

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes.

Off-road Equipment -

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes.

Grading - For purposes of analysis, total acres graded per day is based on the equipment specific grading rates (CalEEMod Appendix A) and the equipment list. Estimated 39,815 cy imported

Architectural Coating - Rule 1113

Vehicle Trips - Trip Rates are baesd on ITE 10th Edition Land Use Code 210 consistent with TIA.

Woodstoves - Fireplace and Woodstove no longer constructed as informed by Mr. Dodson

Area Coating -

Solid Waste -

Construction Off-road Equipment Mitigation - For Equipment greater than 150 hp during site prep, tier 3 engines will be required. Increase watering to 4 times per day.

Mobile Commute Mitigation -

Area Mitigation -

Water Mitigation -

Waste Mitigation -

Energy Mitigation -

Energy Use - For Multi-Family Residnetial, 2019 Title 24 Standards are 7% better than the 2016 Title 24 Standards they replace

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00

Tentative Parcel Map No. 30394 (Mitigated) - Riverside-South Coast County, Annual

tblArchitecturalCoating	EF_Parking	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblEnergyUse	LightingElect	810.36	753.63
tblEnergyUse	T24E	877.14	815.74
tblEnergyUse	T24NG	9,544.50	8,876.39
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	178.50	0.00
tblFireplaces	NumberNoFireplace	21.00	0.00
tblFireplaces	NumberWood	10.50	0.00
tblGrading	AcresOfGrading	105.00	120.00
tblGrading	AcresOfGrading	20.00	35.00
tblLandUse	LotAcreage	13.13	10.39
tblLandUse	Population	601.00	697.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	513.5
tblTripsAndVMT	HaulingTripNumber	0.00	4,977.00
tblVehicleTrips	ST_TR	7.16	8.14
tblVehicleTrips	SU_TR	6.07	6.28

tblVehicleTrips	WD_TR	6.59	7.32
tblWoodstoves	NumberCatalytic	10.50	0.00
tblWoodstoves	NumberNoncatalytic	10.50	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

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					
2021	0.4755	4.8925	2.8922	9.5200e-003	0.5210	0.1729	0.6938	0.1777	0.1615	0.3391	0.0000	855.2989	855.2989	0.1403	0.0000	858.8058
2022	1.0188	2.9700	2.3237	6.5200e-003	0.2175	0.1136	0.3312	0.0583	0.1067	0.1650	0.0000	575.9721	575.9721	0.0961	0.0000	578.3746
Maximum	**1.0188**	**4.8925**	**2.8922**	**9.5200e-003**	**0.5210**	**0.1729**	**0.6938**	**0.1777**	**0.1615**	**0.3391**	**0.0000**	**855.2989**	**855.2989**	**0.1403**	**0.0000**	**858.8058**

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					
2021	0.4133	4.3449	3.1145	9.5200e-003	0.3265	0.1497	0.4762	0.0976	0.1418	0.2394	0.0000	855.2984	855.2984	0.1403	0.0000	858.8053
2022	0.9892	2.7445	2.5084	6.5200e-003	0.2175	0.1052	0.3227	0.0583	0.1000	0.1584	0.0000	575.9717	575.9717	0.0961	0.0000	578.3742
Maximum	**0.9892**	**4.3449**	**3.1145**	**9.5200e-003**	**0.3265**	**0.1497**	**0.4762**	**0.0976**	**0.1418**	**0.2394**	**0.0000**	**855.2984**	**855.2984**	**0.1403**	**0.0000**	**858.8053**

	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	**6.14**	**9.83**	**-7.80**	**0.00**	**26.34**	**11.02**	**22.06**	**33.92**	**9.80**	**21.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Tentative Parcel Map No. 30394 (Mitigated) - Riverside-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-12-2021	7-11-2021	2.3864	2.0869
2	7-12-2021	10-11-2021	1.5546	1.3986
3	10-12-2021	1-11-2022	1.5337	1.3830
4	1-12-2022	4-11-2022	1.3568	1.2475
5	4-12-2022	7-11-2022	1.3729	1.2624
6	7-12-2022	9-30-2022	1.0941	1.0723
		Highest	2.3864	2.0869

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	0.9046	0.0251	2.1737	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5486	3.5486	3.4400e-003	0.0000	3.6347
Energy	0.0169	0.1442	0.0614	9.2000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	413.5431	413.5431	0.0171	5.9400e-003	415.7421
Mobile	0.4443	3.8309	5.5645	0.0257	1.9969	0.0178	2.0146	0.5350	0.0166	0.5516	0.0000	2,381.7954	2,381.7954	0.1173	0.0000	2,384.7279
Waste						0.0000	0.0000		0.0000	0.0000	19.6089	0.0000	19.6089	1.1589	0.0000	48.5803
Water						0.0000	0.0000		0.0000	0.0000	4.3408	63.8178	68.1586	0.4494	0.0113	82.7540
Total	**1.3657**	**4.0002**	**7.7996**	**0.0267**	**1.9969**	**0.0414**	**2.0383**	**0.5350**	**0.0403**	**0.5753**	**23.9497**	**2,862.7050**	**2,886.6547**	**1.7462**	**0.0172**	**2,935.4390**

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	0.9046	0.0251	2.1737	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5486	3.5486	3.4400e-003	0.0000	3.6347
Energy	0.0169	0.1442	0.0614	9.2000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	413.5431	413.5431	0.0171	5.9400e-003	415.7421
Mobile	0.4443	3.8309	5.5645	0.0257	1.9969	0.0178	2.0146	0.5350	0.0166	0.5516	0.0000	2,381.7954	2,381.7954	0.1173	0.0000	2,384.7279
Waste						0.0000	0.0000		0.0000	0.0000	19.6089	0.0000	19.6089	1.1589	0.0000	48.5803
Water						0.0000	0.0000		0.0000	0.0000	3.4726	55.5186	58.9912	0.3598	9.0700e-003	70.6894
Total	**1.3657**	**4.0002**	**7.7996**	**0.0267**	**1.9969**	**0.0414**	**2.0383**	**0.5350**	**0.0403**	**0.5753**	**23.0816**	**2,854.4057**	**2,877.4872**	**1.6565**	**0.0150**	**2,923.3743**

	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**	**3.62**	**0.29**	**0.32**	**5.13**	**12.78**	**0.41**

3.0 Construction Detail

Construction Phase

Tentative Parcel Map No. 30394 (Mitigated) - Riverside-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/12/2021	4/23/2021	5	10	
2	Grading	Grading	4/24/2021	6/4/2021	5	30	
3	Building Construction	Building Construction	6/5/2021	7/29/2022	5	300	
4	Paving	Paving	7/30/2022	8/26/2022	5	20	
5	Architectural Coating	Architectural Coating	8/27/2022	9/23/2022	5	20	

Acres of Grading (Site Preparation Phase): 35

Acres of Grading (Grading Phase): 120

Acres of Paving: 4.01

Residential Indoor: 425,250; Residential Outdoor: 141,750; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 10,704 (Architectural Coating – sqft)

OffRoad Equipment

Tentative Parcel Map No. 30394 (Mitigated) - Riverside-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Crawler Tractors	4	8.00	212	0.43
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Crawler Tractors	2	8.00	212	0.43
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	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Crawler Tractors	3	8.00	212	0.43
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

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	4,977.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	11	226.00	52.00	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	45.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2021

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	0.0267	0.3039	0.1093	2.8000e-004		0.0132	0.0132		0.0122	0.0122	0.0000	25.0542	25.0542	8.1000e-003	0.0000	25.2568
Total	**0.0267**	**0.3039**	**0.1093**	**2.8000e-004**	**0.1089**	**0.0132**	**0.1221**	**0.0517**	**0.0122**	**0.0638**	**0.0000**	**25.0542**	**25.0542**	**8.1000e-003**	**0.0000**	**25.2568**

3.2 Site Preparation - 2021

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	3.9000e-004	2.6000e-004	2.8300e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8000	0.8000	2.0000e-005	0.0000	0.8004
Total	**3.9000e-004**	**2.6000e-004**	**2.8300e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8000**	**0.8000**	**2.0000e-005**	**0.0000**	**0.8004**

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					0.0283	0.0000	0.0283	0.0134	0.0000	0.0134	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.1975	0.1302	2.8000e-004		7.9000e-003	7.9000e-003		7.5100e-003	7.5100e-003	0.0000	25.0542	25.0542	8.1000e-003	0.0000	25.2567
Total	**0.0141**	**0.1975**	**0.1302**	**2.8000e-004**	**0.0283**	**7.9000e-003**	**0.0362**	**0.0134**	**7.5100e-003**	**0.0209**	**0.0000**	**25.0542**	**25.0542**	**8.1000e-003**	**0.0000**	**25.2567**

3.2 Site Preparation - 2021

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	3.9000e-004	2.6000e-004	2.8300e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8000	0.8000	2.0000e-005	0.0000	0.8004
Total	**3.9000e-004**	**2.6000e-004**	**2.8300e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8000**	**0.8000**	**2.0000e-005**	**0.0000**	**0.8004**

3.3 Grading - 2021

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					0.1540	0.0000	0.1540	0.0565	0.0000	0.0565	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0738	0.8482	0.4684	1.0700e-003		0.0343	0.0343		0.0316	0.0316	0.0000	94.2470	94.2470	0.0305	0.0000	95.0090
Total	**0.0738**	**0.8482**	**0.4684**	**1.0700e-003**	**0.1540**	**0.0343**	**0.1883**	**0.0565**	**0.0316**	**0.0881**	**0.0000**	**94.2470**	**94.2470**	**0.0305**	**0.0000**	**95.0090**

3.3 Grading - 2021

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	0.0124	0.5529	0.0762	1.8500e-003	0.0429	1.6600e-003	0.0446	0.0118	1.5900e-003	0.0134	0.0000	178.5480	178.5480	0.0109	0.0000	178.8206
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	8.7000e-004	9.4400e-003	3.0000e-005	3.3000e-003	2.0000e-005	3.3200e-003	8.8000e-004	2.0000e-005	8.9000e-004	0.0000	2.6665	2.6665	6.0000e-005	0.0000	2.6681
Total	**0.0137**	**0.5538**	**0.0857**	**1.8800e-003**	**0.0462**	**1.6800e-003**	**0.0479**	**0.0127**	**1.6100e-003**	**0.0143**	**0.0000**	**181.2146**	**181.2146**	**0.0110**	**0.0000**	**181.4887**

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					0.0400	0.0000	0.0400	0.0147	0.0000	0.0147	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0596	0.7275	0.4970	1.0700e-003		0.0284	0.0284		0.0265	0.0265	0.0000	94.2469	94.2469	0.0305	0.0000	95.0089
Total	**0.0596**	**0.7275**	**0.4970**	**1.0700e-003**	**0.0400**	**0.0284**	**0.0685**	**0.0147**	**0.0265**	**0.0412**	**0.0000**	**94.2469**	**94.2469**	**0.0305**	**0.0000**	**95.0089**

3.3 Grading - 2021

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	0.0124	0.5529	0.0762	1.8500e-003	0.0429	1.6600e-003	0.0446	0.0118	1.5900e-003	0.0134	0.0000	178.5480	178.5480	0.0109	0.0000	178.8206
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	8.7000e-004	9.4400e-003	3.0000e-005	3.3000e-003	2.0000e-005	3.3200e-003	8.8000e-004	2.0000e-005	8.9000e-004	0.0000	2.6665	2.6665	6.0000e-005	0.0000	2.6681
Total	**0.0137**	**0.5538**	**0.0857**	**1.8800e-003**	**0.0462**	**1.6800e-003**	**0.0479**	**0.0127**	**1.6100e-003**	**0.0143**	**0.0000**	**181.2146**	**181.2146**	**0.0110**	**0.0000**	**181.4887**

3.4 Building Construction - 2021

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	0.2789	2.7738	1.6225	3.6100e-003		0.1218	0.1218		0.1144	0.1144	0.0000	308.1742	308.1742	0.0799	0.0000	310.1727
Total	**0.2789**	**2.7738**	**1.6225**	**3.6100e-003**		**0.1218**	**0.1218**		**0.1144**	**0.1144**	**0.0000**	**308.1742**	**308.1742**	**0.0799**	**0.0000**	**310.1727**

3.4 Building Construction - 2021

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	9.3100e-003	0.3637	0.0700	9.9000e-004	0.0246	7.0000e-004	0.0253	7.1100e-003	6.6000e-004	7.7700e-003	0.0000	95.1495	95.1495	7.2600e-003	0.0000	95.3310
Worker	0.0727	0.0490	0.5336	1.6700e-003	0.1863	1.1200e-003	0.1874	0.0495	1.0300e-003	0.0505	0.0000	150.6595	150.6595	3.5100e-003	0.0000	150.7472
Total	**0.0820**	**0.4126**	**0.6036**	**2.6600e-003**	**0.2109**	**1.8200e-003**	**0.2128**	**0.0566**	**1.6900e-003**	**0.0583**	**0.0000**	**245.8090**	**245.8090**	**0.0108**	**0.0000**	**246.0782**

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	0.2435	2.4532	1.7952	3.6100e-003		0.1099	0.1099		0.1046	0.1046	0.0000	308.1738	308.1738	0.0799	0.0000	310.1723
Total	**0.2435**	**2.4532**	**1.7952**	**3.6100e-003**		**0.1099**	**0.1099**		**0.1046**	**0.1046**	**0.0000**	**308.1738**	**308.1738**	**0.0799**	**0.0000**	**310.1723**

3.4 Building Construction - 2021

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	9.3100e-003	0.3637	0.0700	9.9000e-004	0.0246	7.0000e-004	0.0253	7.1100e-003	6.6000e-004	7.7700e-003	0.0000	95.1495	95.1495	7.2600e-003	0.0000	95.3310
Worker	0.0727	0.0490	0.5336	1.6700e-003	0.1863	1.1200e-003	0.1874	0.0495	1.0300e-003	0.0505	0.0000	150.6595	150.6595	3.5100e-003	0.0000	150.7472
Total	**0.0820**	**0.4126**	**0.6036**	**2.6600e-003**	**0.2109**	**1.8200e-003**	**0.2128**	**0.0566**	**1.6900e-003**	**0.0583**	**0.0000**	**245.8090**	**245.8090**	**0.0108**	**0.0000**	**246.0782**

3.4 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	0.2512	2.4517	1.5796	3.6100e-003		0.1052	0.1052		0.0988	0.0988	0.0000	307.9090	307.9090	0.0793	0.0000	309.8905
Total	**0.2512**	**2.4517**	**1.5796**	**3.6100e-003**		**0.1052**	**0.1052**		**0.0988**	**0.0988**	**0.0000**	**307.9090**	**307.9090**	**0.0793**	**0.0000**	**309.8905**

3.4 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	8.6800e-003	0.3426	0.0652	9.9000e-004	0.0246	5.8000e-004	0.0252	7.1100e-003	5.6000e-004	7.6700e-003	0.0000	94.3311	94.3311	6.8800e-003	0.0000	94.5030
Worker	0.0681	0.0441	0.4916	1.6100e-003	0.1863	1.0900e-003	0.1874	0.0495	1.0000e-003	0.0505	0.0000	145.1617	145.1617	3.1500e-003	0.0000	145.2405
Total	**0.0768**	**0.3867**	**0.5567**	**2.6000e-003**	**0.2109**	**1.6700e-003**	**0.2126**	**0.0566**	**1.5600e-003**	**0.0581**	**0.0000**	**239.4928**	**239.4928**	**0.0100**	**0.0000**	**239.7435**

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	0.2216	2.2262	1.7643	3.6100e-003		0.0967	0.0967		0.0921	0.0921	0.0000	307.9086	307.9086	0.0793	0.0000	309.8901
Total	**0.2216**	**2.2262**	**1.7643**	**3.6100e-003**		**0.0967**	**0.0967**		**0.0921**	**0.0921**	**0.0000**	**307.9086**	**307.9086**	**0.0793**	**0.0000**	**309.8901**

3.4 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	8.6800e-003	0.3426	0.0652	9.9000e-004	0.0246	5.8000e-004	0.0252	7.1100e-003	5.6000e-004	7.6700e-003	0.0000	94.3311	94.3311	6.8800e-003	0.0000	94.5030
Worker	0.0681	0.0441	0.4916	1.6100e-003	0.1863	1.0900e-003	0.1874	0.0495	1.0000e-003	0.0505	0.0000	145.1617	145.1617	3.1500e-003	0.0000	145.2405
Total	**0.0768**	**0.3867**	**0.5567**	**2.6000e-003**	**0.2109**	**1.6700e-003**	**0.2126**	**0.0566**	**1.5600e-003**	**0.0581**	**0.0000**	**239.4928**	**239.4928**	**0.0100**	**0.0000**	**239.7435**

3.5 Paving - 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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving	5.2500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0163**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0276**	**20.0276**	**6.4800e-003**	**0.0000**	**20.1895**

3.5 Paving - 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	6.0000e-004	3.9000e-004	4.3500e-003	1.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.2846	1.2846	3.0000e-005	0.0000	1.2853
Total	**6.0000e-004**	**3.9000e-004**	**4.3500e-003**	**1.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.2846**	**1.2846**	**3.0000e-005**	**0.0000**	**1.2853**

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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	5.2500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0163**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0275**	**20.0275**	**6.4800e-003**	**0.0000**	**20.1895**

3.5 Paving - 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	6.0000e-004	3.9000e-004	4.3500e-003	1.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.2846	1.2846	3.0000e-005	0.0000	1.2853
Total	**6.0000e-004**	**3.9000e-004**	**4.3500e-003**	**1.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.2846**	**1.2846**	**3.0000e-005**	**0.0000**	**1.2853**

3.6 Architectural Coating - 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					
Archit. Coating	0.6694					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7300e-003	0.0188	0.0242	4.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	3.4043	3.4043	2.2000e-004	0.0000	3.4099
Total	**0.6721**	**0.0188**	**0.0242**	**4.0000e-005**		**1.0900e-003**	**1.0900e-003**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**3.4043**	**3.4043**	**2.2000e-004**	**0.0000**	**3.4099**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8100e-003	1.1700e-003	0.0131	4.0000e-005	4.9500e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	3.8539	3.8539	8.0000e-005	0.0000	3.8559
Total	**1.8100e-003**	**1.1700e-003**	**0.0131**	**4.0000e-005**	**4.9500e-003**	**3.0000e-005**	**4.9700e-003**	**1.3100e-003**	**3.0000e-005**	**1.3400e-003**	**0.0000**	**3.8539**	**3.8539**	**8.0000e-005**	**0.0000**	**3.8559**

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	0.6694					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7300e-003	0.0188	0.0242	4.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	3.4043	3.4043	2.2000e-004	0.0000	3.4099
Total	**0.6721**	**0.0188**	**0.0242**	**4.0000e-005**		**1.0900e-003**	**1.0900e-003**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**3.4043**	**3.4043**	**2.2000e-004**	**0.0000**	**3.4099**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8100e-003	1.1700e-003	0.0131	4.0000e-005	4.9500e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	3.8539	3.8539	8.0000e-005	0.0000	3.8559
Total	**1.8100e-003**	**1.1700e-003**	**0.0131**	**4.0000e-005**	**4.9500e-003**	**3.0000e-005**	**4.9700e-003**	**1.3100e-003**	**3.0000e-005**	**1.3400e-003**	**0.0000**	**3.8539**	**3.8539**	**8.0000e-005**	**0.0000**	**3.8559**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4443	3.8309	5.5645	0.0257	1.9969	0.0178	2.0146	0.5350	0.0166	0.5516	0.0000	2,381.7954	2,381.7954	0.1173	0.0000	2,384.7279
Unmitigated	0.4443	3.8309	5.5645	0.0257	1.9969	0.0178	2.0146	0.5350	0.0166	0.5516	0.0000	2,381.7954	2,381.7954	0.1173	0.0000	2,384.7279

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,537.20	1,709.40	1318.80	5,230,293	5,230,293
Parking Lot	0.00	0.00	0.00		
Total	1,537.20	1,709.40	1,318.80	5,230,293	5,230,293

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
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	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
Apartments Low Rise	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965
Parking Lot	0.545527	0.036856	0.186032	0.115338	0.015222	0.004970	0.017525	0.069528	0.001397	0.001160	0.004547	0.000932	0.000965

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	246.4962	246.4962	0.0139	2.8800e-003	247.7025
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	246.4962	246.4962	0.0139	2.8800e-003	247.7025
NaturalGas Mitigated	0.0169	0.1442	0.0614	9.2000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	167.0469	167.0469	3.2000e-003	3.0600e-003	168.0396
NaturalGas Unmitigated	0.0169	0.1442	0.0614	9.2000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	167.0469	167.0469	3.2000e-003	3.0600e-003	168.0396

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					
Apartments Low Rise	3.13034e+006	0.0169	0.1442	0.0614	9.2000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	167.0469	167.0469	3.2000e-003	3.0600e-003	168.0396
Parking Lot	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		**0.0169**	**0.1442**	**0.0614**	**9.2000e-004**		**0.0117**	**0.0117**		**0.0117**	**0.0117**	**0.0000**	**167.0469**	**167.0469**	**3.2000e-003**	**3.0600e-003**	**168.0396**

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					
Apartments Low Rise	3.13034e+006	0.0169	0.1442	0.0614	9.2000e-004		0.0117	0.0117		0.0117	0.0117	0.0000	167.0469	167.0469	3.2000e-003	3.0600e-003	168.0396
Parking Lot	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		**0.0169**	**0.1442**	**0.0614**	**9.2000e-004**		**0.0117**	**0.0117**		**0.0117**	**0.0117**	**0.0000**	**167.0469**	**167.0469**	**3.2000e-003**	**3.0600e-003**	**168.0396**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	995848	231.9527	0.0131	2.7100e-003	233.0878
Parking Lot	62440	14.5435	8.2000e-004	1.7000e-004	14.6147
Total		**246.4962**	**0.0139**	**2.8800e-003**	**247.7025**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	995848	231.9527	0.0131	2.7100e-003	233.0878
Parking Lot	62440	14.5435	8.2000e-004	1.7000e-004	14.6147
Total		**246.4962**	**0.0139**	**2.8800e-003**	**247.7025**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9046	0.0251	2.1737	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5486	3.5486	3.4400e-003	0.0000	3.6347
Unmitigated	0.9046	0.0251	2.1737	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5486	3.5486	3.4400e-003	0.0000	3.6347

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	0.0682					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7704					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0660	0.0251	2.1737	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5486	3.5486	3.4400e-003	0.0000	3.6347
Total	**0.9046**	**0.0251**	**2.1737**	**1.1000e-004**		**0.0120**	**0.0120**		**0.0120**	**0.0120**	**0.0000**	**3.5486**	**3.5486**	**3.4400e-003**	**0.0000**	**3.6347**

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	0.0682					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7704					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0660	0.0251	2.1737	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5486	3.5486	3.4400e-003	0.0000	3.6347
Total	**0.9046**	**0.0251**	**2.1737**	**1.1000e-004**		**0.0120**	**0.0120**		**0.0120**	**0.0120**	**0.0000**	**3.5486**	**3.5486**	**3.4400e-003**	**0.0000**	**3.6347**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	58.9912	0.3598	9.0700e-003	70.6894
Unmitigated	68.1586	0.4494	0.0113	82.7540

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	13.6823 / 8.62583	68.1586	0.4494	0.0113	82.7540
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**68.1586**	**0.4494**	**0.0113**	**82.7540**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	10.9459 / 8.62583	58.9912	0.3598	9.0700e-003	70.6894
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**58.9912**	**0.3598**	**9.0700e-003**	**70.6894**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	19.6089	1.1589	0.0000	48.5803
Unmitigated	19.6089	1.1589	0.0000	48.5803

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	96.6	19.6089	1.1589	0.0000	48.5803
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**19.6089**	**1.1589**	**0.0000**	**48.5803**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	96.6	19.6089	1.1589	0.0000	48.5803
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**19.6089**	**1.1589**	**0.0000**	**48.5803**

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

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APPENDIX 3.2:

EMFAC2014 MODEL OUTPUTS

EMFAC2014 (v1.0.7) Emissions Inventory
Region Type: County
Region: Riverside
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	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Fuel_Consumption	Fuel_Consumption	Total Fuel	VMT	Total VMT	Miles per G	Vehicle Class
Riverside	2022	HHDT	Aggregated	Aggregated	GAS	103.8613	11863.75	2.334326006	2334.326006	631452.8459	11863.75447	4123636.078	6.53	HHDT
Riverside	2022	HHDT	Aggregated	Aggregated	DSL	24908.52	4111772	629.1185199	629118.5199		4111772.323			
Riverside	2022	LDA	Aggregated	Aggregated	GAS	854398.3	30449294	964.9787232	964978.7232	973161.1298	30449294.06	32354525.76	33.25	LDA
Riverside	2022	LDA	Aggregated	Aggregated	DSL	9122.584	344148	8.182406636	8182.406636		344147.9872			
Riverside	2022	LDA	Aggregated	Aggregated	ELEC	33170.8	1561084	0	0		1561083.714			
Riverside	2022	LDT1	Aggregated	Aggregated	GAS	65570.49	2183429	82.50746183	82507.46183	82557.80194	2183428.607	2185874.122	26.48	LDT1
Riverside	2022	LDT1	Aggregated	Aggregated	DSL	65.60143	1571.439	0.050340118	50.34011758		1571.439434			
Riverside	2022	LDT1	Aggregated	Aggregated	ELEC	24.91388	874.0758	0	0		874.0758293			
Riverside	2022	LDT2	Aggregated	Aggregated	GAS	289739.8	11011947	461.9771185	461977.1185	462634.6707	11011947.39	11033326.06	23.85	LDT2
Riverside	2022	LDT2	Aggregated	Aggregated	DSL	515.1398	21378.67	0.657552197	657.5521967		21378.67375			
Riverside	2022	LHDT1	Aggregated	Aggregated	GAS	15920.87	407545.3	37.54306239	37543.06239	61765.38924	407545.3272	902797.8348	14.62	LHDT1
Riverside	2022	LHDT1	Aggregated	Aggregated	DSL	16891.6	495252.5	24.22232685	24222.32685		495252.5076			
Riverside	2022	LHDT2	Aggregated	Aggregated	GAS	2800.616	88546.93	8.511929268	8511.929268	19296.44686	88546.93359	294753.7617	15.28	LHDT2
Riverside	2022	LHDT2	Aggregated	Aggregated	DSL	6245.016	206206.8	10.78451759	10784.51759		206206.8281			
Riverside	2022	MCY	Aggregated	Aggregated	GAS	39487.55	269679.7	7.087966456	7087.966456	7087.966456	269679.7437	269679.7437	38.05	MCY
Riverside	2022	MDV	Aggregated	Aggregated	GAS	209137.1	6713034	393.67929	393679.29	398816.2553	6713034.386	6840572.293	17.15	MDV
Riverside	2022	MDV	Aggregated	Aggregated	DSL	3267.707	127537.9	5.136965321	5136.965321		127537.9063			MDV
Riverside	2022	MH	Aggregated	Aggregated	GAS	6084.99	43148.7	5.186139521	5186.139521	6501.160693	43148.69957	57240.60562	8.80	MH
Riverside	2022	MH	Aggregated	Aggregated	DSL	1955.279	14091.91	1.315021172	1315.021172		14091.90605			
Riverside	2022	MHDT	Aggregated	Aggregated	GAS	2053.624	98705.43	12.30736862	12307.36862	113352.9188	98705.42697	1039365.095	9.17	MHDT
Riverside	2022	MHDT	Aggregated	Aggregated	DSL	17749.9	940659.7	101.0455502	101045.5502		940659.668			
Riverside	2022	OBUS	Aggregated	Aggregated	GAS	932.1589	44644.35	5.406486159	5406.486159	10132.6628	44644.35132	82875.14071	8.18	OBUS
Riverside	2022	OBUS	Aggregated	Aggregated	DSL	459.5161	38230.79	4.726176637	4726.176637		38230.78939			
Riverside	2022	SBUS	Aggregated	Aggregated	GAS	470.4612	17071.96	1.516772674	1516.772674	6785.591859	17071.9642	55285.41406	8.15	SBUS
Riverside	2022	SBUS	Aggregated	Aggregated	DSL	1007.351	38213.45	5.268819186	5268.819186		38213.44985			
Riverside	2022	UBUS	Aggregated	Aggregated	GAS	284.2622	33916.58	6.645590041	6645.590041	13386.97116	33916.58153	68795.55423	5.14	UBUS
Riverside	2022	UBUS	Aggregated	Aggregated	DSL	277.48	34878.97	6.741381118	6741.381118		34878.9727			

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