APPENDIX H
ENERGY ANALYSIS

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Six Basins Strategic Plan

ENERGY ANALYSIS

CITIES OF CLAREMONT, POMONA, LA VERNE, & UPLAND, & THE COUNTY OF LOS ANGELES

SIX BASINS WATERMASTER

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TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
AQIA	Air Quality Impact Analysis
BACM	Best Available Control Measures
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CPEP	Clean Power and Electrification Pathway
CPUC	California Public Utilities Commission
DMV	Department of Motor Vehicles
EMFAC	Emissions Factor Model
FERC	Federal Energy Regulatory Commission
GS-1	General Service Rate Schedule
GWh	Gigawatt Hour
HHD	Heavy-Heavy Duty
2019 IEPR	2019 Integrative Energy Policy Report
ISO	Independent Service Operator
ISTEA	Intermodal Surface Transportation Efficiency Act
kWh	Kilowatt Hour
LDA	Light Duty Autos
LHD	Light-Heavy Duty
MHD	Medium-Heavy Duty
MPG	Miles Per Gallon
MPO	Metropolitan Planning Organization
PG&E	Pacific Gas and Electric
Project	Six Basins Strategic Plan
SCAB	Southern California Air Basin
SCE	Southern California Edison
SDAB	San Diego Air Basin
SDG&E	San Diego Gas & Electric
SF	Square Feet
SoCalGas	Southern California Gas
SP	Specific Plan
TEA-21	Transportation Equity Act for the 21^{st} Century
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Six Basins Strategic Plan Energy Analysis* is summarized below based on the significance criteria in Section 5 of this report consistent with Appendix G of the 2019 California Environmental Quality Act (CEQA) Statute and Guidelines (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for potential energy impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Energy Impact #1: Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	5.0	*Less Than Significant*	*n/a*
Energy Impact #2: Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	5.0	*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 Six Basins Strategic Plan (Project). The purpose of this report is to ensure that energy implication is considered by the Six Basins Watermaster, as the lead agency, and to quantify anticipated energy usage associated with construction 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 Six Basins Strategic Plan Project is generally located within the Cities of Claremont, Pomona, La Verne, and Upland, in addition to unincorporated County of Los Angeles, as shown on Exhibit 1-A.

1.2 PROJECT DESCRIPTION

The Six Basins Watermaster Parties are proposing to rehabilitate, enhance, or construct a number of water projects in a coordinated manner to optimize conjunctive water management activities in the Six Basins to increase reliability and sustainability of regional water supplies. There are four goals for the Project: (1) enhance water supplies, (2) enhance basin management, (3) protect and enhance water quality and (4) equitably finance the Strategic Plan implementation. For the environmental evaluation of the Six Basins Project, *Proposed Projects to Optimize Conjunctive Water Management*, have been placed in four categories. The four categories are:

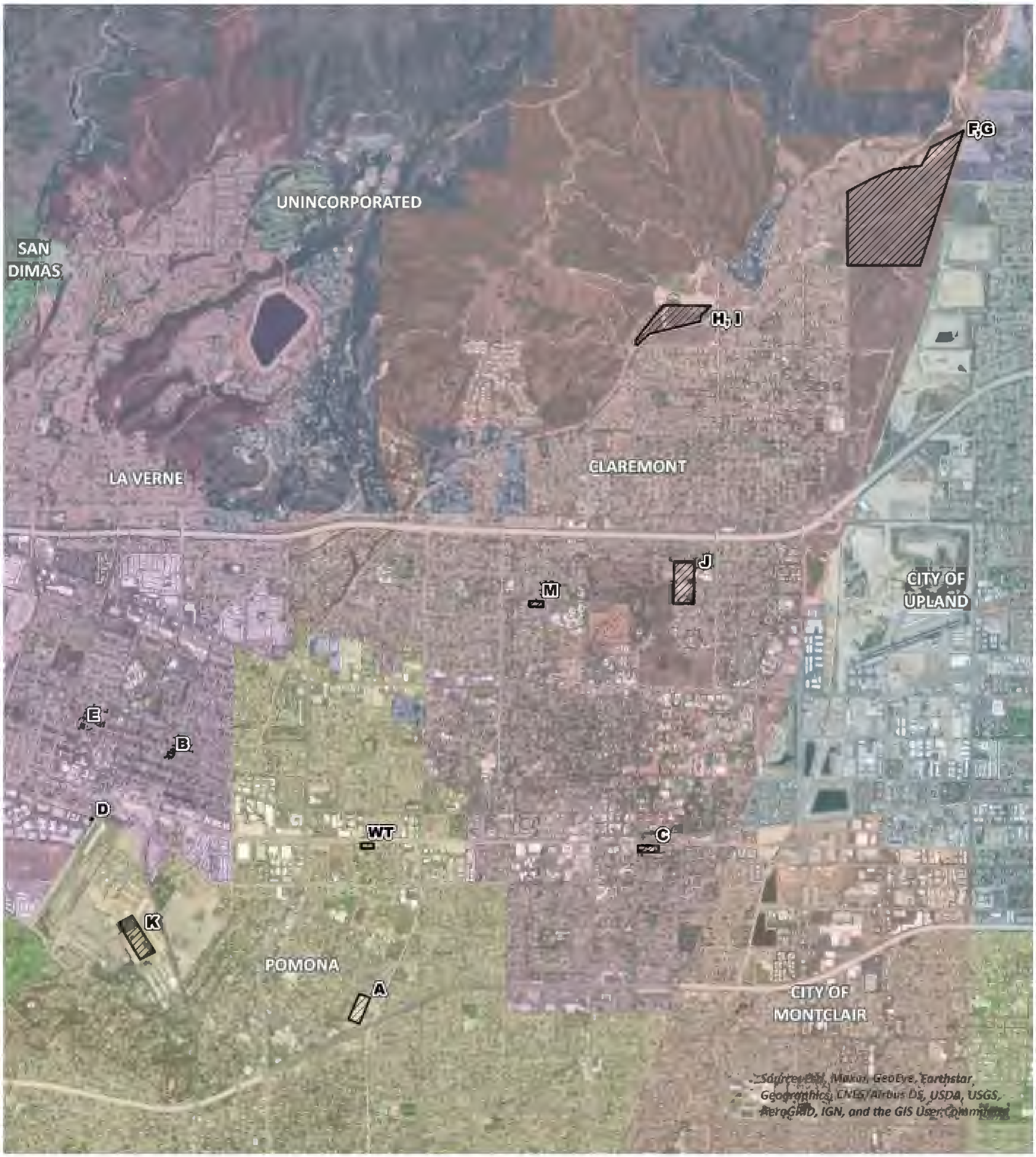
Project Category 1: Pump and treat groundwater in the Pomona Basin.

This category of projects consists of improvements to existing facilities in the Pomona Basin including: (1) increasing groundwater production at some existing wells; and (2) increasing treatment capacity at existing sites either through the construction of ion exchange (IX) or biological treatment facilities to remove Cr-6, nitrate and perchlorate; or expanding the existing air stripping facility or construct a granular activated carbon (GAC) facility to remove constituents.

Project Category 2: Stormwater and Supplemental water Recharge Projects

This category of projects represents improvements that would be undertaken at the San Antonio Spreading Grounds and the Thompson Creek Spreading Grounds to enhance stormwater recharge and supplemental water recharge; enhance stormwater recharge at the Pedley Spreading Grounds; to create an area for the recharge of stormwater and supplemental water at the Los Angeles County Fairplex; and to identify opportunities for stormwater recharge through compliance with the Municipal Separate Storm Sewer System (MS-4).

EXHIBIT 1-A: PROJECT LOCATION MAP



N

LEGEND:

(A) Project Identification (PID)

WT Potential Water Treatment Facility

URBAN CROSSROADS

More specifically, the San Antonio Spreading Grounds includes:

- 50 acres in area within a larger 90-acre area within the San Antonio Creek wash, west of the San Antonio Creek Channel, east of the power transmission lines, south of the existing LACFCD basins, and north of the extension of East Pomello Drive.
- 150-200 feet in depth (depending on groundwater level).
- Approximately 2.5 million tons of aggregate material will be excavated with typical aggregate mining equipment (dozers, scrapers) and hauled to a portable crusher within the excavation area.
- A total of approximately 20 million tons would be excavated over a five year period.
- Material is crushed on site and released onto a conveyor system. A typical system consists of a rubberized belt on a series of rollers within a frame that may range in size from 2-4 feet in width and between 2-4 feet above ground surface.
- Material would be conveyed to an active mining area between Holliday Pits 4 and 5. The material would be either stockpiled at that location of conveyed south to be processed at the Foothill Plant locate south of Baseline Road – no material is transported by haul truck.
- The crusher and conveyor system are portable and can be moved around the excavated area as mining lowers the level of the excavation area.
- Excavation activities at the SASG site could take up to 5 years to complete but could be completed in 2 years depending on the ultimate depth.
- No transport of excavated material would be hauled on surface streets through neighborhoods.

Project Category 3: Temporary Surplus Projects

Projects in this category include: 1) rehabilitating Pomona's P-20 wellhead treatment facility, 2) constructing new production wells and monitoring wells; and 3) construction of new underground pipelines to interconnect some sites.

Project Category 4: Monitoring programs in support of the Strategic Plan.

This category of projects consists of the research for and development of groundwater monitoring programs to support the design of new wells and treatment facilities (Project Categories 1 and 3) and provide groundwater production and water-level data to the Watermaster Parties, supporting well-siting investigations, and other support functions to monitor and develop new strategies and projects for conjunctive water use.

The *Proposed Projects to Optimize Conjunctive Water Management* included in the program-level Six Basins Project are listed on Table 1-1.

TABLE 1-1: PROPOSED PROJECTS TO OPTIMIZE CONJUNCTIVE WATER MANAGEMENT

PID[1]	Project Description
Pump and Treat[2]	
A	Increase Groundwater Production and Treatment Capacity at Reservoir 5 Treatment Facility
B	Increase Groundwater Production and Treatment Capacity at Lincoln/Mills Treatment Facility
C	Rehabilitate Del Monte 4 and Add Arsenic Treatment
D	Construct Durward 2 Well and a Wellhead Treatment Facility
E	Rehabilitate Old Baldy Well and Construct Wellhead Treatment Facility
Recharge Improvements	
F	Enhance Stormwater Recharge at the San Antonio Spreading Grounds
G[3]	Enhance Supplemental-Water Recharge at the SASG
H[4]	Enhance Stormwater Recharge at the Thompson Creek Spreading Grounds
I	Supplemental-Water Recharge at the TCSG
J[5]	Enhance Stormwater Recharge at the Pedley Spreading Grounds
K[6]	Recharge Stormwater and Supplemental Water at the LA County Fairplex
N	Enhance Stormwater Recharge through MS-4 Compliance
~~O[7]~~	~~Create a Conservation Pool Behind San Antonio Dam~~
Temporary Surplus	
L[8]	Construct Interconnections between water supply agencies
M[9]	Rehabilitate P-20 and a Wellhead Treatment Facility
P[10]	Construct New Production Wells

Source: Wildermuth Environmental, Inc., Final Strategic Plan for the Six Basins, November 2017, Table 6-2.

[1] Project Identification Number.

[2] Pump and Treat projects will be carried out at existing well sites and/or treatment facilities. No new site disturbance is anticipated through the physical expansion of a well site or treatment facility.

[3] Potential area of disturbance to expand the SASG is 50 acres to a depth of up to 16 feet. To recharge recycled water, a pipeline of up to 68,000 lineal feet would be constructed.

[4] Potential area of disturbance to expand the TCSG is 143 acres to a depth of up to 10 feet.

[5] Potential area of disturbance to expand the Pedley Spreading Grounds is 6 acres to a depth of up to 10 feet.

[6] Potential area of disturbance to create the new Fairplex water recharge facilities is 100 acres to a depth of up to 10 feet.

[7] Subsequent to the completion of the Draft Strategic Plan, the Watermaster Parties determined that this project was speculative at this time and is no longer being considered in conjunction with the other Strategic Plan projects.

[8] Pipe sizes ranging from 8" to 20" in diameter.

[9] See note No. 2 above.

[10] Construction of new production wells is assumed to disturb up to 0.5 acre per well site (includes well site and site access).

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2 EXISTING CONDITIONS

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

2.1 OVERVIEW

The most recent data for California's estimated total energy consumption and natural gas consumption is from 2018, released by the United States (U.S.) Energy Information Administration's (EIA) California State Profile and Energy Estimates in 2020 and included (2):

- Approximately 7,967 trillion British Thermal Unit (BTU) of energy was consumed
- Approximately 681 million barrels of petroleum
- Approximately 2,137 billion cubic feet of natural gas
- Approximately 1 million short tons of coal

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

- Gasoline demand in the transportation sector is expected to decline from approximately 15.8 billion gallons in 2017 to between 12.3 billion and 12.7 billion gallons in 2030 (3)
- Diesel demand in the transportation sector is expected to rise, increasing from approximately 3.7 billion diesel gallons in 2015 to approximately 4.7 billion in 2030 (3)
    - Data from the Department of Energy states that approximately 3.9 billion gallons of diesel fuel were consumed in 2017 (4)

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

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

In 2019, total system electric generation for California was 277,704 gigawatt hours (GWh). California's massive electricity in-state generation system generated approximately 200,475 GWh which accounted for approximately 72% of the electricity it uses; the rest was imported from the Pacific Northwest (9%) and the U.S. Southwest (19%) (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 2019)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Percent of Imports	Total California Energy Mix	Total California Power Mix
Coal	248	0.12%	219	7,765	7,985	10.34%	8,233	2.96%
Natural Gas	86,136	42.97%	46	8,859	8,906	11.53%	95,042	34.22%
Oil	36	0.02%	0	0	0	0.00%	36	0.01%
Other (Waste Heat/Petroleum Coke)	411	0.20%	0	11	11	0.01%	422	0.15%
Nuclear	16,163	8.06%	0	8,743	8,743	11.32%	24,906	8.97%
Large Hydro	33,145	16.53%	5,071	1,071	6,142	7.95%	39,287	14.15%
Unspecified	0	0.00%	7,979	13,767	21,746	28.16%	21,746	7.83%
Non-Renewable and Unspecified Totals	136,139	67.91%	13,315	40,218	53,533	69.32%	189,672	68.30%
Biomass	5,851	2.92%	903	33	936	1.21%	6,787	2.44%
Geothermal	10,943	5.46%	99	2,218	2,318	3.00%	13,260	4.77%
Small Hydro	5,349	2.67%	292	4	296	0.38%	5,646	2.03%
Solar	28,513	14.22%	282	5,295	5,577	7.22%	34,090	12.28%
Wind	13,680	6.82%	9,038	5,531	14,569	18.87%	28,249	10.17%
Renewable Totals	64,336	32.09%	10,615	13,081	23,696	30.68%	88,032	31.70%
System Totals	**200,475**	**100.00%**	**23,930**	**53,299**	**77,229**	**100.00%**	**277,704**	**100.00%**

Source: California Energy Commission's 2019 Total System Electric Generation

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

- California was the seventh-largest producer of crude oil among the 50 states in 2018, and, as of January 2019, it ranked third in oil refining capacity.
- California is the largest consumer of jet fuel among the 50 states and accounted for one-fifth of the nation's jet fuel consumption in 2018. (7)
- California's total energy consumption is second highest in the nation, but, in 2018, the state's per capita energy consumption was the fourth-lowest, due in part to its mild climate and its energy efficiency programs. (8)
- In 2018, California ranked first in the nation as a producer of electricity from solar, geothermal, and biomass resources and fourth in the nation in conventional hydroelectric power generation.
- In 2018, large- and small-scale solar photovoltaic (PV) and solar thermal installations provided 19% of California's net electricity generation (9).

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

2.2 ELECTRICITY

The usage associated with electricity use were calculated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2. The Southern California region's electricity reliability has been of concern for the past several years due to the planned retirement of aging facilities that depend upon once-through cooling technologies, as well as the June 2013 retirement of the San Onofre Nuclear Generating Station (San Onofre). While the once-through cooling phase-out has been ongoing since the May 2010 adoption of the State Water Resources Control Board's once-through cooling policy, the retirement of San Onofre complicated the situation. California ISO studies revealed the extent to which the South California Air Basin (SCAB) and the San Diego Air Basin (SDAB) region were vulnerable to low-voltage and post-transient voltage instability concerns. A preliminary plan to address these issues was detailed in the 2013 Integrative Energy Policy Report (IEPR) after a collaborative process with other energy agencies, utilities, and air districts (10). Similarly, the subsequent 2018 and 2019 IEPR's identify broad strategies that are aimed at maintaining electricity system reliability.

Electricity is currently provided to the Project by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons in 15 counties and in 180 incorporated cities, within a service area encompassing approximately 50,000 square miles. Based on SCE's 2018 Power Content Label Mix, SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers (11).

California's electricity industry is an organization of traditional utilities, private generating companies, and state agencies, each with a variety of roles and responsibilities to ensure that electrical power is provided to consumers. The California Independent Service Operator (ISO) is a nonprofit public benefit corporation and is the impartial operator of the State's wholesale power grid and is charged with maintaining grid reliability, and to direct uninterrupted electrical energy supplies to California's homes and communities. While utilities still own transmission assets, the ISO routes electrical power along these assets, maximizing the use of the transmission system and its power generation resources. The ISO matches buyers and sellers of electricity to ensure that enough power is available to meet demand. To these ends, every five minutes the ISO forecasts electrical demands, accounts for operating reserves, and assigns the lowest cost power plant unit to meet demands while ensuring adequate system transmission capacities and capabilities (12).

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

Tables 2-2 identifies SCE's specific proportional shares of electricity sources in 2019. As indicated in Table 2-2, the 2019 SCE Power Mix has renewable energy at 35.1% of the overall energy resources. Geothermal resources are at 5.9%, wind power is at 11.5%, large hydroelectric sources are at 7.9%, solar energy is at 16.0%, and coal is at 0% (13).

TABLE 2-2: SCE 2019 POWER CONTENT MIX

Energy Resources	2019 SCE Power Mix
Eligible Renewable	**35.1%**
Biomass & Waste	0.6%
Geothermal	5.9%
Eligible Hydroelectric	1.0%
Solar	16.0%
Wind	11.5%
Coal	**0.0%**
Large Hydroelectric	**7.9%**
Natural Gas	**16.1%**
Nuclear	**8.2%**
Other	**0.1%**
Unspecified Sources of power*	32.6%
Total	**100%**

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

2.3 NATURAL GAS

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

> *"The CPUC regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller natural gas utilities. The CPUC also regulates independent storage operators: Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.*
>
> *California's natural gas utilities provide service to over 11 million gas meters. SoCalGas and PG&E provide service to about 5.9 million and 4.3 million customers, respectively, while SDG&E provides service to over 800, 000 customers. In 2018, California gas utilities forecasted that they would deliver about 4740 million cubic feet per day (MMcfd) of gas to their customers, on average, under normal weather conditions.*
>
> *The overwhelming majority of natural gas utility customers in California are residential and small commercials customers, referred to as "core" customers. Larger volume gas customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.*

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

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

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

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

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

PG&E and SoCalGas own and operate several natural gas storage fields that are located within their service territories in northern and southern California, respectively. These storage fields, and four independently owned storage utilities - Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage - help meet peak seasonal and daily natural gas demand and allow California natural gas customers to secure natural gas supplies more efficiently. PG&E is a 25% owner of the Gill Ranch Storage field. These storage fields provide a significant amount of infrastructure capacity to help meet

California's natural gas requirements, and without these storage fields, California would need much more pipeline capacity in order to meet peak gas requirements .

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

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

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

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

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

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

In order properly operate their natural gas transmission pipeline and storage systems, PG&E and SoCalGas must balance the amount of gas received into the pipeline system and delivered to customers or to storage fields. Some of these utilities' storage capacity is dedicated to this service, and under most circumstances, customers do not need to precisely match their deliveries with their consumption. However, when too much or too little gas is expected to be delivered into the utilities' systems, relative to the amount being consumed, the utilities require customers to more precisely match up their deliveries with their consumption. And, if customers do not meet certain delivery requirements, they could face financial penalties. The utilities do not profit from these financial penalties - the amounts are then returned to customers as a whole. If the utilities find that they are unable to deliver all the gas that is expected to be consumed, they may even call for a curtailment of some gas deliveries. These curtailments are typically required for just the largest, noncore customers. It has been many years since there has been a significant curtailment of core customers in California ." (14)

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.

Based on information provided by the Project applicant, no natural gas will be used as a result of the project, and as such use of natural gas is not considered in the analysis.

2.4 TRANSPORTATION ENERGY RESOURCES

The Project would generate additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. In March 2019, the Department of Motor Vehicles (DMV) identified 36.4 million registered vehicles in California (15), and those vehicles consume an estimated 17.8 billion gallons of fuel each year[1]. Gasoline (and other vehicle fuels)

[1] Fuel consumptions estimated utilizing information from EMFAC2014.

are commercially provided commodities and would be available to the Project patrons and employees via commercial outlets.

California's on-road transportation system includes 394,383 land miles, more than 27.5 million passenger vehicles and light trucks, and almost 8.1 million medium- and heavy-duty vehicles (15). While gasoline consumption has been declining since 2008 it is still by far the dominant fuel. Petroleum comprises about 91% of all transportation energy use, excluding fuel consumed for aviation and most marine vessels (16). Nearly 17.8 billion gallons of on-highway fuel are burned each year, including 14.6 billion gallons of gasoline (including ethanol) and 3.2 billion gallons of diesel fuel (including biodiesel and renewable diesel). In 2019, Californians also used 194 million cubic feet of natural gas as a transportation fuel (17), or the equivalent of 183 billion gallons of gasoline.

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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 PUC 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.

3.1 FEDERAL REGULATIONS

3.1.1 INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT OF 1991 (ISTEA)

The ISTEA of 1991 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 SCAG is not planning for intermodal facilities on or through the Project site.

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

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

The Project site is located along major transportation corridors with proximate access to the Interstate freeway system and 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

3.2.1 INTEGRATED ENERGY POLICY REPORT (IEPR)

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

The 2019 IEPR was adopted January 31, 2020, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2019 IEPR focuses on a variety of topics such as including the environmental performance of the electricity generation system, landscape-scale planning, the response to the gas leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues, updates on Southern California electricity reliability, methane leakage, climate adaptation activities for the energy sector, climate and sea level rise scenarios, and the California Energy Demand Forecast (18). The 2020 IEPR Update is currently in progress but is not anticipated to be adopted until February 2021.

Electricity would be provided to the Project by Southern California Edison (SCE). SCE's Clean Power and Electrification Pathway (CPEP) white paper builds on existing state programs and policies. As such, the Project is consistent with, and would not otherwise interfere with, nor obstruct implementation the goals presented in the 2019 IEPR.

3.2.2 STATE OF CALIFORNIA ENERGY PLAN

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

The Project does not generate a substantive amount of vehicular travel would not otherwise interfere with, nor obstruct implementation of the State of California Energy Plan.

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

California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas (GHG) emissions. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020. The 2019 Title are applicable to building permit applications submitted on or after January 1, 2020. The 2019 Title 24 standards require solar PV systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, and update indoor and outdoor lighting standards for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7% less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar PV systems, homes built under the 2019 standards will about 53% less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30% less energy due to lighting upgrades compared to the prior code (19).

As a conservative measure, the analysis herein assumes compliance with the 2016 Title 24 Standards and no additional reduction for compliance with the 2019 standards have been taken.

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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* (20)*,* this report analyzes the project's anticipated energy use during construction and operations to determine if the Project would:

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

In addition, Appendix F of the *State CEQA Guidelines* (21)*,* 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 Version 2016.3.2 outputs for the *Six Basins Strategic Plan Air Quality Impact Analysis* (AQIA) (22) was utilized in this analysis, detailing Project related construction equipment, transportation energy demands, and facility energy demands.

4.2.1 CALEEMOD

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 Version 2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutants and GHG emissions from direct and indirect sources as well as energy usage. (23). 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 is provided in Appendix 4.1.

4.3 CONSTRUCTION ENERGY DEMANDS

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.

4.3.1 CONSTRUCTION POWER COST

The total Project construction power costs is the summation of the products of the area (sf) by the construction duration and the typical power cost.

CONSTRUCTION DURATION

For purposes of analysis, construction is expected to commence in August 2021 and will last through September 2022 (22). The construction schedule utilized in the analysis, shown in Table 4-1, represents a "worst-case" analysis scenario. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines* (24).

PROJECT CONSTRUCTION POWER COST

The *2020 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of $2.38, which was used to calculate the Project's total construction power cost (25).

As shown on Table 4-1, the total power cost of the on-site electricity usage during the construction of the Project is estimated to be approximately $72,745.51.

TABLE 4-1: CONSTRUCTION POWER COST

Land Use	Power Cost (per 1,000 SF of construction per month)	Size (1,000 SF)	Construction Duration (months)	Project Construction Power Cost
Treatment Facility	$2.38	130.680	13	$4,043.24
Pipeline	$2.38	42.500	13	$1,314.95
Spreading Grounds	$2.38	2,178.000	13	$67,387.32
CONSTRUCTION POWER COST				***$72,745.51***

4.3.2 CONSTRUCTION ELECTRICITY USAGE

The total Project construction electricity usage is the summation of the products of the power cost (estimated in Table 4-1) by the utility provider cost per kilowatt hour (kWh) of electricity.

PROJECT CONSTRUCTION ELECTRICITY USAGE

The SCE's general service rate schedule were used to determine the Project's electrical usage. As of October 1, 2020, SCE's general service rate is $0.10 per kilowatt hours (kWh) of electricity for industrial/commercial services (26). As shown on Table 4-2, the total electricity usage from on-site Project construction related activities is estimated to be approximately 759,467 kWh.

TABLE 4-2: CONSTRUCTION ELECTRICITY USAGE

Land Use	Cost per kWh	Project Construction Electricity Usage (kWh)
Treatment Facility	$0.10	42,212
Pipeline	$0.10	13,728
Spreading Grounds	$0.10	703,527
CONSTRUCTION ELECTRICITY USAGE		***759,467***

4.3.3 CONSTRUCTION EQUIPMENT FUEL ESTIMATES

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

CONSTRUCTION EQUIPMENT

Consistent with industry standards and typical construction practices, each piece of equipment listed in Table 4-3 will operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the code. It should be noted that most pieces of equipment would likely operate for fewer hours per day. A summary of construction equipment assumptions by phase is provided at Table 4-3.

TABLE 4-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Equipment	Amount	Hours Per Day
Bore/Drill Rigs	1	6
Cranes	1	6
Crushing/Proc. Equipment	1	6
Excavators	2	6
Generator Sets	1	6
Graders	1	6
Off-Highway Trucks	1	4
Pavers	2	6
Paving Equipment	1	6
Rollers	1	6
Rubber Tired Dozers	1	6
Tractors/Loaders/Backhoes	2	6
Welders	1	6

PROJECT CONSTRUCTION EQUIPMENT FUEL CONSUMPTION

Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in Table 4-5. The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hour per gallon (hp-hr-gal.), obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines (27). For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Project area and region[2].

[2] Based on Appendix A of the CalEEMod User's Guide, Construction consists of several types of off-road equipment. Since the majority of the off-road construction equipment used for construction projects are diesel fueled, CalEEMod assumes all of the equipment operates on diesel fuel.

TABLE 4-4: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES (1 OF 2)

Phase Name	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption
Planning Areas 1, 2,and 3								
Grading	365	Bore/Drill Rigs	221	1	6	0.50	663	13,081
		Cranes	231	1	6	0.29	402	7,930
		Crushing/Proc. Equipment	85	1	6	0.78	398	7,848
		Excavators	158	2	6	0.38	720	14,215
		Generator Sets	84	1	6	0.74	373	7,358
		Graders	187	1	6	0.41	460	9,076
		Off-Highway Trucks	402	1	4	0.38	611	12,056
		Pavers	130	2	6	0.42	655	12,927
		Paving Equipment	132	1	6	0.36	285	5,625
		Rollers	80	1	6	0.38	182	3,599
		Rubber Tired Dozers	247	1	6	0.40	593	11,696
		Tractors/Loaders/Backhoes	97	2	6	0.37	431	8,497
		Welders	46	1	6	0.45	124	2,450
CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)								***116,359***

As previously, presented in Table 4-4, Project construction activities would consume an estimated 116,359 gallons of diesel fuel. Project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

4.3.4 CONSTRUCTION TRIPS AND VMT

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips are presented below in Table 4-5. Worker trips are based on CalEEMod default parameters. It should be noted that for Vendor Trips, specifically, CalEEMod only assigns Vendor Trips to the Building Construction phase. For this Project, vendor trips were calculated consistent with CalEEMod methodology.

TABLE 4-5: CONSTRUCTION TRIPS AND VMT

Phase Type	Worker Trips Per Day	Vendor Trips Per Day	Hauling Trips Per Day
Grading	40	22	0

4.3.5 CONSTRUCTION WORKER FUEL ESTIMATES

With respect to estimated VMT for the Project, the construction worker trips would generate an estimated 179,340 VMT during the 13 months of construction (22). Based on CalEEMod methodology, it is assumed that 50% of all vendor trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[3]), and 25% are from light-duty-trucks (LDT2[4]). Data regarding Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA.

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2014 version of the EMFAC developed by CARB. EMFAC2014 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (28). EMFAC2014 was run for the LDA, LDT1, and LDT2 vehicle class within the California sub-area for the 2021 through 2022 calendar years. Data from EMFAC2014 is shown in Appendix 4.2.

Table 4-6 provides an estimated annual fuel consumption resulting from LDAs related to the Project construction worker trips. Based on Table 4-6, it is estimated that 2,945 gallons of fuel will be consumed related to construction worker trips during full construction of the Project.

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

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

TABLE 4-6: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDA

Phase Name	Duration (Days)	Worker Trips / Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2021						
Grading	110	20	14.7	32,340	29.67	1,090
2022						
Grading	195	20	14.7	57,330	30.91	1,855
PROJECT CONSTRUCTION WORKER (LDA) FUEL CONSUMPTION						***2,945***

Table 4-7 provides an estimated annual fuel consumption resulting from LDT1s related to the Project construction worker trips. Based on Table 4-7, it is estimated that 1,840 gallons of fuel will be consumed related to construction worker trips during full construction of the Project.

TABLE 4-7: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT1

Phase Name	Duration (Days)	Worker Trips / Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2021						
Grading	110	10	14.7	16,170	23.90	677
2022						
Grading	195	10	14.7	28,665	24.64	1,163
PROJECT CONSTRUCTION WORKER (LDT1) FUEL CONSUMPTION						***1,840***

Table 4-8 provides an estimated annual fuel consumption resulting from LDT2s related to the Project construction worker trips. Based on Table 4-8, it is estimated that 2,050 gallons of fuel will be consumed related to construction worker trips during full construction of the Project.

TABLE 4-8: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES – LDT2

Phase Name	Duration (Days)	Worker Trips / Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2021						
Grading	110	10	14.7	16,170	21.39	756
2022						
Grading	195	10	14.7	28,665	22.15	1,294
PROJECT CONSTRUCTION WORKER (LDT2) FUEL CONSUMPTION						***2,050***

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

4.3.6 CONSTRUCTION VENDOR FUEL ESTIMATES

With respect to estimated VMT, the construction vendor trips would generate an estimated 46,299 VMT along area roadways for the Project over the duration of construction activity (22). 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 CalEEMod defaults utilized within the within the AQIA (22). Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2014. EMFAC2014 was run for the MHDT and HHDT vehicle classes within the California sub-area for the 2021 through 2022 calendar years. Data from EMFAC2014 is shown in Appendix 4.2.

Based on Table 4-9, it is estimated that 2,708 gallons of fuel will be consumed related to construction vendor trips (MHDTs) during full construction of the Project.

TABLE 4-9: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – MHDT

Phase Name	Duration (Days)	Vendor Trips / Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2021						
Grading	110	11	6.9	8,349	8.52	980
2022						
Grading	195	11	6.9	14,801	8.56	1,729
PROJECT CONSTRUCTION VENDOR (MHDT) FUEL CONSUMPTION						***2,708***

Tables 4-10 shows the estimated fuel economy of HHDTs accessing the Project site. Based on Tables 4-10, fuel consumption from construction vendor trips (HHDTs) will total approximately 3,881 gallons.

TABLE 4-10: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES – HHDT

Phase Name	Duration (Days)	Vendor Trips / Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2021						
Grading	110	11	6.9	8,349	5.92	1,411
2022						
Grading	195	11	6.9	14,801	5.99	2,470
PROJECT CONSTRUCTION VENDOR (HHDT) FUEL CONSUMPTION						***3,881***

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

4.3.7 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. 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 SUMMARY

4.4.1 CONSTRUCTION ENERGY DEMANDS

The estimated power cost of on-site electricity usage during the construction of the proposed Project is assumed to be around $72,745.51. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction is calculated to be around 759,467 kWh.

Construction equipment used by the Project would result in single event consumption of approximately 116,359 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 construction of the proposed Project would result in the estimated fuel consumption of 6,834 gallons of fuel. Additionally, fuel consumption from construction vendor trips will total approximately 6,590 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 2019 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 (18). As supported by the preceding discussions, Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

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5 CONCLUSIONS

5.1 ENERGY IMPACT 1

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

As supported by the preceding analyses, Project construction would not result in the inefficient, wasteful or unnecessary consumption of energy. Further, the energy demands of the Project can be accommodated within the context of available resources and energy delivery systems. The Project would therefore not cause or result in the need for additional energy producing or transmission facilities. The Project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California.

5.2 ENERGY IMPACT 2

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

The Project includes construction activity and associated improvements and would not result in the inefficient, wasteful, or unnecessary consumption of energy. In fact, improving the pumps, wells, and maintenance facilities would result in a more efficient process and consequently reduce a wasteful use 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

1. **Association of Environmental Professionals.** *2018 CEQA California Environmental Quality Act.* 2018.
2. **Administration, U.S. Energy Information.** California State Profile and Energy Estimates. [Online] https://www.eia.gov/state/data.php?sid=CA#ConsumptionExpenditures.
3. **California Energy Commission.** *Transportation Energy Demand Forecast 2018-2030.* 2018.
4. **Alternate Fuels Data Center. *U.S. Department of Energy.* [Online] https://afdc.energy.gov/states/ca.**
5. **U.S. Energy Information Administration. California Energy Consumption by End-Use Sector. *California State Profile and Energy Estimates.* [Online] https://www.eia.gov/state/?sid=CA#tabs-2.**
6. **California Energy Commission. 2019 Total System Electric Generation. *CA.gov.* [Online] https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation.**
7. **Jet fuel consumption, price, and expenditure estimates, 2017. *U.S. Energy Information Administration.* [Online] https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_jf.html.**
8. **State Profile Data: California. *U.S. Energy and Information Administration.* [Online] https://www.eia.gov/state/data.php?sid=CA.**
9. **U.S. Energy Information Administration. State Profile and Energy Estimates. *Independent Statistics and Analysis.* [Online] http://www.eia.gov/state/?sid=CA#tabs2..**
10. **California Energy Commission. 2013 Integrated Energy Policy Report. [Online] 2013. http://www.energy.ca.gov/2013publications/CEC-100-2013-001/CEC-100-2013-001-CMF.pdf.**
11. **—. California Energy Almanac. *Utility Energy Supply Plans from 2013.* [Online] https://www.energy.ca.gov/almanac/electricity_data/s-2_supply_forms_2013/.**
12. **California ISO. Understanding the ISO. [Online] http://www.caiso.com/about/Pages/OurBusiness/UnderstandingtheISO/default.aspx.**
13. **Southern Californai Edison. 2019 Power Content Label. *Southern California Edison.* [Online] https://www.sce.com/sites/default/files/inline-files/SCE_2019PowerContentLabel.pdf.**
14. **California Public Utilities Commission. Natural Gas and California. [Online] http://www.cpuc.ca.gov/general.aspx?id=4802.**
15. **Department of Motor Vehicles. *State of California Department of Motor Vehicles Statistics For Publication January Through December 2019.* 2019.**
16. **U.S. Energy Information Administration. Use of Energy in the United States Explained Energy Use for Transportation. [Online] https://www.eia.gov/energyexplained/?page=us_energy_transportation.**
17. **—. Natural Gas Consumption by End Use. [Online] https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm.**
18. **California Energy Commission Staff. 2019 Integrated Energy Policy Report Update. [Online] 2019. [Cited: March 26, 2020.] https://ww2.energy.ca.gov/2019_energypolicy/.**
19. **The California Energy Commission. 2019 Building Energy Efficiency Standards . *California Energy Commission.* [Online] 2018.**

https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.

20. **Association of Environmental Professionals. *2019 CEQA California Environmental Quality Act.* 2019.**
21. **State of California. *California Environmental Quality Act Guideline, California Public Resources Code, Title 14, Division 6, Chapter 3,.***
22. **Urban Crossroads, Inc. *Six Basins Strategic Plan Air Quality Impact Analysis.* 2021.**
23. **California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model (CalEEMod). [Online] September 2016. www.caleemod.com.**
24. **State of California. *2019 CEQA California Environmental Quality Act.* 2019.**
25. **Pray, Richard. *2020 National Construction Estimator.* Carlsbad : Craftsman Book Company, 2020.**
26. **Southern California Edison. Schedule GS-1 General Service. *Regulatory Information - Rates Pricing.* [Online] https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/general-service-&-industrial-rates/ELECTRIC_SCHEDULES_GS-1.pdf.**
27. **California Air Resources Board. *Methods to Find the Cost-Effectiveness of Funding Air Quality Projects For Evaluating Motor Vehicle Registration Fee Projects And Congestion Mitigation and Air Quality Improvement (CMAQ) Projects, Emission Factor Tables.* 2018.**
28. **California Department of Transportation. EMFAC Software. [Online] http://www.dot.ca.gov/hq/env/air/pages/emfac.htm.**

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7 CERTIFICATIONS

The contents of this energy report represent an accurate depiction of the environmental impacts associated with the proposed Six Basins Strategic Plan 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 hqureshi@urbanxroads.com.

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EDUCATION

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

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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

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APPENDIX 3.2:

EMFAC 2014 MODEL OUTPUTS

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