



El Camino Specific Plan Amendment

ENERGY ANALYSIS

CITY OF SAN JUAN CAPISTRANO

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LIST OF ABBREVIATED TERMS

%	Percent
(1)	Reference
AQIA	El Camino Specific Plan Amendment Air Quality Impact Analysis
BACM	Best Available Control Measures
BTU	British Thermal Units
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
City	City of San Juan Capistrano
CPUC	California Public Utilities Commission
DMV	Department of Motor Vehicles
ECSP	El Camino Specific Plan
ECSPA	El Camino Specific Plan Amendment
EIA	Energy Information Administration
EPA	Environmental Protection Agency
EMFAC	EMissions FACtor
FERC	Federal Energy Regulatory Commission
GHG	Greenhouse Gas
GWh	Gigawatt Hour
HHDT	Heavy-Heavy Duty Trucks
hp-hr-gal	Horsepower Hours Per Gallon
HTC	Historic Town Center
I-5	Interstate 5
IEPR	Integrated Energy Policy Report
ISO	Independent Service Operator
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
kBTU	Thousand-British Thermal Units
kWh	Kilowatt Hour
LDA	Light Duty Auto
LDT1/LDT2	Light-Duty Trucks
LHDT1/LHDT2	Light-Heavy Duty Trucks

MCY	Motorcycles
MDV	Medium Duty Trucks
MH	Motorhome
MHDT	Medium-Heavy Duty Trucks
MMcfd	Million Cubic Feet Per Day
mpg	Miles Per Gallon
MPO	Metropolitan Planning Organization
OBUS	Other Bus
PG&E	Pacific Gas and Electric
Project	El Camino Specific Plan Amendment
PV	Photovoltaic
SBUS	School Buses
SCAB	South Coast Air Basin
SDAB	San Diego Air Basin
SDG&E	San Diego Gas & Electric
SF	Square Feet
SoCalGas	Southern California Gas
TEA-21	Transportation Equity Act for the 21st Century
U.S.	United States
UBUS	Urban Bus
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *El Camino Specific Plan Amendment Energy Analysis* is summarized below based on the significance criteria in Section 5 of this report consistent with Appendix G of the *CEQA 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	<i>Less Than Significant</i>	<i>n/a</i>
Energy Impact #2: Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	5.0	<i>Less Than Significant</i>	<i>n/a</i>

ES.2 PROJECT REQUIREMENTS

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

- Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)
- The Transportation Equity Act for the 21st Century (TEA-21)
- Integrated Energy Policy Report (IEPR)
- State of California Energy Plan
- California Code Title 24, Part 6, Energy Efficiency Standards
- California Code Title 24, Part 11, California Green Building Standards Code (CALGreen)
- AB 1493 Pavley Regulations and Fuel Efficiency Standards
- California’s Renewable Portfolio Standard (RPS)
- Clean Energy and Pollution Reduction Act of 2015 (SB 350)

Consistency with the above regulations is discussed in detail in section 6 of this report.

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1 INTRODUCTION

This report presents the results of the energy analysis prepared by Urban Crossroads, Inc., for the proposed El Camino Specific Plan Amendment Project (Project). The purpose of this report is to ensure that energy implication is considered by the City of San Juan Capistrano (Lead Agency), 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 Project site encompasses approximately 5.61 acres of land in the downtown area of the City of San Juan Capistrano, as shown on Exhibit 1-A. The Forster & El Camino Mixed Use Project portion of the Project site is located at 31878 Camino Capistrano on a 3.15-acre property (Assessor's Parcel Numbers: 124-160-37, -51, and -52). The central portion of the Project site includes the Blas Aguilar Adobe and Historic Town Center (HTC) Park (Assessor's Parcel Numbers: 124-160-08, -09, -10, -11, -12, and -27). The Project site is located south of Old Mission Road, east of El Camino Real, and both west and north of Del Obispo Street. Local access to the Project site would be provided by Forster Street and Camino Capistrano. Regional access to the site would be provided by Interstate 5 (I-5), which is located approximately 568 feet northwest of the Project site.

1.2 ADOPTED EL CAMINO SPECIFIC PLAN

The El Camino Specific Plan (ECSP), adopted in August 2022, includes the recently approved mixed use developed located at the former Downtown Playhouse site. The ECSP site is a 1.68± acre single parcel of land that is generally located south of Old Mission Road, east of El Camino Real. The approved project consists of the development of a 27,457 square-foot (SF) mixed use development in place of the El Camino Real Downtown Playhouse and public parking lot. The Project's retail/commercial space consists of 7,391 SF of retail, of which 2,607 SF is located on the ground floor of the parking structure, and 7,586 SF of restaurant space, plus 5,436 SF of medical office use and 7,044 SF of office space. Parking will be provided via a total of 216 parking spaces; it is expected that this parking structure would also serve as parking to the Project's Performing Arts Center component.

1.3 PROPOSED EL CAMINO SPECIFIC PLAN AMENDMENT

With the Project, the ECSP, which now totals 1.68± acres, would be amended to encompass eight [8] parcels of land with a combined total of approximately 7.33± acres of land. Approximately 3.15± acres of land on the southern portion of the Project site would be redeveloped with the Forster & El Camino Mixed-Use Development. The middle 2.5± acres of the Project include a 1.0± acre HTC park and a 1.5± acre site that is set aside for development of a Performing Arts Center. Although no development will occur on the 1.0-acre Blas Aguilar Adobe Museum property, it is also proposed to be part of the expanded El Camino Specific Plan Amendment (ECSPA).

EXHIBIT 1-A: LOCATION MAP



LEGEND:

-  Approved Specific Plan Area
-  Specific Plan Boundary
-  Specific Plan Amendment
-  Off-Site Disturbance Area

The proposed Forster & El Camino mixed-use component of the Project as shown on Exhibit 1-B, consists of 95 multi-family apartment homes with 50 one-bedroom units, and 45 two-bedroom units, a 3,500 SF residential clubhouse/leasing office, and a one building that would house a 4,294 SF quality restaurant and a one-story, 3,100 SF health/fitness club. This Project component will provide a total of 175 parking spaces, comprised of 83 structured spaces in the garage, and 92 surface spaces on site. The middle 2.5± acres of the Project include a 1.0± acre HTC park, and a 1.5±-acre site that is set aside for development of a 49,097 SF performing arts center with a capacity of 352 seats in the Main Auditorium and a capacity of 100 seats in the “Black Box” theater. This Project component is expected to share parking with the 216-space parking structure that is planned as a part of the adopted ECSP development.

EXHIBIT 1-B: FORSTER & EL CAMINO MIXED USE PROJECT SITE PLAN



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2 EXISTING CONDITIONS

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

2.1 OVERVIEW

The most recent data for California's estimated total energy consumption and natural gas consumption is from 2021, released by the United States (U.S.) Energy Information Administration's (EIA) California State Profile and Energy Estimates in 2021 and included (2):

- As of 2021, approximately 7,359 trillion British Thermal Unit (BTU) of energy was consumed
- As of 2021, approximately 605 million barrels of petroleum
- As of 2021, approximately 2,101 billion cubic feet of natural gas
- As of 2021, approximately 1 million short tons of coal

According to the EIA, in 2022 the U.S. petroleum consumption comprised about 90% of all transportation energy use, excluding fuel consumed for aviation and most marine vessels (3). In 2022, about 251,923 million gallons (or about 5.99 million barrels) of finished petroleum products were consumed in the U.S., an average of about 690 million gallons per day (or about 16.4 million barrels per day) (4). In 2021, California consumed approximately 12,157 million gallons in motor gasoline (33.31 million per day) and approximately 3,541 million gallons of diesel fuel (9.7 million per day) (5).

The most recent data provided by the EIA for energy use in California is reported from 2021 and provided by demand sectors as follows:

- Approximately 37.8% transportation sector
- Approximately 23.2% industrial sector
- Approximately 20.0% residential sector
- Approximately 19.0% commercial sector (6)

According to the EIA, California used approximately 247,250 gigawatt hours of electricity in 2021 (7). By sector in 2021, residential uses utilized 36.5% of the state's electricity, followed by 43.9% for commercial uses, 19.2% for industrial uses, and 0.3% for transportation. Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building (7).

According to the EIA, California used approximately 200,871 million therms of natural gas in 2021 (8). In 2021 (the most recent year for which data is available), by sector, industrial uses utilized 33% of the state's natural gas, followed by 30% used as fuel in the electric power sector, 21% from residential, 11% from commercial, 1% from transportation uses and the remaining 3% was utilized for the operations, processing and production of natural gas itself (8). While the supply of natural gas in the United States and production in the lower 48 states has increased greatly since 2008, California produces little, and imports 90% of its supply of natural gas (8).

In 2022, total system electric generation for California was 287,220 gigawatt hours (GWh). California's massive electricity in-state generation system generated approximately 203,257 GWh which accounted for approximately 71% of the electricity it uses; the rest was imported from the Pacific Northwest (12%) and the U.S. Southwest (17%) (9). Natural gas is the main source for electricity generation at 47.46% of the total in-state electric generation system power as shown in Table 2-1.

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 (10):

- In 2022, California was the seventh-largest producer of crude oil among the 50 states, and, as of January 2022, the state ranked third in crude oil refining capacity.
- California is the largest consumer of jet fuel and second-largest consumer of motor gasoline among the 50 states.
- In 2020, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all but three other states.
- In 2022, renewable resources, including hydroelectric power and small-scale, customer-sited solar power, accounted for 49% of California's in-state electricity generation. Natural gas fueled another 42%. Nuclear power supplied almost all the rest.
- In 2022, California was the fourth-largest electricity producer in the nation. The state was also the nation's third-largest electricity consumer, and additional needed electricity supplies came from out-of-state generators.

As indicated below, 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.

TABLE 2-1: TOTAL ELECTRICITY SYSTEM POWER (CALIFORNIA 2022)

Fuel Type	California In-State Generation (GWh)	% of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Total California Energy Mix (GWh)	Total California Power Mix
Coal	273	0.13%	181	5,716	5,897	6,170	2.15%
Natural Gas	96,457	47.46%	44	7,994	8,038	104,495	36.38%
Oil	65	0.03%	-	-	-	65	0.2%
Other (Waste Heat/Petroleum Coke)	315	0.15%	-	-	-	315	0.11%
Unspecified	-	0.0%	12,485	7,943	20,428	20,428	7.11%
Total Thermal and Unspecified	97,110	47.78%	12,710	21,653	34,363	121,473	45.77%
Nuclear	17,627	8.67%	397	8,342	8,739	26,366	9.18%
Large Hydro	14,607	7.19%	10,803	1,118	11,921	26,528	9.24%
Biomass	5,366	2.64%	771	25	797	6,162	2.15%
Geothermal	11,110	5.47%	253	2,048	2,301	13,412	4.67%
Small Hydro	3,005	1.48%	211	13	225	3,230	1.12%
Solar	40,494	19.92%	231	8,225	8,456	48,950	17.04%
Wind	13,938	6.86%	8,804	8,357	17,161	31,099	10.83%
Total Non-GHG and Renewables	106,147	52.22%	21,471	28,129	49,599	155,747	54.23%
SYSTEM TOTALS	203,257	100.0%	34,180	49,782	83,962	287,220	100.0%

Source: CECs 2022 Total System Electric Generation

2.2 ELECTRICITY

The usage associated with electricity use was calculated using CalEEMod Version 2022.1. The Southern California region's electricity reliability has been of concern for the past several years due to the planned retirement of aging facilities that depend upon once-through cooling technologies, as well as the June 2013 retirement of the San Onofre Nuclear Generating Station (San Onofre). While the once-through cooling phase-out has been ongoing since the May 2010 adoption of the State Water Resources Control Board's once-through cooling policy, the retirement of San Onofre complicated the situation. California Independent Service Operator (ISO) studies revealed the extent to which the Mojave Desert Air Basin (MDAB) 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 (11). Similarly, the subsequent 2022 IEPR's provides information and policy recommendations on advancing a clean, reliable, and affordable energy system.

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 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, utilities 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.

Electricity is currently provided to the Project site by San Diego Gas & Electric (SDG&E). SDG&E provides electric power to more than 3.7 million people through 1.49 million electric meters and 905,000 natural gas meters in San Diego and southern Orange counties. Based on SDG&E's 2022 Power Content Label Mix, SDG&E derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SDG&E also purchases from independent power producers and utilities, including out-of-state suppliers (13).

Table 2-2, SDG&E's specific proportional shares of electricity sources in 2022. As indicated in Table 2-2, the 2022 SDG&E Power Mix has renewable energy at 35.8% of the overall energy

resources. Geothermal resources are at 4.7%, wind power is at 10.8%, large hydroelectric sources are at 9.2%, solar energy is at 17.0%, and coal is at 2.1% (14).

TABLE 2-2: SDG&E 2022 POWER CONTENT MIX

Energy Resources	2022 SDG&E Power Mix
Eligible Renewable	35.8%
Biomass & Waste	2.1%
Geothermal	4.7%
Eligible Hydroelectric	1.0%
Solar	17.0%
Wind	10.8%
Coal	2.1%
Large Hydroelectric	9.2%
Natural Gas	36.4%
Nuclear	9.2%
Other	0.1%
Unspecified Sources of power*	7.1%
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 and 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 commercial 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 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 CPUC 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 pipeline 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.” (15)

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. The Department of Motor Vehicles (DMV) identified 36.2 million registered vehicles in California (6), and those vehicles consume an estimated 17.2 billion gallons of fuel each year¹. Gasoline (and other vehicle fuels) are commercially provided commodities and would be available to the Project patrons and employees via commercial outlets.

¹ Fuel consumptions estimated utilizing information from EMFAC2021.

California's on-road transportation system includes 396,616 lane miles, more than 26.6 million passenger vehicles and light trucks, and almost 9.0 million medium- and heavy-duty vehicles (6). While gasoline consumption has been declining since 2008 it is still by far the dominant fuel. California is the second-largest consumer of petroleum products, after Texas, and accounts for 8% of the nation's total consumption. The State is the largest U.S. consumer of motor gasoline and jet fuel, and 83% of the petroleum consumed in California is used in the transportation sector (16).

California accounts for less than 1% of total U.S. natural gas reserves and production. As with crude oil, California's natural gas production has experienced a gradual decline since 1985. In 2021, about 33% of the natural gas delivered to consumers went to the State's industrial sector, and about 31% was delivered to the electric power sector. Natural gas fueled more than two-fifths of the State's utility-scale electricity generation in 2021. The residential sector, where three-fifths of California households use natural gas for home heating, accounted for 22% of natural gas deliveries. The commercial sector received 12% of the deliveries to end users and the transportation sector consumed the remaining 1% (16).

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

3.1 FEDERAL REGULATIONS

3.1.1 INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT OF 1991 (ISTEA)

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

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

The TEA-21 was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. The TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. The 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. The 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 (ITS), to help improve operations and management of transportation systems and vehicle safety.

3.2 CALIFORNIA REGULATIONS

3.2.1 INTEGRATED ENERGY POLICY REPORT (IEPR)

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

The 2022 IEPR was adopted February 2023, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2022 IEPR introduces a new

framework for embedding equity and environmental justice at the CEC and the California Energy Planning Library which allows for easier access to energy data and analytics for a wide range of users. Additionally, energy reliability, western electricity integration, gasoline cost factors and price spikes, the role of hydrogen in California’s clean energy future, fossil gas transition and distributed energy resources are topics discussed within the 2022 IEPR (17).

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 State Energy Plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

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

California Code of Regulations (CCR) Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California’s energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on August 1, 2009, and is administered by the California Building Standards Commission.

CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2022 California Green Building Code Standards that became effective on January 1, 2023². The Project would be required to comply with the applicable standards in place at the time plan check submittals were made in 2022 (18).

3.2.4 AB 1493 PAVLEY REGULATIONS AND FUEL EFFICIENCY STANDARDS

California AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Under this legislation, CARB adopted regulations to reduce GHG emissions from non-commercial passenger vehicles (cars and light-duty trucks). Although aimed at reducing GHG emissions, specifically, a co-benefit of the Pavley standards is an improvement in fuel efficiency and consequently a reduction in fuel consumption.

² The 2022 California Green Building Standard Code will be published July 1, 2022.

3.2.5 CALIFORNIA'S RENEWABLE PORTFOLIO STANDARD (RPS)

First established in 2002 under Senate Bill (SB) 1078, California's Renewable Portfolio Standards (RPS) requires retail sellers of electric services to increase procurement from eligible renewable resources to 33% of total retail sales by 2020 (19).

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

In October 2015, the legislature approved, and the Governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the CEC, and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electricity transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

3.2.7 EXECUTIVE ORDER N-79-20 AND ADVANCED CLEAN CARS II

On August 25, 2022, CARB approved the Advanced Clean Cars II rule, which codifies the goals set out in Executive Order N-79-20 and establishes a year-by-year roadmap such that by 2035, 100% of new cars and light trucks sold in California will be zero-emission vehicles. Under this regulation, automakers are required to accelerate deliveries of zero-emission light-duty vehicles, beginning with model year 2026. CARB estimates that between 2026 and 2040, the regulation would reduce GHG emissions by a cumulative 395 million metric tons, equivalent to reducing petroleum use by 915 million barrels.

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4 PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

4.1 EVALUATION CRITERIA

Appendix F of the *State CEQA Guidelines* (20), 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.

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

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

4.2 METHODOLOGY

Information from the CalEEMod Version 2022.1.1.12 outputs for the *El Camino Specific Plan Amendment Air Quality Impact Analysis* (AQIA) (21) was utilized in this analysis, detailing Project related construction equipment, transportation energy demands, and facility energy demands.

4.2.1 CAL EEMOD

In May 2023, 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 2022.1.1.21. 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 (22). Accordingly, the latest version of CalEEMod has been used to determine the proposed Project's anticipated transportation and facility energy demands. Outputs from the annual model runs are provided in Appendices 4.1 and 4.2.

4.2.2 EMISSION FACTORS MODEL

On May 2, 2022, the EPA approved the 2021 version of the EMISSIONS FACTOR model (EMFAC2021) web database for use in State Implementation Plan and transportation conformity analyses. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (23). This energy study utilizes the different fuel types for each vehicle class from the annual EMFAC2021 emission inventory in order to derive the average vehicle fuel economy which is then used to determine the estimated annual fuel consumption associated with vehicle usage during Project construction and operational activities. For purposes of analysis, the 2026 through 2028 analysis years were utilized to determine the average vehicle

fuel economy used throughout the duration of the Project. Outputs from the EMFAC2021 model run is provided in Appendix 4.3.

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 of Project is expected to commence in June 2025 and would last through September 2027 (21). The construction schedule utilized in the analysis, shown in Table 4-1, represent 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* (1).

TABLE 4-1: CONSTRUCTION DURATION

Area	Construction Activity	Start Date	End Date	Days
Forster & El Camino Mixed Use Project	Demolition	6/10/2025	7/10/2025	23
	Grading	7/11/2025	8/30/2025	36
	Grading/Off-Site Improvements	8/31/2025	9/30/2025	22
	Building Construction	8/30/2025	12/3/2026	329
	Architectural Coating	8/20/2026	1/3/2027	97
	Paving	10/27/2026	2/20/2027	84
Performing Arts Center	Grading	12/14/2025	1/13/2026	22
	Grading/Off-Site Improvements	1/14/2026	2/2/2026	14
	Building Construction	2/3/2026	7/2/2027	369
	Architectural Coating	12/19/2026	8/21/2027	175
	Paving	7/2/2027	9/5/2027	46

PROJECT CONSTRUCTION POWER COST

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of \$2.50, which was used to calculate the Project’s total construction power cost (24).

As shown on Table 4-2, the total power cost of the on-site electricity usage during the construction of the Project is estimated to be approximately \$16,957.32.

TABLE 4-2: CONSTRUCTION POWER COST

Area	Land Use	Power Cost (per 1,000 SF)	Size (1,000 SF)	Construction Duration (months)	Power Cost
Forster & El Camino Mixed Use Project	Multi-family Housing (Low Rise)	\$2.50	30.572	20	\$1,528.60
	Fitness/Health Club		3.100		\$155.00
	Fine Dining		4.294		\$214.70
	Landscape		22.933		\$1,146.65
	Parking Lot		55.759		\$2,787.95
	Enclosed Parking		88.959		\$4,447.95
	Other Asphalt Surfaces		20.556		\$1,027.81
CONSTRUCTION POWER COST					\$11,308.66
Performing Arts Center	Performing Arts Center	\$2.50	49.097	21	\$2,577.59
	Other Asphalt Surfaces		58.496		\$3,071.06
CONSTRUCTION POWER COST					\$5,648.65
TOTAL CONSTRUCTION POWER COST					\$16,957.32

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 4-3) by the utility provider cost per kilowatt hour (kWh) of electricity.

PROJECT CONSTRUCTION ELECTRICITY USAGE

The SDG&E's general service rate schedule are used to determine the Project's electrical usage. As of January 1, 2023, SDG&E's general service rate is \$0.46 per kilowatt hours (kWh) of electricity for general services and \$0.51 for residential services (25). As shown on Table 4-3, the total electricity usage from on-site Project construction related activities is estimated to be approximately 36,868 kWh.

TABLE 4-3: CONSTRUCTION ELECTRICITY USAGE (1 OF 2)

Area	Land Use	Cost per kWh	Project Construction Electricity Usage (kWh)
Forster & El Camino Mixed Use Project	Multi-family Housing (Low Rise)	\$0.51	2,991
	Fitness/Health Club	\$0.46	340
	Fine Dining		471
	Landscape		2,518
	Parking Lot		6,121
	Enclosed Parking		9,766
	Other Asphalt Surfaces		2,257
CONSTRUCTION ELECTRICITY USAGE			24,465
Performing Arts Center	Performing Arts Center	\$0.46	5,660
	Other Asphalt Surfaces		6,743
CONSTRUCTION ELECTRICITY USAGE			12,403
TOTAL CONSTRUCTION ELECTRICITY USAGE			36,868

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 4-4 would 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.

TABLE 4-4: CONSTRUCTION EQUIPMENT ASSUMPTIONS (1 OF 2)

Area	Construction Activity	Equipment	Quantity	Hours Per Day
Forster & El Camino Mixed Use Project	Demolition	Rubber Tired Dozers	2	8
		Concrete/Industrial Saws	1	8
		Excavators	3	8
	Grading	Graders	1	8
		Excavators	1	8
		Rubber Tired Dozers	1	8
		Crawler Tractors	3	8

TABLE 4-4: CONSTRUCTION EQUIPMENT ASSUMPTIONS (2 OF 2)

Area	Construction Activity	Equipment	Quantity	Hours Per Day
Forster & El Camino Mixed Use Project	Grading/Off-Site Improvements	Graders	1	8
		Excavators	1	8
		Rubber Tired Dozers	1	8
		Crawler Tractors	3	8
	Building Construction	Cranes	1	8
		Forklifts	3	8
		Generator Sets	1	8
		Welders	1	8
		Tractors/Loaders/Backhoes	3	8
	Paving	Tractors/Loaders/Backhoes	1	8
		Cement and Mortar Mixers	2	8
		Pavers	1	8
		Paving Equipment	2	8
		Rollers	2	8
	Architectural Coating	Air Compressors	1	8
Performing Arts Center	Grading	Graders	1	8
		Rubber Tired Dozers	1	8
		Crawler Tractors	2	8
	Grading/Off-Site Improvements	Graders	1	8
		Rubber Tired Dozers	1	8
		Crawler Tractors	2	8
	Building Construction	Cranes	1	8
		Forklifts	2	8
		Generator Sets	1	8
		Welders	3	8
		Tractors/Loaders/Backhoes	1	8
	Paving	Tractors/Loaders/Backhoes	1	8
		Cement and Mortar Mixers	1	8
		Pavers	1	8
		Paving Equipment	1	8
Rollers		2	8	
Architectural Coating	Air Compressors	1	8	

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 4-7. 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 (26). 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 residential and commercial fuel providers serving the Project area and region³. As presented in Table 4-5, Project construction activities would consume an estimated 105,658 gallons of diesel fuel. Project construction would represent a “single-event” diesel fuel demand and would not require ongoing or permanent commitment of diesel fuel resources for this purpose.

³ 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 4-5: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES (1 OF 3)

Area	Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Fuel Consumption (gallons)
Forster & El Camino Mixed Use Project	Demolition	23	Rubber Tired Dozers	367	2	8	0.40	2,349	2,920
			Concrete/Industrial Saws	33	1	8	0.73	193	240
			Excavators	36	3	8	0.38	328	408
	Grading	36	Graders	148	1	8	0.41	485	945
			Excavators	36	1	8	0.38	109	213
			Rubber Tired Dozers	367	1	8	0.40	1,174	2,285
			Crawler Tractors	87	3	8	0.43	898	1,747
	Grading/Off-Site Improvements	22	Graders	148	1	8	0.41	485	577
			Excavators	36	1	8	0.38	109	130
			Rubber Tired Dozers	367	1	8	0.40	1,174	1,397
			Crawler Tractors	87	3	8	0.43	898	1,068
	Building Construction	329	Cranes	367	1	8	0.29	851	15,142
			Forklifts	82	3	8	0.20	394	7,000
			Generator Sets	14	1	8	0.74	83	1,474
			Welders	46	1	8	0.45	166	2,945
Tractors/Loaders/Backho			84	3	8	0.37	746	13,265	

TABLE 4-5: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES (2 OF 3)

Area	Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Fuel Consumption (gallons)
Forster & El Camino Mixed Use Project	Paving	84	Tractors/Loaders/Backho	84	1	8	0.37	249	1,129
			Cement and Mortar	10	2	8	0.56	90	407
			Pavers	81	1	8	0.42	272	1,236
			Paving Equipment	89	2	8	0.36	513	2,328
			Rollers	36	2	8	0.38	219	994
	Architectural Coating	97	Air Compressors	37	1	8	0.48	142	745
CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)									58,593
Performing Arts Center	Grading	22	Graders	148	1	8	0.41	485	577
			Rubber Tired Dozers	367	1	8	0.40	1,174	1,397
			Crawler Tractors	87	2	8	0.43	599	712
	Grading/Off-Site Improvements	14	Graders	148	1	8	0.41	485	367
			Rubber Tired Dozers	367	1	8	0.40	1,174	889
			Crawler Tractors	87	2	8	0.43	599	453
	Building Construction	369	Cranes	367	1	8	0.29	851	16,983
			Forklifts	82	2	8	0.20	262	5,234
			Generator Sets	14	1	8	0.74	83	1,653
			Tractors/Loaders/Backho	84	1	8	0.37	249	4,959
Welders			46	3	8	0.45	497	9,909	

TABLE 4-5: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES (2 OF 3)

Area	Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Fuel Consumption (gallons)
Performing Arts Center	Paving	46	Tractors/Loaders/Backho	84	1	8	0.37	249	618
			Pavers	81	1	8	0.42	272	677
			Paving Equipment	89	1	8	0.36	256	637
			Rollers	36	2	8	0.38	219	544
			Cement and Mortar	10	1	8	0.56	45	111
	Architectural Coating	175	Air Compressors	37	1	8	0.48	142	1,344
CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)									47,065
TOTAL CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)									105,658

4.3.4 CONSTRUCTION TRIPS AND VMT

Construction generates on-road vehicle emissions from vehicle usage for workers, vendors, and haul truck commuting to and from the site. The number of workers, vendor, and hauling trips are presented below in Table 4-6. It should be noted that for vendor trips, specifically, CalEEMod only assigns vendor trips to the Building Construction phase. Vendor trips would likely occur during all phases of construction. As such, the CalEEMod defaults for vendor trips have been adjusted based on a ratio of the total vendor trips to the number of days of each subphase of activity.

TABLE 4-6: CONSTRUCTION TRIPS AND VMT

Area	Construction Activity	Worker Trips Per Day	Vendor Trips Per Day	Hauling Trips Per Day
Forster & El Camino Mixed Use Project	Demolition	15	1	131
	Grading	15	2	0
	Grading/Off-Site Improvements	15	1	0
	Building Construction	85	14	0
	Paving	17	0	0
	Architectural Coating	20	0	0
Performing Arts Center	Grading	10	1	23
	Grading/Off-Site Improvements	10	1	0
	Building Construction	21	6	0
	Paving	4	1	0
	Architectural Coating	15	0	0

4.3.5 CONSTRUCTION WORKER FUEL ESTIMATES

With respect to estimated VMT for the Project, the construction worker trips (personal vehicles used by workers commuting to the Project from home) would generate an estimated 809,579 VMT during Project construction (21). Based on CalEEMod methodology, it is assumed that 50% of all construction worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1⁴), and 25% are from light-duty-trucks (LDT2⁵). 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 2021 version of the EMFAC developed by CARB. EMFAC2021 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 (23). EMFAC2021 was

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

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

run for the LDA, LDT1, and LDT2 vehicle class within the Orange (SC) for the years 2025 through 2027. Data from EMFAC2021 is shown in Appendix 4.3.

As shown in Table 4-7, the estimated fuel consumption resulting from Project construction worker trips is 27,237 gallons. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require ongoing or permanent commitment of fuel resources for this purpose.

TABLE 4-7: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (1 OF 4)

Area	Year	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Forster & El Camino Mixed Use Project	2025	LDA						
		Demolition	23	8	18.5	3,404	33.86	101
		Grading	36	8	18.5	5,328	33.86	157
		Grading/Off-Site Improvements	22	8	18.5	3,256	33.86	96
		Building Construction	88	43	18.5	70,004	33.86	2,067
		LDT1						
		Demolition	23	4	18.5	1,702	25.78	66
		Grading	36	4	18.5	2,664	25.78	103
		Grading/Off-Site Improvements	22	4	18.5	1,628	25.78	63
		Building Construction	88	22	18.5	35,816	25.78	1,390
		LDT2						
		Demolition	23	4	18.5	1,702	25.43	67
		Grading	36	4	18.5	2,664	25.43	105
		Grading/Off-Site Improvements	22	4	18.5	1,628	25.43	64
		Building Construction	88	22	18.5	35,816	25.43	1,409
		2026	LDA					
	Building Construction		241	43	18.5	191,716	34.81	5,508
	Paving		48	10	18.5	8,880	34.81	255
	Architectural Coating		96	9	18.5	15,984	34.81	459

TABLE 4-7: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (2 OF 4)

Area	Year	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Forster & El Camino Mixed Use Project	2026	LDT1						
		Building Construction	241	22	18.5	98,087	26.28	3,732
		Paving	48	5	18.5	4,440	26.28	169
		Architectural Coating	96	5	18.5	8,880	26.28	338
		LDT2						
		Building Construction	241	22	18.5	98,087	26.07	3,762
		Paving	48	5	18.5	4,440	26.07	170
	Architectural Coating	96	5	18.5	8,880	26.07	341	
	2027	LDA						
		Paving	36	10	18.5	6,660	35.67	187
		Architectural Coating	1	9	18.5	167	35.67	5
		LDT1						
		Paving	36	5	18.5	3,330	26.76	124
		Architectural Coating	1	5	18.5	93	26.76	3
LDT2								
Paving		36	5	18.5	3,330	26.65	125	
Architectural Coating	1	5	18.5	93	26.65	3		
CONSTRUCTION WORKER FUEL CONSUMPTION								20,870
Performing Arts Center	2025	LDA						
		Grading	13	5	18.5	1,203	33.86	36
		LDT1						
Grading	13	3	18.5	722	25.78	28		

TABLE 4-7: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES (3 OF 4)

Area	Year	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Performing Arts Center	2025	LDT2						
		Grading	13	3	18.5	722	25.43	28
	2026	LDA						
		Grading	9	5	18.5	833	34.81	24
		Grading/Off-Site Improvements	14	5	18.5	1,295	34.81	37
		Building Construction	238	11	18.5	48,433	34.81	1,391
		Architectural Coating	9	2	18.5	333	34.81	10
		LDT1						
		Grading	9	3	18.5	500	26.28	19
		Grading/Off-Site Improvements	14	3	18.5	777	26.28	30
		Building Construction	238	6	18.5	26,418	26.28	1,005
		Architectural Coating	9	1	18.5	167	26.28	6
		LDT2						
		Grading	9	3	18.5	500	26.07	19
		Grading/Off-Site Improvements	14	3	18.5	777	26.07	30
		Building Construction	238	6	18.5	26,418	26.07	1,013
	Architectural Coating	9	1	18.5	167	26.07	6	
	2027	LDA						
		Building Construction	131	11	18.5	26,659	35.67	747
		Paving	46	8	18.5	6,808	35.67	191
Architectural Coating		166	2	18.5	6,142	35.67	172	

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

Area	Year	Construction Activity	Duration (Days)	Worker (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)	
Performing Arts Center	2027	LDT1							
		Building Construction	131	6	18.5	14,541	26.76	543	
		Paving	46	4	18.5	3,404	26.76	127	
		Architectural Coating	166	1	18.5	3,071	26.76	115	
		LDT2							
		Building Construction	131	6	18.5	14,541	26.65	546	
		Paving	46	4	18.5	3,404	26.65	128	
		Architectural Coating	166	1	18.5	3,071	26.65	115	
		CONSTRUCTION WORKER FUEL CONSUMPTION							6,367
		TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION							27,237

4.3.6 CONSTRUCTION VENDOR AND HAULING FUEL ESTIMATES

With respect to estimated VMT, the construction vendor trips (vehicles that deliver materials to the site during construction) and material hauling trips would generate an estimated 99,513 VMT along area roadways during Project construction (21). It is assumed that 50% of all vendor trips are from medium-heavy duty trucks (MHD) and 50% of all vendor trips are from heavy-heavy duty trucks (HHD). Hauling trips are assumed to be performed only by HHD trucks. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA (21). Vehicle fuel efficiencies for MHDs and HHDs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHD and HHD vehicle classes within the Orange (SC) for the 2025 through 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.3.

Based on Table 4-8, it is estimated that 14,886 gallons of fuel will be consumed related to construction vendor and hauling trips during construction. 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.

TABLE 4-8: CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION ESTIMATES (1 OF 2)

Area	Year	Construction Activity	Duration (Days)	Vendor/Hauling (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Forster & El Camino Mixed Use Project	2025	MHDT						
		Demolition	23	1	10.2	235	7.63	31
		Grading	36	1	10.2	367	7.63	48
		Grading/Off-Site Improvements	22	1	10.2	224	7.63	29
		Building Construction	88	7	10.2	6,283	7.63	823
		HHDT (Vendor)						
		Demolition	23	1	10.2	235	6.10	38
		Grading	36	1	10.2	367	6.10	60
		Grading/Off-Site Improvements	22	1	10.2	224	6.10	37
		Building Construction	88	7	10.2	6,283	6.10	1,031
	HHDT (Hauling)							
	Demolition	23	131	4.75	14,312	6.10	2,348	
	2026	MHDT						
		Building Construction	241	7	10.2	17,207	7.76	2,218
HHDT (Vendor)								
Building Construction		241	7	10.2	17,207	6.20	2,775	
CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION								9,438
Performing Arts Center	2025	MHDT						
		Grading	13	1	10.2	133	7.63	17
		HHDT (Vendor)						
Grading	13	1	10.2	133	6.10	22		

TABLE 4-8: CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION ESTIMATES (2 OF 2)

Area	Year	Construction Activity	Duration (Days)	Vendor/Hauling (Trips/Day)	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
Performing Arts Center	2025	HHDT (Hauling)						
		Grading	13	22	20	5,720	6.10	938
	2026	MHDT						
		Grading	9	1	10.2	92	7.76	12
		Grading/Off-Site Improvements	14	1	10.2	143	7.76	18
		Building Construction	238	3	10.2	7,283	7.76	939
		Architectural Coating	9	1	10.2	92	7.76	12
		HHDT (Vendor)						
		Grading	9	1	10.2	92	6.20	15
		Grading/Off-Site Improvements	14	1	10.2	143	6.20	23
		Building Construction	238	3	10.2	7,283	6.20	1,175
		Architectural Coating	9	1	10.2	92	6.20	15
		HHDT (Hauling)						
		Grading	9	22	20	3,960	6.20	639
	2027	MHDT						
		Building Construction	131	3	10.2	4,009	7.91	507
		Architectural Coating	166	1	10.2	1,693	7.91	214
		HHDT (Vendor)						
		Building Construction	131	3	10.2	4,009	6.32	634
		Architectural Coating	166	1	10.2	1,693	6.32	268
CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION								5,447
TOTAL CONSTRUCTION VENDOR/HAULING FUEL CONSUMPTION								14,886

4.3.7 CONSTRUCTION ENERGY EFFICIENCY/CONSERVATION MEASURES

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

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

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

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

In general, 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 fuel demands (fuel consumed by passenger car and truck vehicles accessing the Project site), fuel demands from operational equipment, and facilities energy demands (energy consumed by building operations and site maintenance activities).

4.4.1 TRANSPORTATION FUEL DEMANDS

Energy that would be consumed by Project-generated traffic is a function of total VMT and estimated vehicle fuel economies of vehicles accessing the Project site. The VMT per vehicle class can be determined by evaluated in the vehicle fleet mix and the total VMT. As with worker and vendors trips, operational vehicle fuel efficiencies were estimated using information generated within EMFAC2021 developed by CARB (23). EMFAC2021 was run for the Orange (SC) for the 2028 calendar year. Data from EMFAC2021 is shown in Appendix 4.3.

The estimated transportation energy demands are summarized on Table 4-9. As summarized on Table 4-9 the Project would result in 4,869,581 annual VMT and 177,467 gallons per year during operations.

TABLE 4-9: TOTAL PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION (1 OF 2)

Area	Vehicle Type	Average Vehicle Fuel Economy (mpg)	Annual Vehicle Miles Traveled	Estimated Annual Fuel Consumption (gallons)
Forster & El Camino Mixed Use Project	LDA	36.55	1,012,668	27,708
	LDT1	27.29	80,881	2,964
	LDT2	27.24	489,458	17,969
	MDV	22.38	299,290	13,372
	LHDT1	17.85	57,741	3,235
	LHDT2	16.68	15,293	917
	MHDT	8.11	32,110	3,960
	HHDT	6.47	12,074	1,867
	OBUS	6.63	1,230	185
	UBUS	3.80	728	192
	MCY	42.60	45,975	1,079
	SBUS	6.70	1,985	296
	MH	5.98	7,221	1,208
FUEL CONSUMPTION (ALL VEHICLES)			2,056,654	74,953

TABLE 4-9: TOTAL PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION (2 OF 2)

Phase	Vehicle Type	Average Vehicle Fuel Economy (mpg)	Annual Vehicle Miles Traveled	Estimated Annual Fuel Consumption (gallons)
Performing Arts Center	LDA	36.55	1,385,047	37,897
	LDT1	27.29	110,622	4,054
	LDT2	27.24	669,442	24,577
	MDV	22.38	409,345	18,290
	LHDT1	17.85	78,973	4,424
	LHDT2	16.68	20,917	1,254
	MHDT	8.11	43,918	5,416
	HHDT	6.47	16,514	2,554
	OBUS	6.63	1,682	254
	UBUS	3.80	996	262
	MCY	42.60	62,880	1,476
	SBUS	6.70	2,715	405
	MH	5.98	9,877	1,652
	FUEL CONSUMPTION (ALL VEHICLES)			2,812,927
TOTAL FUEL CONSUMPTION (ALL VEHICLES)			4,869,581	177,467

4.4.2 FACILITY ENERGY DEMANDS

Project building operations activities would result in the consumption of natural gas and electricity, which would be supplied to the Project by SoCalGas and SDG&E, respectively. Annual natural gas and electricity demands of the Project are summarized in Table 4-10.

TABLE 4-10: PROJECT ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY (1 OF 2)

Area	Land Use	Natural Gas Demand	Electricity Demand
		(kBTU/year)	(kWh/year)
Forster & El Camino Mixed Use Project	Multi-family Housing (Low Rise)	1,288,714	331,858
	Fitness/Health Club	125,129	27,818
	Fine Dining	482,671	152,964
	Landscape	0	0

TABLE 4-10: PROJECT ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY (2 OF 2)

Area	Land Use	Natural Gas Demand	Electricity Demand
		(kBTU/year)	(kWh/year)
Forster & El Camino Mixed Use Project	Parking Lot	0	48,843
	Enclosed Parking	0	116,248
	Other Asphalt Surfaces	0	0
PROJECT ENERGY DEMAND		1,896,514	677,731
Performing Arts Center	Performing Arts Center	1,981,764	440,568
	Other Asphalt Surfaces	0	0
PROJECT ENERGY DEMAND		1,981,764	440,568
TOTAL PROJECT ENERGY DEMAND		3,878,278	1,118,299

4.4.4 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., Title 24, California Green Building Standards Code).

ENHANCED VEHICLE FUEL EFFICIENCIES

Project annual fuel consumption estimates presented previously in Table 4-9 represent likely potential maximums that would occur for the Project. Under subsequent future conditions, average fuel economies of vehicles accessing the Project site can be expected to improve as older, less fuel-efficient vehicles are removed from circulation, and in response to fuel economy and emissions standards imposed on newer vehicles entering the circulation system.

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

4.5 SUMMARY

4.5.1 CONSTRUCTION ENERGY DEMANDS

The estimated power cost of on-site electricity usage during the construction of the Project is assumed to be approximately \$16,957. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Project buildout, is calculated to be approximately 36,868 kWh.

Construction equipment used by the Project would result in single event consumption of approximately 105,658 gallons of diesel fuel during construction. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Project's proposed construction process that are unusual or energy-intensive, and Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

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

Construction worker trips for full construction of the Project would result in the estimated fuel consumption of 27,237 gallons during construction. Additionally, fuel consumption from construction vendor trips (MHDs and HHDs) and hauling (HHDs) will total approximately 14,886 gallons of fuel will be consumed related to construction vendor and hauling trips construction. Diesel fuel would be supplied by City and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 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 (27). As supported by the preceding discussions, Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

4.5.2 OPERATIONAL ENERGY DEMANDS

TRANSPORTATION ENERGY DEMANDS

Annual vehicular trips and related VMT generated by the operation of the Project would result in a fuel demand of 4,869,581 annual VMT and 177,467 gallons per year during operations.

Fuel would be provided by current and future residential and commercial vendors. Trip generation and VMT generated by the Project are consistent with other residential and commercial uses of similar scale and configuration, as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Ed., 2021); and CalEEMod. As such, Project operations would not result in excessive and wasteful vehicle trips and VMT, nor excess and wasteful vehicle energy consumption compared to other residential and commercial uses.

It should be noted that the state strategy for the transportation sector for medium and heavy-duty trucks is focused on making trucks more efficient and expediting truck turnover rather than reducing VMT from trucks. This is in contrast to the passenger vehicle component of the transportation sector where both per-capita VMT reductions and an increase in vehicle efficiency are forecasted to be needed to achieve the overall state emissions reductions goals.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels,

hydrogen cells) would likely decrease future gasoline fuel demands per VMT. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands. The Project would implement sidewalks, facilitating and encouraging pedestrian access. Facilitating pedestrian and bicycle access would reduce VMT and associated energy consumption. In compliance with the California Green Building Standards Code and City requirements, the Project would promote the use of bicycles as an alternative mean of transportation by providing short-term and/or long-term bicycle parking accommodations. As supported by the preceding discussions, Project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

FACILITY ENERGY DEMANDS

Project facility operational energy demands are estimated at: 3,878,278 kBtu/year of natural gas and 1,118,299 kWh/year of electricity. Natural gas would be supplied to the Project by SoCalGas; electricity would be supplied by SDG&E. The Project proposes conventional residential and commercial uses reflecting contemporary energy efficient/energy conserving designs and operational programs. The Project does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other residential and commercial uses of similar scale and configuration.

Implementation of the Project would increase the demand for electricity at the Project site and petroleum consumption in the region during operation. However, the electrical consumption demands of the Project during operation would conform to the state's Title 24 and to CALGreen standards, which implement conservation measures. Further, the proposed Project would not directly require the construction of new energy generation or supply facilities and providers of electricity are in compliance with regulatory requirements that assist in conservation, including requirements that electrical providers achieve state-mandated renewable energy production requirements. With compliance with Title 24 conservation standards and other regulatory requirements, the Project would not be wasteful or inefficient or unnecessarily consume energy resources during construction or operation and would result in a less-than-significant impact with respect to consumption of energy resources.

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

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5 CONCLUSIONS

5.1 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?

Impact Analysis

A significant impact would occur if the proposed Project would result in the inefficient, wasteful, or unnecessary use of energy.

Construction

Based on CalEEMod estimations within the modeling output files used to estimate GHG emissions associated with future development projects, construction-related vehicle trips would result in approximately 909,092 VMT and consume an estimated 42,122 gallons of gasoline and diesel combined during future development projects construction phases. Additionally, on-site construction equipment would consume an estimated 105,658 gallons of diesel fuel. Limitations on idling of vehicles and equipment and requirements that equipment be properly maintained would result in fuel savings. California Code of Regulations, Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel- powered equipment and are enforced by the ARB. Additionally, given the cost of fuel, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Due to the temporary nature of construction and the financial incentives for developers and contractors to use energy-consuming resources in an efficient manner, the construction phase of the proposed project would not result in wasteful, inefficient, and unnecessary consumption of energy. Therefore, the construction-related impacts related to electricity and fuel consumption would be less than significant.

Operation

Electricity and Natural Gas

Operation of the proposed project would consume energy as part of building operations and transportation activities. Building operations would involve energy consumption for multiple purposes including, but not limited to, building heating and cooling, refrigeration, lighting, and electronics. Based on client provided energy use estimations, operations for the Project would result in approximately 1,118,299 kWh of electricity and 3,878,278 kBtu/year of natural gas annually.

Future development projects would be designed and constructed in accordance with the County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a

building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Fuel

Operational energy would also be consumed during vehicle trips associated with future development projects envisioned under the proposed project. Fuel consumption would be primarily related to vehicle use by residents, visitors, and employees associated with future development projects. Based on CalEEMod energy use estimations, project-related vehicle trips would result in approximately 4.87 million VMT and consume an estimated 177,467 gallons of gasoline and diesel combined, annually (see Appendix 4.1).

The Project is located on an infill site that is surrounded by existing urban uses, the existing transportation facilities and infrastructure would provide future residents, visitors, and employees associated with the Project access to a mix of land uses in close proximity to the Project, thus further reducing fuel consumption demand. Additionally, the Project will also be providing parking and EV infrastructure that would further promote fuel efficient vehicles. For these reasons, operational-related transportation fuel consumption would not result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the operational impact related to vehicle fuel consumption would be less than significant.

5.2 ENERGY IMPACT 2

Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Impact Analysis

A significant impact would occur if the proposed Project would conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Construction

As discussed in Section 5.1, above, the proposed project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on- road and off-road diesel-powered equipment and are enforced by the ARB. The proposed project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy, and impacts would be less than significant.

Operation

California's Renewable Portfolio Standard (RPS) establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan greenhouse gas emissions reductions. As discussed in Section 5.1, above, the Project would result in approximately 1,118,299 kWh of electricity and 3,878,278 kBTU/year of natural gas annually.

Future development projects would be designed and constructed in accordance with the County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards, widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development projects would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, impacts would be less than significant.

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7 CERTIFICATIONS

The contents of this energy analysis report represent an accurate depiction of the environmental impacts associated with the proposed El Camino Specific Plan Amendment. The information contained in this energy analysis report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at hqureshi@urbanxroads.com.

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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

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 4.1:

CALEEMOD PROJECT CONSTRUCTION EMISSIONS MODEL OUTPUTS

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APPENDIX 4.2:

CALEEMOD PROJECT OPERATIONS EMISSIONS MODEL OUTPUTS

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APPENDIX 4.3:

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