

Table 3.13-1. Southern California Edison Electricity Mix

Energy Resources	2014 SCE Power Mix (Actual)	2014 CA Power Mix
Eligible Renewable	24%	20%
Biomass & Waste	1%	3%
Geothermal	9%	4%
Small Hydroelectric	0%	1%
Solar	4%	4%
Wind	10%	8%
Coal	0%	6%
Large Hydroelectric	3%	6%
Natural Gas	27%	45%
Nuclear	6%	8%
Other	0%	0%
Unspecified Sources of Power¹	40%	15%
Total	100%	100%

¹ "Unspecified Sources of Power" means electricity from transactions that are not traceable to specific generation sources.

Source: CEC 2015a; SCE 2015a.

Southern California Edison (SCE) is the primary local public utility and energy supplier that services a majority of southern California, including the Project area, via a statewide network of power plants and transmission lines. SCE has delivered electricity to southern and central California for more than 125 years as one of the nation's largest electric utilities, conveying electric power to approximately 14 million people in a 50,000 square-mile area across 15 counties (Fresno, Imperial, Inyo, Kern, Kings, Los Angeles, Madera, Mono, Orange, Riverside, San Bernardino, Santa Barbara, Tuolumne, Tulare, and Ventura) (SCE 2007, 2015b). SCE produces and purchases electricity from renewable and nonrenewable sources. Table 3.13-1 identifies SCE and statewide power mixes for 2014 (CEC 2015a; SCE 2015a). Within the County of Orange (County), total electricity consumption equaled 20,723 GWh in 2014 (CEC 2016a), or approximately seven percent of the state annual energy consumption.

Various transmission and distribution lines traverse the City of Fountain Valley (City), serving to carry electrical power from power plants within and outside the City to electrical substations where power is converted to voltages suitable for distribution to end-users. The majority of the City's electrical transmission lines run underground and follow existing street right-of-way, consistent with City Municipal Code 21.68.100, *Public utilities and utility easements*. Within the Project area, overhead and underground 12 kilovolt (kV) electrical transmission lines are located along the existing right-of-way of arterial roadways. Interconnection studies of electrical transmission lines have identified the adequate deliverability of electrical services within and surrounding the Project area (SCE 2016). Based on consumption factors provided by the CEC in the *2006 California Commercial End-use Survey*, electrical energy demand within the Project area is estimated to be approximately 36.16 million kilowatt-hours (kWh), or 36.16 GWh per year, contributing to approximately 0.17 percent of the total County energy consumption, with Office/Industrial land uses consuming the largest amount (Table 3.13-2).

Table 3.13-2. Estimated Electricity Consumption in the Project Area

Land Use	Total Area	Consumption Factor ¹	Estimated Electricity
Retail	360,894 sf	14.06 kWh/sf/yr	5.07 GWh/yr
Office/Industrial²	1,439,997 sf	16.08 kWh/sf/yr	23.15 GWh/yr
Commercial Warehouse	1,177,024 sf	6.74 kWh/sf/yr	7.93 GWh /yr
Residential	--	6,081 kWh/unit/yr	--
Total	--	--	36.16 GWh/yr

¹Estimated electricity demand for retail, office/industrial, commercial warehouse, and residential uses were calculated using statewide average energy consumption factors by land use as documented in the CEC California Commercial End-use Survey.

²Land use category includes office, industrial, and auto uses.

sf = square feet, kWh = kilowatt hour, yr = year

1 kilowatt = 0.000001 gigawatt

Source: CEC 2006.

Natural Gas

Natural gas is a fossil fuel formed when layers of buried organic matter are exposed to intense heat and pressure over thousands of years. The energy is stored in the form of hydrocarbons and can be extracted in the form of natural gas. Natural gas is combusted to generate electricity, enabling this stored energy to be transformed into usable power or used directly for heating, cooking, and other use. Natural gas consumed in California is largely extracted from onshore and offshore sites from the Southwestern U.S. (38 percent), Rocky Mountain States (36 percent), Canada (16 percent), and within California (10 percent) (CEC 2015c). In 2014, California consumed approximately 10,208 million Therms¹ (thm) of natural gas (CEC 2016b) and as the population in California grows over the next few years, consumption of natural gas is anticipated to steadily increase at a rate of 0.04 to 0.06 percent annually, with potential to decrease due to expanding natural gas conservation measures (CEC 2013).

Natural gas services are provided to the Project area by Southern California Gas Company (SoCalGas), which has delivered natural gas throughout southern and central California for more than 145 years as the nation's largest natural gas distribution utility. In 2014, the County consumed a total of 550.2 million thm of natural gas, or approximately 5.3 percent of California's annual natural gas consumption (CEC 2016c). SoCalGas natural gas pipelines approach the Project area from the north and south, to locations outside the Project area approximately 1,000 feet south and 1,250 feet north of the boundary, where the service is then connected into end-use transmission lines. Within the Project area, natural gas demand is estimated to be approximately 312,554.88 thm per year, approximately 0.06 percent of the County's total consumption, with Office/Industrial land uses consuming the largest amount (Table 3.13-3).

¹ Approximately the energy equivalent of burning 100 cubic feet of natural gas; equal to 100,000 British thermal units.

Table 3.13-3. Estimated Natural Gas Consumption in the Project Area

Land Use	Total Area	Consumption Factor	Estimated Consumption
Retail	360,894 sf	0.05 thm/sf/yr	18,044.7 thm/yr
Office/Industrial²	1,439,997 sf	0.18 thm/sf/yr	259,199.46 thm/yr
Commercial Warehouse	1,177,024 sf	0.03 thm/sf/yr	35,310.72 thm/yr
Residential	--	492.6 thm/unit/yr	--
Total	--	--	312,554.88 thm/yr

¹Estimated electricity demand for retail, office/industrial, commercial warehouse, and residential uses were calculated using statewide average energy consumption factors by land use as documented in the CEC California Commercial End-use Survey.

²Land use category includes office, industrial, and auto uses.

sf = square feet, thm = Therms, yr = year

1 kilowatt = 0.000001 gigawatt

Source: CEC 2006.

Petroleum and Transportation Fuel

Petroleum is a thick, flammable mixture of gaseous, liquid, and solid hydrocarbons that occur naturally beneath the earth’s surface and can be separated into fractions to be used as raw materials for a variety of derivative products including gasoline and diesel fuels for use in automobiles (American Association of Petroleum Geologists [AAPG] 2016). California is currently the third-largest oil-producing state in the nation (behind Texas and Alaska); in 2014, 205.2 million barrels of oil (MMBO) were produced in California with an average production of 562,200 barrels of oil per day (BOPD) (California Department of Conservation, Division of Oil, Gas, & Geothermal Resources [DOGGR] 2015).

California’s demand for oil and gas exceeds in-state production. In 2013, California consumed 628.7 MMBO, while 199.6 MMBO were produced in the state that year (DOGGR 2015). Similarly, California consumed 2,345 billion cubic feet of natural gas and the state produced only 199.2 billion cubic feet (approximately 8 percent of the amount consumed). In 2014, California consumed approximately 343,588 thousand barrels of motor gasoline for transportation, approximately 10.5 percent of the total annual consumption of motor gasoline in the U.S. Almost 90 percent of all gasoline consumption in the state of California in 2014 resulted from just light-duty or personal vehicles alone (U.S. Energy Information Administration [USEIA] 2015).

To combat increasing petroleum and motor gasoline consumption, state and federal agencies have established policies and programs which encourage the development and use of renewable and alternative fuels and technologies to reduce California’s dependence on petroleum-based fuels (CEC 2016d). Despite high motor gasoline demand, transportation energy demand forecasts predict motor gasoline fuel consumption reductions up to 3.7 percent per year over the next decade due to improving fuel economy and increasing alternative fuel technologies (CEC 2016d).

Renewable Resources

California has a long history of support for the development and use of renewable energy sources. California leads the U.S. in geothermal, biomass, solar photovoltaic (PV), and solar thermal electric generation capacity, and is second in wind and hydropower generation capacity (American Council on Renewable Energy [ACORE] 2014). In 2014, approximately 22 percent of all electricity produced in California was produced from renewable resources within California, including wind, solar, geothermal, biomass, and small hydroelectric facilities; large hydroelectric plants generated another 6 percent of electricity generated in California (CEC 2015a). However, the renewable energy sector is changing rapidly due to state mandates to further increase reliance on renewable energy.

As of October 31, 2015, the in-state operating capacity of renewable resources was 21.7 gigawatts (GW), which includes 3.7 GW of self-generation capacity (CEC 2015b). In addition, there are 12.93 GW of new renewable capacity proposed that have environmental permits and are in preconstruction or construction stages. Proposed solar PV projects account for more than 90 percent of the new renewable energy capacity expected to come online from July 2015 through December 2016 (CEC 2016d). California has the largest market for solar PV projects in the U.S. In 2013, California was responsible for 57 percent of the nation's capacity additions, with the installation of 2.6 GW of grid-connected solar PV (ACORE 2014). The California Solar Initiative had a goal of installing 3 GW of solar energy systems on homes and businesses by the end of 2016, and California achieved this goal approximately 1.5 years ahead of target (CEC 2016d).

In 2014, SoCal Edison delivered approximately 17,700 GWh of renewable energy to the residents and businesses of southern and central California. In addition to providing cleaner, renewable energy, SoCal Edison offers incentives and programs, such as their Rooftop Solar Program, to southern California businesses and households to encourage the implementation of solar stations on rooftops. Since the California Solar Initiative began in 2007, SoCal Edison has paid \$800 million-plus in rebates to more than 65,000 solar customers.

3.13.2 Regulatory Framework

3.13.2.1 Federal Regulations

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can obtain federal tax credits for purchasing fuel efficient appliances and products, including buying hybrid vehicles, building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

3.13.2.2 State Policies and Regulations

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the CEC to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. 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 in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicles miles traveled and accommodate pedestrian and bicycle access.

The CEC adopted the 2013 Integrated Energy Policy Report on February 20, 2014. The 2013 Integrated Energy Policy Report provides the results of the CEC's assessment of a variety of issues, including:

- Ensuring that the state has sufficient, reliable, and safe energy infrastructure to meet current and future energy demands;
- Monitoring publicly-owned utilities' progress towards achieving 10-year energy efficiency targets; defining and including zero-net-energy goals in state building standards;
- Overcoming challenges to increased use of geothermal heat pump/ground loop technologies and procurement of biomethane;
- Using demand response to meet California's energy needs and integrate renewable technologies;
- Removing barriers to bioenergy development; planning for California's electricity infrastructure needs given potential retirement of power plants and the closure of the San Onofre Nuclear Generating Station;
- Estimating new generation costs for utility-scale renewable and fossil-fueled generation;
- Planning for new or upgraded transmission infrastructure;
- Monitoring utilities' progress in implementing past recommendations related to nuclear power plants;
- Tracking natural gas market trends;
- Implementing the Alternative and Renewable Fuel and Vehicle Technology Program; and,

- Addressing the vulnerability of California’s energy supply and demand infrastructure to the effects of climate change; and planning for potential electricity system needs in 2030 (CEC 2014a).

Title 24, Building Energy Efficiency Standards

California Code of Regulations Title 24, Part 6 comprises the California Energy Code, which was first established in 1978 in response to a legislative mandate to reduce California’s energy consumption. The standards are updated periodically to increase the baseline energy efficiency requirements. Although it was not originally intended to reduce greenhouse gas (GHG) emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

California Green Building Standards Code (CALGreen)

The California Building Standards Commission adopted the California Green Buildings Standards Code (CALGreen) (Part 11 of the Title 24 Building Standards Code) for all new construction statewide on July 17, 2008. Originally a volunteer measure, the code became mandatory in 2010. The code sets targets for energy efficiency, water consumption, dual plumbing systems for potable and recyclable water, diversion of construction waste from landfills, and use of environmentally sensitive materials in construction and design, including eco-friendly flooring, carpeting, paint, coatings, thermal insulation, and acoustical wall and ceiling panels.

3.13.2.3 Local Policies and Regulations

Fountain Valley General Plan Conservation Element

The Conservation Element includes goals and policies that address the issues of conserving energy resources.

Goal 5.5 Energy conservation

Policy 5.5.1 Facilitate the conservation of scarce energy resources.

Policy 5.5.2 The City will encourage the use of alternate energy sources, including passive solar, in industrial, commercial, and residential development.

Fountain Valley Municipal Code (FVMC)

Buildings Codes and Regulations (Title 18)

This title provides regulations for plumbing, electrical, and energy for existing and proposed developments. Title 18 of the FVMC includes City adopted codes such as the California Electrical Code, the California Energy Code, the Uniform Solar Energy Code, and the California Green Building Standards Code.

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Public Utilities and Utility Easements (21.68.10)

This section provides direction for the provision of connections to public utilities, including electricity and gas, as installed as part of subdivision improvements. When undergrounding is required, all existing and proposed utility distribution facilities (including electric, telecommunications and cable television lines) installed in and for the purpose of supplying service to any subdivision should be installed underground. Equipment belonging to underground facilities, including surface mounted transformers, pedestal mounted terminal boxes and meter cabinets and concealed ducts, would also be underground unless otherwise approved by the review authority based on the recommendations of the City engineer. Additional guidance on the location of installations, the minimum width of easements for public or private utilities, conditional approval of overhead lines, and the timing of utility installation is also included.

3.13.3 Impact Assessment and Methodology

3.13.3.1 Thresholds for Determining Significance

The significance criteria for this analysis are based on the guidance provided in Appendix F of the California Environmental Quality Act (CEQA) Guidelines. For the purpose of this Environmental Impact Report (EIR), implementation of the proposed Project would result in a significant impact associated with energy conservation if it would:

- Use large amounts of fuel or energy in an unnecessary, wasteful, or inefficient manner;
- Constrain local or regional energy supplies, affect peak and base periods of electrical demand, require or result in the construction of new electrical generation and/or transmission facilities, or necessitate the expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Conflict with existing energy standards, including standards for energy conservation.

3.13.3.2 Methodology

The energy conservation analysis qualitatively assesses potential impacts of the proposed Project related to the consumption of electricity and natural gas, as well as construction- and operation-related diesel and gasoline consumption from both construction equipment and transportation.

3.13.4 Project Impacts and Mitigation Measures

Impact EC-1 Description

EC-1 The proposed Project would increase energy demand, but would not result in wasteful, inefficient, or unnecessary consumption of energy. Implementation of standard regulations, as well as conformance with the City adopted 2013 California Energy Code, California Green Building Standards Code, and policies of the City General Plan would reduce potential impacts (*Less than Significant*).

The proposed Project would increase the demand for electricity and natural gas within the Project area due to an increase in approximately 258,011 square feet (sf) of warehouse commercial, niche retail, and office uses, and an additional 491 residential units. The estimated potential increased electricity demand in the Project area is 10.9 GWh per year (see Table 3.13-4), while the estimated potential increase in natural gas demand in the Project area is 333,871.9 thm per year (see Table 3.13-5).

Table 3.13-4. Additional Electricity Demand under Proposed Buildout

Land Use	Consumption Factor ¹	Projected Change in Land Use	Estimated Electricity
Retail	14.06 kWh/sf/yr	118,808 sf	1.67 GWh/yr
Warehouse Commercial	6.74 kWh/sf/yr	-340,030 sf	-2.29 GWh/yr
Office/Industrial²	16.08 kWh/sf/yr	534,810 sf	8.59 GWh/yr
Residential	6,081 kWh/unit/yr	491 units	2.98 GWh/yr
Total	--	--	10.9 GWh/yr

sf= square feet; yr = year; kWh = kilowatt hour; GWh = gigawatt hour

1 kilowatt hour = 0.000001 gigawatt hour

¹ Estimated electricity demand for retail, office, and residential uses were calculated using statewide average energy consumption factors by land use as documented in the California Energy Commission's (CEC) California Commercial End-use Survey.

² Land use category includes office, industrial, and auto uses.

Source: CEC 2006.

Table 3.13-5. Additional Natural Gas Demand under Proposed Buildout

Land Use	Consumption Factor ¹	Projected Change in Land Use	Estimated Electricity
Retail	0.05 thm/sf/yr	118,808 sf	5,940.4 thm/yr
Warehouse Commercial	0.03 thm/sf/yr	-340,030 sf	-10,200.9 thm/yr
Office/Industrial²	0.18 thm/sf/yr	534,810 sf	96,265.8 thm/yr
Residential	492.6 thm/unit/yr	491 units	241,866.6 thm/yr
Total	--	--	333,871.9 thm/yr

sf= square feet; yr = year; thm = Therms

¹ Estimated electricity demand for retail, office, and residential uses were calculated using statewide average energy consumption factors by land use as documented in the California Energy Commission's (CEC) California Commercial End-use Survey.

² Land use category includes office, industrial, and auto uses.

Source: CEC 2006.

It should be noted that the estimated energy demand is highly conservative as the demand factors do not account for the most current energy efficiency standards of the Title 24 of the California Code of Regulations (CALGreen). Implementation of the proposed Project would require development within the Project area to comply with applicable federal, state, and local rules and regulations governing the use and conservation of California's energy resources. Development under the proposed Project would be required to comply with the regulations of the 2013 California

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Energy Code, which was adopted by the City as the Energy Code under Chapter 18.22 of the FVMC, as well as the City adopted California Green Building Standards Code. In addition, the proposed Project encourages new development to implement energy efficient designs and technologies presented by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, the National Association of Homebuilders Model Green Home Building Guidelines, and other future green building ordinances or guidelines as they become available. Therefore, new development of the Project area under the proposed Project would be consistent with adopted codes and regulations, and would not contribute to the wasteful or inefficient consumption of energy resources.

Furthermore, the proposed Project would guide redevelopment of the Project area, and reduce consumption of non-renewable petroleum and transportation fuels by increasing public transit, pedestrian mobility, and alternative modes of transportation. In addition, the designation of specialized subdistricts in the FVCSP would orient development and place housing within close proximity to employment and commercial areas of the City. The goals of these subdistricts are to provide a compatible mix of workplace, commercial, and residential uses, established an improved transition from the Project area to existing neighborhoods, balance drivable and walkable access, and promote uses that cater to the needs of the workplace and nearby neighborhoods. Improved pedestrian access to and from, as well as throughout the Project area would reduce individual's consumption of petroleum and transportation fuels.

While the Project would result in an increase in electricity and natural gas consumption, the Project would guide redevelopment of the Project area in a manner consistent with federal, state, and locally established goals, policies, and regulation governing energy conservation and fostering sustainable development, the proposed Project is not expected to result in the substantially wasteful or inefficient use of California's energy resources. Therefore, implementation of the proposed Project is considered to have a *less than significant* impact on the consumption and use of energy resources.

Mitigation Measure

No mitigation required.

Impact EC-2 Description

EC-2 Implementation of the proposed Project would not constrain local or regional energy supplies, necessitating the construction of new or expansion of existing electrical generation or transmission facilities (*Less than Significant*).

As previously discussed, the Project area is largely developed and currently contributes to approximately 36.16 GWh per year of energy demand over a developed area of 3,089,758 sf, approximately 0.17 percent of the County's total energy demand. Under implementation of the proposed Project, redevelopment of the Project area would result in a net increase of approximately 258,011 sf of warehouse commercial, niche retail, and office uses, and an additional 491 residential units, contributing a net increase in energy demand within the Project

area. Despite an increase in development by approximately 8.6 percent, SCE readily anticipates growth throughout its service area, and provides reliable electricity services based on end-use consumption. As previously mentioned, full buildout of the proposed Project would result in a net increase in electricity demand of approximately 10.9 GWh per year (see Table 3.13-4). This increase in energy demand would result in an incremental increase in County energy demand for SCE services by approximately 0.0005 percent. Therefore, implementation of the proposed Project would negligibly affect local or regional energy supplies, and impacts are considered *less than significant*.

Mitigation Measure

No mitigation required.

Impact EC-3 Description

EC-3 Implementation of the proposed Project would require new development within the Project area to comply with federal, state, or local regulations governing the use and conservation of energy resources (*Beneficial*).

Currently, the Project area is largely developed for industrial and commercial use. These developments likely consists of older developments which pre-date adopted regulations that govern the implementation of energy efficient and sustainable building design requirements. Under the proposed Project, individual development would be required to comply with City-adopted codes and regulations governing energy efficient design and sustainable development. In addition, the FVCSP strongly encourages new development to implement “green technologies” to increase energy efficiency and conservation, and reduce wasteful use of energy resources. Therefore, it is anticipated that much of the redevelopment which would take place under implementation of the proposed Project would increase energy efficiency and conservation throughout the Project area.

Mitigation Measure

No mitigation required.

3.13.4.1 Residual Impacts

No significant impacts to energy resources and energy conservation requiring mitigation are anticipated as a result of implementation of the proposed Project. Therefore, impacts resulting from implementation of the proposed Project are considered *less than significant*.

3.13.4.2 Cumulative Impacts

Potential future development under the proposed Project would incrementally contribute to the need for regional energy production and distribution facilities. As discussed above, these facilities are operated and maintained by private utility companies that plan for anticipated growth. Electric and natural gas services are provided upon demand from consumers and expanded as needed to meet demand, consistent with applicable local, state, and federal regulations. Additionally, all

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new buildings must be designed to conform to the California Green Building Standards Code and the 2013 California Energy Code adopted by the City under Title 12 of the FVMC. Furthermore, the City is pursuing energy conservation through policies and standards that encourage the use of renewable energy technologies (solar, solid waste conversion, etc.). Therefore, impacts are considered *less than significant*.