3.89 Energy Use and Conservation

Appendix F (Energy Conservation) of the CEQA Guidelines provides that potentially significant energy implications of a project must be considered in an EIR, with particular emphasis on avoiding or reducing the inefficient, wasteful and unnecessary consumption of energy. As such, this discussion considers the proposed Project's consumption of energy resources, particularly electricity, natural gas and transportation fuels, during both the project's construction and operational phases.

3.89.1 Existing Conditions

In 2012, California's per-capita energy consumption rate was one of the lowest in the country and ranked 49th compared to other states (EIA 2014). This is largely because of California's proactive energy efficiency programs and mild weather, which reduce energy demands for heating and cooling.

The transportation sector makes up the single largest consumer of energy in California, accounting for 38 percent of the state's total energy demand, and nearly all of this energy is provided by petroleum (EIA 2014). In 2012, total gasoline consumed in the state was 14.6 billion gallons (BOE 2014a). Diesel fuel is the second largest transportation fuel in California behind gasoline. In 2012, more than 2.6 billion gallons of diesel were sold in California (BOE 2014b).

The industrial sector accounts for approximately 23 percent of the total energy consumption in California. The residential and commercial sectors both account for approximately 19 percent of the energy consumption in the state. In 2013, electric energy consumption for all land uses in California totaled 278,680 gigawatt-hours (GWh) (CEC 2013a).

In 2013, according to statistics tracked by the California Energy Commission (CEC), installed in-state power facilities in California generated 199,783 GWh of electricity (CEC 2014a), which represents a significant decline from the state's peak electric generation of 230,102 GWh in 2006 (CEC 2006). While in-state electricity production has declined primarily with the decommissioning of the San Onofre Nuclear Power Plant in 2013 and the decommissioning of older obsolete fossil fuel plants, new solar photovoltaic, solar thermal, and combined cycle natural gas power plants have been brought on-line or are under construction to both replace the older decommissioned plants and to reduce California's carbon footprint with renewable and cleaner natural gas power facilities. Additionally, eleven new photovoltaic power facilities constituting almost 4,250 megawatts (MW) of power are approved in California (CEC 2012).

Natural gas is the second most widely used energy source in California. Natural gas is a hydrocarbon fuel found in reservoirs beneath the earth's surface and is used for space and water heating, process heating (e.g., smelting, metal melting, creating polymers), and electricity generation, and as transportation fuel. Depending on yearly conditions, 40 to 45 percent of natural gas is consumed for electricity generation; 10 percent is consumed in facilitating the extraction of oil and gas, while the rest is used for everything from space heating to fuel for bus fleets (CEC 2014a).

Natural gas-fired generation has been the primary source of electricity generation in California for many years and fuels over half of electricity consumption, both from in-state and imported sources (CEC 2014a). As natural gas is a resource that can fill in the gaps from other power resources, its total use can vary greatly from year to year. The availability of hydroelectric resources, the emergence of renewable resources for electricity generation, and overall consumer demand are the variables that shape natural gas consumption. In 2012, 23,323 million therms of natural gas were consumed statewide.

Electricity generation in California is largely moving away from non-renewable resources, such as coal. Spurred by regulatory measures and tax incentives, older, less-efficient fossil-fuel burning power plants are being replaced with more efficient combined-cycle natural gas power plants. Combined-cycle plants are up to 50 percent more efficient than the traditional plants they replace. California's electrical system has also become more reliant on renewable energy sources, including cogeneration, wind energy, solar energy, geothermal energy, and hydroelectric plants. In 2013, 18.77 percent of all electricity came from renewable resources such as wind, solar, geothermal, biomass, and small hydroelectric facilities. Large hydroelectric plants generated another 7.76 percent of California's electricity (CEC 2014a).

Regional

Residential land uses in San Diego County consume approximately 6.9 million megawatt-hours (MWh) of electricity and 325 million therms of natural gas each year (CEC 2014a). Commercial and industrial land uses in San Diego County consume approximately 12.6 million MWh of electricity and 217 million therms of natural gas each year (CEC 2014a).

There are three major electricity-generating power plants in the County, which include the Palomar Energy Center, Otay Mesa Energy Center, and the Encina Power Station (SDG&E 2013a). There are also a number of smaller electricity generating plants in the County that are used as backup during times of peak power demand, which are referred to as "peakers." These in-region assets are currently capable of generating approximately 3,071 MW of electricity. SDG&E also provides natural gas in the amount of 150 million cubic feet per day for residential users and 70 million cubic feet per day for commercial and other users (SDG&E 2013b).

Power generation and power use are not linked geographically. Electricity generated within the San Diego region is not dedicated to users in the SDG&E service area. Instead, electricity generated in the County is fed into the statewide utility grid and made generally available to users statewide. SDG&E purchases electricity from this statewide grid, through various long-term contracts. Similarly, natural gas is also imported into southern California and originates from any of a series of major supply basins located from Canada to Texas. Gas is pumped out and shipped to receipt points that connect with major interstate gas pipelines.

Table 3.7-1 lists SDG&E's current energy sources. As shown in **Table 3.7-1,** SDG&E obtained 63.1 percent of its energy from natural gas in 2012. SDG&E's renewable resources are the second largest source in its energy portfolio and include biomass and waste, geothermal, small hydroelectric, solar, and wind sources. SDG&E obtained 19.2 percent of its energy from renewable resources in 2012. SDG&E's other energy sources include coal, nuclear and unspecified sources.

Existing Regulatory Setting

The following regulations and guidelines provide the framework for energy conservation.

Federal

On the federal level, the U.S. Department of Transportation, the U.S. Department of Energy, and the U.S. Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. Generally, federal agencies influence and regulate transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy-related research and development projects, and through funding for transportation infrastructure improvements.

Federal Energy Policy and Conservation Act and Amendments

Minimum standards of energy efficiency for many major appliances were established by the U.S. Congress in the federal Energy Policy and Conservation Act of 1975, and have been amended by subsequent energy legislation, including the federal Energy Policy Act of 2005. The intent of the National Energy Act of 1978 was to promote greater use of renewable energy, provide residential consumers with energy conservation audits to encourage slower growth of electricity demand, and promote fuel efficiency.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 included an increase in auto mileage standards and addressed conservation measures and building efficiency. The 2007 Act also included a new energy grant program for use by local governments in implementing energy-efficiency initiatives, as well as a variety of green building incentives and programs.

Additional relevant regulations at the federal level, including the Corporate Average Fuel Economy Standards (which serves to increase the fuel economy of cars and light trucks), among others, are described in Section 3.8, Climate Change.

State

On the state level, the California Energy Commission (CEC) and California Public Utilities Commission (CPUC) are two agencies with authority over different aspects of energy. The CEC collects and analyzes energy-related data, prepares statewide energy policy recommendations and plans, promotes and funds energy efficiency programs, and adopts and enforces appliance and building energy efficiency standards. The CPUC regulates utilities in the energy, rail, telecommunications and water fields.

Energy Action Plan

The California Power Authority, which is now defunct, approved the State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure adequate, reliable, and reasonably priced electrical power and natural gas supplies (CEC 2014b). The CEC's Energy Action Plan II, adopted in 2005, identified a number of initiatives for increasing supply and reducing demand. One example involved the reduction of peak energy demand for the state's water supply infrastructure, which comprises almost 20 percent of the state's electricity consumption. At the beginning of 2008, the CEC and CPUC prepared an update to the Energy Action Plan that examined the state's ongoing actions in the context of global climate change. The update was prepared using the information and analysis prepared for the Integrated Energy Policy Report (IEPR) documents (CEC 2014b).

As described in Section 3.8, Climate Change, there are additional regulations at the state level designed to reduce energy use and greenhouse gas emissions. These include, among others, the Assembly Bill 1493 light-duty vehicle standards (commonly referred to as the "Pavley standards"); Title 24, Part 6, of the California Code of Regulations, which contains energy efficiency standards for the built environment; Title 24, Part 11, of the California Code of Regulations (commonly referred to as "CALGreen"); Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006; and Senate Bill 375 (SB 375), the Sustainable Communities and Climate Protection Act of 2008..

Regional

SDG&E is a CPUC-regulated public utility that is the owner and operator of natural gas and electricity transmission and distribution infrastructure in San Diego County. The CPUC sets the gas and electricity rates for SDG&E and is responsible for making sure that California's utilities customers have safe and reliable utility service at reasonable rates.

In 2004, SDG&E filed a long-term energy resource plan (LTRP) with the CPUC, which identifies how it will meet the future energy needs of customers in SDG&E's service area. The LTRP identifies several energy demand reduction (i.e., conservation) targets, as well as goals for increasing renewable energy supplies, new local power generation, and increased transmission capacity.

Consistent with the State of California's Renewable Portfolio Standard requirements, the LTRP sets a standard for acquiring 20 percent of SDG&E's energy mix from renewables by 2010 and 33 percent by 2020. The LTRP also calls for greater use of in-region energy supplies, including renewable energy installations. By 2020, the LTRP states that SDG&E intends to achieve and maintain the capacity to generate 75 percent of summer peak demand with in-county generation. The LTRP also identifies the procurement of 44 percent of its renewables to be generated and distributed in-region by 2020.

3.89.2 Analysis of Project Impacts and Determination of Significance

Appendix F of the CEQA Guidelines requires inclusion of relevant information in the EIR that addresses the project's energy consumption impacts and its ability to avoid or reduce the

inefficient, wasteful, and unnecessary consumption of energy. Although Appendix F is not described as a threshold for determining the significance of impacts, for purposes of determining the significance of an impact in this EIR, the following criteria are used:

- Would the project result in the wasteful and inefficient use of nonrenewable resources during construction of the project?

Construction of the proposed Project is expected to last approximately 10 years. Construction activities would consume energy through the operation of off-road equipment, trucks, and worker trips.

The off-road equipment, summarized in Section 2.2, Air Quality, and Table 5 of the Air Quality Impact Report (SRA, AECOM 2014), would use diesel fuel during each phase of project construction. The minimum requirement to meet Toxics-Best Available Control Technology (Toxics-BACT) standards is for construction fleets to be comprised of 10% Tier 2 and Tier 3 equipment. The standards for equipment Tiers are set by the U.S. EPA. Based on the analysis given in the Air Quality Impact Report, construction fleets used for the project would be comprised mainly of Tier 2 and Tier 3 equipment, and would therefore meet the Toxics-BACT standards, and lead to an improved efficiency for use of fuel. Benefits also would be associated with the improved fuel efficiency of newer off-road engines in the construction equipment used on the project site as required by the California Air Resources Board's (ARB) off-road diesel regulations as the project progresses toward build-out.

California regulations (CCR Title 13, Sections 2449(d)(3) and 2485) limit idling from both on-road and off-road diesel-powered equipment and are enforced by the ARB. Despite the increase in energy demand, primarily related to fuel use, during construction, project construction equipment requirements, combined with local, state, and federal regulations, which limit engine idling times and require recycling of construction debris, would reduce short-term energy demand due to project construction. Therefore, it is anticipated that the construction phase would not result in a wasteful or inefficient use of energy, and the proposed Project's impact on the wasteful and inefficient use of nonrenewable resources during construction of the project would be *less than significant*.

- Would the project result in the wasteful and inefficient use of nonrenewable resources during the long-term operation of the project?

Long-term operational energy use associated with the project includes electricity and natural gas consumption by residents, energy consumption related to obtaining water, and fuel consumption by operation of vehicles.

Electricity and Natural Gas Consumption

The project's electricity use was estimated using the CalEEMod Model. As outlined in more detail in Section 3.8, Global Climate Change, and the Energy Conservation and Water Conservation Plans of the Resort Village Specific Plan (Appendices III and VI of the Specific Plan), the project proposes land use, community design, recycling, and water and energy conservation features that include the following:

- Building orientation and site design requirements through the Site Plan Approval process that create passive solar heating and cooling opportunities to reduce energy consumption from indoor heating and cooling;
- Stringent building and community energy and lighting efficiency standards in accordance with the state's Title 24 and CALGreen building and energy efficiency code requirements;
- Indoor residential plumbing products would comply with the 2013 CALGreen Code, including future updates to CALGreen as these updates apply to homes in the project built under the updated code;
- Project-wide blue and green-waste recycling for residential, commercial, and institutional land uses;
- A Water Conservation Plan that that will reduce site-wide outdoor water usage by 30% compared to existing outdoor water usage for typical residential homes; and,
- A project-wide requirement to equip buildings with solar panels to offset utility electricity usage by 30%.

With project design features that reduce electricity use, the project would result in an estimated use of 16,948 MWh per year of electricity (without considering solar electricity) and 569,270 therms of natural gas each year. Specific project design features intended to reduce GHG emissions are described in **Table 3.8-2**.

The proposed Project's Energy Conservation Plan is developed in accordance with Appendix F of the CEQA Guidelines, and would meet the goals of energy conservation by decreasing overall per capita energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. In addition, all future development in the project would be required to comply with the then-applicable energy performance standards outlined by the Title 24 Building Energy Efficiency Standards and CALGreen. These statewide mandatory construction and energy efficiency standards have continued to get more stringent with each code adoption cycle. For example, based on the CEC's comparative analysis of the 2008 and 2013 versions of Title 24, the 2013 version resulted in an overall reduction in energy use of 25% in residential structures, as compared to the 2008 version. And, for the project's climate zone, Climate Zone 10, the energy savings is closer to 28% between the two versions of the code (CEC 2013b). The code requirements reduce the amount of electrical and natural gas energy required for lighting, water heating, indoor and outdoor water usage, and heating and air conditioning in buildings compared to existing buildings. The 2016 update process to the Title 24 standards is contemplating additional energy efficiency savings related to garage and attic space (CEC 2015).

California, with its Renewable Portfolio Standard, is also on the forefront of implementing renewable energy solutions and requirements for industry and homeowners. Further, on December 5, 2007, the CEC adopted the 2007 Integrated Energy Policy Report, which established the goal of requiring all new residential homes and all new commercial buildings to be "net zero" energy by 2020 and 2030, respectively. In summary, as a result of these project design features and energy

efficiency code requirements, future land uses associated with the project would operate at significantly higher energy efficiency than current land uses.

Water Conveyance

The provision of potable water to residences consumes large amounts of energy through its supply, treatment, and distribution. As a result of the Water Conservation Plan (Appendix VI of the Specific Plan), the proposed Project would reduce potable water demand for both indoor and outdoor use by an average of 78 gallons per day per single family home. Further, the proposed Project would comply with CALGreen's standards for indoor plumbing, require high-efficiency irrigation equipment, limit natural turf in residential development to no more than 30 percent of the outdoor open space, and require all landscaping in the project, including private homeowner landscaping not typically required to meet the requirements of the County's Landscape Ordinance, to comply with the County's Landscape Ordinance. Total water use for the project with water conservation measures would be 467 million gallons of water per year. This would result in an estimated use of 5,933 MWh of electricity. Title 24 standards would also improve water use efficiency for the development associated with the project. The reduction of water demand would also result in a decrease in overall per capita energy consumption associated with the supply, treatment, and distribution of potable water.

Fuel Consumption

Energy in the form of fuel (gasoline and diesel) would be consumed by vehicles associated with the project through the generation of new vehicle trips. As discussed in Section 2.9, Transportation and Traffic, the project would generate a total of 27,191 daily trips. Due to the mix of land uses provided by the project, including the multiple use area, not all trips would leave the project site. Approximately 19.4 percent of the total trips, or 5,275 trips per day, are expected to remain internal to the project site. For example, a portion of the shopping trips would be satisfied by the commercial uses located within the project site, as would a certain percentage of school and recreational trips.

The project includes design measures to enhance walkability and to improve the on-site pedestrian network. The non-vehicular modes of travel, including walking and bicycling, would be encouraged through the provision of trails throughout the project site, connecting to the planned 28.6 acres of recreational open space and other activity centers, and by focusing higher residential densities adjacent to the planned mixed-use and commercial development.

Vehicle miles traveled (VMT) can be used to determine energy consumption based on assumptions of fuel economy and fleet mix. Based on the design measures and location, the project would generate roughly 68million VMT per year. In addition to the project design features, various federal and state regulations on vehicle and fuel manufacturing would likely result in the substantial reduction of the project's vehicle fuel consumption each year into the future. Specifically, the federal ~~café~~ CAFE standards, and the state's low carbon fuel standard and Pavley standards are anticipated to improve the fuel economy of vehicles.

Summary

As discussed above, future land uses associated with the proposed Project would increase the demand for energy resources. However, despite the overall increase in demand for energy as a result of the project, state energy programs, the Energy Conservation Plan, Water Conservation Plan, and project design features that emphasize energy efficient design of future land uses would minimize wasteful, inefficient energy consumption. Land uses associated with the project would operate at higher energy efficiency than current land uses. The reduction of water demand would also result in a decrease in overall per capita energy consumption associated with the supply, treatment, and distribution of potable water. Due to the mix of land uses provided by the project, including the multiple use area, not all trips would leave the project site. The project includes design measures to enhance walkability and to improve the on-site pedestrian network. In addition to the project design features, various federal and state regulations on vehicle and fuel manufacturing would likely result in the substantial reduction of the project's vehicle fuel consumption each year into the future.

Therefore, the proposed Project would be developed in accordance with Appendix F of the CEQA Guidelines, and would meet the goals of energy conservation by decreasing overall per capita energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. Energy consumption associated with operation of the project would not be expected to be wasteful or inefficient. Therefore, the project's operational impacts relating to energy consumption would be ***less than significant***.