5.4 ENERGY

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for energy-related impacts associated with the Villages at Cabrillo Specific Plan (Specific Plan) and ways in which the Specific Plan would reduce unnecessary energy consumption, consistent with the suggestions contained in Appendix F of the CEQA Guidelines. Energy service providers to the Plan Area include Southern California Edison (SCE) for electrical service and Southern California Gas Company (SoCalGas) for natural gas. Modeling of energy data is included in Appendix C of this DEIR.

5.4.1 Environmental Setting

PRC Section 21100(b)(3) requires that an EIR include a detailed statement identifying mitigation measures proposed to minimize significant effects on the environment, including but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy. Appendix F of the State CEQA Guidelines states that, in order to ensure that energy implications are considered in project decisions, the potential energy implications of a project shall be considered in an EIR, to the extent relevant and applicable to the project. Appendix F further states that a project's energy consumption and proposed conservation measures may be addressed, as relevant and applicable, in the project description, environmental setting, and impact analysis portions of technical sections, as well as through mitigation measures and alternatives.

In accordance with Appendices F and G of the CEQA Guidelines, this EIR includes relevant information and analyses that address the energy implications of the Specific Plan. This section represents a summary of the Specific Plan's anticipated energy needs, impacts, and conservation measures. Information found herein, as well as other aspects of the Specific Plan's energy implications, are discussed in greater detail elsewhere in this EIR, including Chapter 3, *Project Description*, and Sections 5.2, *Air Quality*, 5.6, *Greenhouse Gas Emissions*, and 5.14, *Transportation.*

5.4.1.1 REGULATORY BACKGROUND

Federal, state, and local laws, regulations, plans, or guidelines related to energy that are applicable to the Specific Plan are summarized below.

Federal Regulations

Federal Energy Policy and Conservation Act

The Energy Policy and Conservation Act (EPCA) of 1975 was established in response to the 1973 oil crisis. The Act created the Strategic Petroleum Reserve, established vehicle fuel economy standards, and prohibited the export of U.S. crude oil (with a few limited exceptions). EPCA created Corporate Average Fuel Economy (CAFE) standards for passenger cars starting in model year 1978. CAFÉ Standards are updated periodically to account for changes in vehicle technologies, driver behavior, and/or driving conditions.

Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 seeks "to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner." The Act imposes new planning and regulatory requirements on states and cities in developing transportation plans and program.

Transportation Equity Act for the 21st Century (1998)

The Transportation Equity Act for the 21st Century (TEA-21) authorizes over $200 billion to improve the Nation's transportation infrastructure, enhance economic growth and protect the environment. TEA-21 builds on the initiatives established in the ISTEA along with the current programs with new initiatives to improve traffic safety and enhance the transportation system. It also creates new opportunities to improve air and water quality, restore wetlands and natural habitat, and rejuvenate urban areas through transportation redevelopment, increased transit and sustainable alternatives to urban sprawl.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (Public Law 110-140) seeks to provide the nation with greater energy independence and security by increasing the production of clean renewable fuels; improving vehicle fuel economy; and increasing the efficiency of products, buildings, and vehicles. It also seeks to improve the energy performance of the federal government. The Act sets increased Corporate Average Fuel Economy Standards; the Renewable Fuel Standard; appliance energy efficiency standards; building energy efficiency standards; and accelerated research and development tasks on renewable energy sources (e.g., solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies), carbon capture, and sequestration (USEPA 2019).

Update to Corporate Average Fuel Economy Standards (2021 to 2026)

The federal government issued new CAFE standards in 2012 for model years 2017 to 2025, which required a fleet average of 54.5 miles per gallon in 2025. However, on March 30, 2020, the USEPA finalized an updated CAFE and GHG emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026, known as The Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021-2026. However, a consortium of automakers and the state of California have agreed on a voluntary framework to reduce emissions that can serve as an alternative path forward for clean vehicle standards nationwide. Automakers agreeing to the framework include Ford, Honda, BMW of North America, and Volkswagen Group of America. The framework supports continued annual reductions of vehicle greenhouse gas (GHG) emissions through the 2026 model year, encourages innovation to accelerate the transition to electric vehicles, and provides industry the certainty needed to make investments and create jobs. This commitment means that the auto companies party to the voluntary agreement will only sell cars in the United States that meet these standards (California Air Resources Board (CARB) 2019).

State Regulations

Renewables Portfolio Standard

The California Renewables Portfolio Standard (RPS) was established in 2002 under SB 1078 and was amended in 2006, 2011 and 2018. The RPS program requires investor-owned utilities (IOU), electric service providers (ESP), and community choice aggregators (CCA) to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. The California Public Utilities Commission (CPUC) is required to provide quarterly progress reports on progress toward RPS goals. This has accelerated the development of renewable energy projects throughout the state.

All electricity retail sellers had an interim target between compliance periods to serve at least 27% of their load with RPS-eligible resources by December 31, 2017. In general, retail sellers either met or exceeded the interim 27% target and are on track to achieve their compliance requirements. California's three large IOUs collectively served 36% of their 2017 retail electricity sales with renewable power. The Small and Multi-Jurisdictional Utilities (SMJUs) and ESPs served roughly 27% of retail sales with renewables and CCAs collectively served 50% of retail sales with renewable power. (CPUC 2020). Senate Bill 350 (SB 350) was signed into law September 2015, establishing tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures. Senate Bill 100 (SB 100), passed in 2018, puts California on the path to 100% fossil-fuel free electricity by the year 2045 (California Energy Commission (CEC) 2017a).

State Alternative Fuels Plan

Assembly Bill 1007 requires the CEC to prepare a plan to increase the use of alternative fuels in California. The State Alternative Fuels Plan was prepared by the CEC with the CARB and in consultation with other federal, state, and local agencies to reduce petroleum consumption; increase use of alternative fuels (e.g., ethanol, natural gas, liquefied petroleum gas, electricity, and hydrogen); reduce GHG emissions; and increase in-state production of biofuels. The State Alternative Fuels Plan recommends a strategy that combines private capital investment, financial incentives, and advanced technology that will increase the use of alternative fuels; result in significant improvements in the energy efficiency of vehicles; and reduce trips and vehicle miles traveled (VMT) through changes in travel habits and land management policies. The Alternative Fuels and Vehicle Technologies Funding Program legislation (Assembly Bill 118, Statutes of 2007) proactively implements this plan (CEC 2007).

Appliance Efficiency Regulations

California's Appliance Efficiency Regulations contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California (California Code of Regulations Title 20, Parts 1600–1608). These standards are updated regularly to allow consideration of new energy efficiency technologies and methods (CEC 2017b).

Title 24, Part 6, Energy Efficiency Standards

Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2019 (California Code of Regulations Title 24, Part 6). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Building Energy Efficiency Standards, which were adopted on May 9, 2018, went into effect starting January 1, 2020.

The 2019 standards were adopted to cut energy use in new homes by more than 50 percent and require installation of solar photovoltaic (PV) systems for single-family homes and multifamily buildings of three stories and less. The 2019 standards focus on four key areas: 1) smart residential PV systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements (CEC 2018a). Under the 2019 standards, nonresidential buildings will be 30 percent more energy efficient compared to the 2016 standards, and single-family homes will be 7 percent more energy efficient (CEC 2018b). When accounting for the electricity generated by the solar PV system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards (CEC 2018b).

Title 24, Part 11, Green Building Standards

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (California Code of Regulations Title 24, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. It includes mandatory requirements for new residential and nonresidential buildings throughout California. CALGreen is intended to (1) reduce GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. The mandatory provisions of CALGreen became effective January 1, 2011 and were last updated in 2016, which became effective on January 1, 2017. On October 3, 2018, the CEC adopted the voluntary standards of the 2019 CALGreen, which became effective on January 1, 2020.

Overall, the code is established to reduce construction waste, make buildings more efficient in the use of materials and energy, and reduce environmental impact during and after construction. CALGreen contains requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, and site irrigation conservation, among others. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency.

Assembly Bill 1493

California vehicle GHG emission standards were enacted under Assembly Bill 1493 ("Pavley I"). Pavley I was a clean-car standard that reduced GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016, including a 30 percent reduction of GHG emissions in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA set more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles. In January 2012, CARB approved the Pavley Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025 new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Warren-Alquist Act

Established in 1974, the Warren-Alquist Act created the CEC in respond to the energy crisis of the early 1970s and the state's unsustainable growing demand for energy resources. The CEC's core responsibilities include advancing state energy policy, encouraging energy efficiency, certifying thermal power plants, investing in energy innovation, developing renewable energy, transforming transportation and preparing for energy emergencies. The Warren-Alquist Act is updated every year to address current energy needs and issues with its latest edition in January 2020.

California Energy Action Plan

On May 8, 2003, the CEC and CPUC approved the California Energy Action Plan (EAP). The plan establishes shared goals and proposes specific actions to ensure that adequate, reliable, and reasonably priced electrical power and natural gas supplies are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers. On August 25, 2005, the EAP II was approved which identifying further actions necessary to meet California's future energy needs. Subsequently, in 2008, the EAP updated was published that examines the state's ongoing actions in the context of global climate change.

Local Regulations

City of Long Beach Sustainable City Action Plan

The City adopted the Sustainable City Action Plan in February 2010 (Long Beach 2010). The Sustainable City Action Plan is designed to guide the City's future operational and policy decisions and includes the following environmental and sustainability goals related to energy demand reduction, energy efficiency, and renewable energy generation:

- LEED certified (or equivalent) of 100% of major city facilities by 2020.
- At least 5 million square feet of privately developed LEED certified (or equivalent) green buildings by 2020.

- Double the number of LEED accredited professionals (or equivalent) in the City and community by 2012.
- Reduce electricity use in City operations by 25% by 2020.
- Reduce natural gas use in City operations by 15% by 2020.
- Facilitate the development of at least 2 Megawatts of solar energy on city facilities by 2020.
- Reduce community electricity use by 15% by 2020.
- Reduce community natural gas use by 10% by 2020.
- Facilitate the development of at least 8 Megawatts of solar energy within the community (private rooftops) by 2020.
- Establish a native landscape demonstration in every park 1 acre or larger by 2020.
- Convert 1,200 front yards to native or edible landscape by 2016.
- Reduce per capita use of potable water, exceeding the State mandate to achieve a demand reduction of 20% in per capita water use by the year 2020.
- Facilitate the installation of rain catchment systems at five City facilities by 2012.

City of Long Beach Climate Action and Adaptation Plan

In May of 2019, the City of Long Beach partially released its Draft Climate Action and Adaptation Plan (CAAP) in May of 2019 with adoption anticipated in 2021. The CAAP is intended to be utilized for purposes of GHG streamlining and to satisfy the requirements needed under CEQA Guidelines Section 15183 to be considered a qualified GHG reduction plan. Overall, the CAAP provides a framework for the City to reduce community-wide GHG emissions and comply with state regulations (e.g., Senate Bill 32 (SB 32)), and to also address the effects of climate change on the community. Under the CAAP, the City aims to achieve a per capita emissions target of 4.46 $MTCO_2e$ per capita for year 2030, which would coincide with the emissions reduction target established under SB 32. To achieve this target, the City would be required to reduce emissions by 998,000 $MTCO_2e$ relative to the emissions forecast for year 2030. In addition to the year 2030 target, the CAAP also includes a long-term net carbon neutrality goal for year 2045. This goal would require a reduction in GHG of 2,562,819 $MTCO_2e$. To meet the 2030 reduction target, the CAAP includes 19 priority mitigation actions covering the transportation, building energy, and waste sectors. The following are the energy-related priority action measures:

- **BE-1:** Provide access to renewably generated electricity.
- **BE-2:** Develop a home energy assessment program.

- **BE-3:** Provide access to energy efficiency financing, rebates, and incentives for building owners.
- **BE-4:** Promote community and solar microgrids.
- **BE-5:** Perform municipal energy audits.

5.4.1.2 EXISTING CONDITIONS

Electricity

The Plan Area is in SCE's service area, which spans much of southern California—from Orange and Riverside counties in the south to Santa Barbara County in the west to Mono County in the north (CEC 2015a). Total electricity consumption in SCE's service area in gigawatt-hours (GWh) was 104,407 GWh in 2018 (CEC 2020a).[1] Sources of electricity sold by SCE in 2017, the latest year for which data are available, were:

- 32 percent renewable, consisting mostly of solar and wind
- 8 percent large hydroelectric
- 20 percent natural gas
- 6 percent nuclear
- 34 percent unspecified sources—that is, not traceable to specific sources (SCE 2018)[2]

Estimated Existing Electricity Demands

Total estimated existing (2020) electricity demand for the Plan Area is estimated at 5,295,391 kilowatt hours (kWh) per year.[3]

Natural Gas

Serving approximately 150,000 customers, LBER is the largest California municipal gas utility and the fifth largest municipal gas utility in the United States. LBER's service territory includes the cities of Long Beach and Signal Hill, and sections of surrounding communities including Lakewood, Bellflower, Compton, Seal Beach, Paramount, and Los Alamitos.

Long Beach receives a small amount of its gas supply directly into its pipeline system from local production fields that are located within the City's service territory, as well as offshore. Currently, the City receives approximately five percent of its gas supply from local production. The majority of the City's supplies are purchased at the California border, primarily from the Southwestern United States. The City, as a wholesale customer, receives intrastate transmission service for this gas from SoCalGas.

[1] One GWh is equivalent to one million kilowatt-hours.
[2] The electricity sources listed reflect changes after the 2013 closure of the San Onofre Nuclear Generating Station, which is owned by SCE.
[3] Based on the historical CalEEMod electricity rates for the apartment mid-rise, general office, health club, regional shopping center, and enclosed parking structure with elevator.

SoCalGas provides gas service in the City and has facilities throughout the City, including the Plan Area. The service area of SoCalGas spans much of the southern half of California, from San Luis Obispo County in the northwest to part of Fresno County in the north to Riverside County and most of San Bernardino County in the east to Imperial County in the southeast (CEC 2015b). Total natural gas supplies available to SoCalGas for years 2018 and 2019 are 3,055 million cubic feet per day (MMcf/day) and 3,385 MMcf/day, respectively (CGEU 2018). Total natural gas consumption in SoCalGas's service area was 722,247 MMcf for 2018, which is equivalent to 1,979 MMcf/day (CEC 2020b).

Estimated Existing Natural Gas Demands

Existing natural gas demands for the Plan Area is estimated at 9,900,123 kilo-British thermal units per year (kBTU/yr).[4]

Transportation Fuels

In 2019, California consumed 15.4 billion gallons of gasoline and 3.1 billion gallons of diesel fuel (CDTFA 2020a; CDTFA 2020b). According to CARB's Emissions Factor (EMFAC) Database, on-road transportation sources within Los Angeles County consumed 11.2 million gallons of gasoline per day and 1.7 million gallons of diesel fuel per day on average in 2019.

Estimated Existing Transportation Fuel Usage

Table 5.4-1, *Existing Operation-Related Annual Fuel Usage*, shows the fuel usage associated with VMT currently generated under existing baseline conditions based on fuel usage data obtained from EMFAC2017, Version 1.0.2, and VMT data provided by Fehr & Peers (see Appendix I). The table provides fuel usage associated with the VMT associated with the Plan Area.

Table 5.4-1 Existing Operation-Related Annual Fuel Usage

	Gas		Diesel		Compressed Natural Gas		Electricity	
Scenario	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Existing Year	14,988,202	614,254	676,769	63,739	26,762	7,379	154,382	51,567

Source: EMFAC2017 Version 1.0.2.
Note: VMTs based on daily VMT and average trip generation data provided by Fehr & Peers.

5.4.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

E-1 Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

E-2 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

[4] Based on the historical CalEEMod natural gas rates for the apartment mid-rise, general office, health club, and regional shopping center.

5.4.3 Environmental Impacts

5.4.3.1 METHODOLOGY

Based on Appendix F, Energy Conservation, in order to ensure energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential impacts of proposed projects, with particular emphasis on avoiding or reducing wasteful, unnecessary, or inefficient use of energy resources as applicable. Environmental effects may include the proposed project's energy requirements and its energy use efficiencies by amount and fuel type during demolition, construction, and operation, the effects of the proposed project on local and regional energy supplies, the effects of the proposed project on peak and base period demands for electricity and other forms of energy, the degree to which the proposed project complies with existing energy standards, the effects of the proposed project on energy resources, and the proposed project's projected transportation energy use requirements and its overall use of efficient transportation alternatives, if applicable. The energy and fuel usage information provided in this section are based on the following:

- **Building Energy:** Building electricity and natural gas demands are based on the CalEEMod default natural gas and electricity usage rates. The CalEEMod historical energy rates, which are based on the 2005 Building Energy Efficiency Standards, are utilized for the existing buildings. New buildings are assumed to comply with the 2019 Building Energy Efficiency Standards and are modeled to be 10.2 percent and 1 percent more energy efficient for electricity and natural gas, respectively, compared to the 2016 Building Energy Efficiency Standards (NORESCO 2018). Under the California Building and Energy Standards, residential buildings that are four stories and higher fall under the non-residential standards.

- **On-Road Vehicle Fuel Usage:** Fuel usage associated with operation-related vehicle trips are based on fuel usage data obtained from EMFAC2017, Version 1.0.2, and on daily VMT and average daily trip (ADT) generation data provided by Fehr and Peers (see Appendix I). In addition, fuel usage associated with construction-related vehicle trips (i.e., worker and vendor trips) are based on construction-related trips information provided and on CalEEMod defaults.

- **Off-Road Equipment Fuel Usage:** Fuel usage for construction-related off-road equipment is based on fuel usage data from OFFROAD2017, Version 1.0.1, with conservative estimates for anticipated construction (activities and equipment) and operations associated with the development phase of the Specific Plan (see DEIR Section Table 5.2-9, *Construction Activities, Phasing and Equipment: Worst-Case Development Phase*, for details regarding the anticipated construction schedule and equipment). This *Worst-Case Development Phase* is used to represent the construction-related fuels that could be required by the other anticipated development phases accommodated under the Specific Plan. This conservative estimate generally accounts for the largest amount of demolition and grading hauling activities and development that could occur within a given development phase.

5.4.3.2 IMPACT ANALYSIS

The following impact analysis addresses thresholds of significance for which the Initial Study (Appendix A) disclosed potential significant impacts. The applicable thresholds are identified in brackets after the impact statement.

Impact 5.4-1: Implementation of the Specific Plan would not result in the wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation [Threshold E-1])

Impact Analysis: The following evaluates energy usage associated with construction and operation of land uses accommodated under the Specific Plan.

Short-Term Construction Impacts

Construction of the land uses accommodated under the Specific Plan would create temporary increased demands for electricity and vehicle fuels compared to existing conditions and would result in short-term transportation-related energy use. Natural gas is not generally required to power construction equipment, and therefore is not anticipated to be used during construction phases. Table 5.4-2 provides an estimate of the potential energy and fuel usage from construction activities associated with the worst-case development phase of the Specific Plan. The energy data shown for the Full Buildout scenario is based on the total energy calculated for the worst-case phase and multiplied by 12, which is the potential number development phases that could occur under the Specific Plan. As stated under the Impact 5.2-2 discussion in this DEIR, construction activities associated with buildout of Specific Plan are anticipated to occur sporadically over approximately ten years or more. Buildout of the Specific Plan would comprise of either the same or reduced scope compared to the worst-case phase modeled and/or multiple smaller projects with each having its own construction timeline, activities, and construction equipment mix.

Construction activities associated with the land uses accommodated under the Specific Plan would require electricity use to power the construction equipment. The electricity use during construction would vary during different phases of construction: the majority of construction equipment during demolition and grading would be gas-powered or diesel-powered, while later construction phases would require electricity-powered equipment such as nail guns for interior construction and sprayers for architectural coatings. Overall, the use of electricity would be temporary in nature and would fluctuate according to the phase of construction. Additionally, it is anticipated that the majority of electric-powered construction equipment would be hand tools (e.g., power drills, table saws, compressors) and lighting, which would result in minimal electricity usage during construction activities.

Table 5.4-2 Construction-Related Fuel Usage

Project Component	Gas[1]		Diesel[1]		Electricity[1]	
	VMT	Gallons	VMT	Gallons	VMT	kWh
Worst-Case Phase						
Construction Worker Commute	379,204	13,222	2,624	60	6,535	2,122
Construction Vendor Trips	7,112	1,382	81,601	9,618	n/a	n/a
Construction Haul Trips	6	1	7,095	1,006	n/a	n/a
Construction Off-Road Equipment	n/a	4,367	n/a	23,264	n/a	n/a
Total	386,322	18,973	91,320	33,948	6,535	2,122
Full Buildout[2]						
Construction Worker Commute	4,550,447	158,664	31,488	717	78,425	25,460
Construction Vendor Trips	85,349	16,589	979,214	115,418	n/a	n/a
Construction Haul Trips	73	17	85,135	12,074	n/a	n/a
Construction Off-Road Equipment	n/a	52,403	n/a	279,169	n/a	n/a
Total	4,635,870	227,673	1,095,837	407,377	78,425	25,460

Source: CalEEMod Version 2016.3.2, EMFAC2017 Version 1.0.2, & OFFROAD2017 Version 1.0.1.
Notes: VMT=vehicle miles traveled; kWh=kilowatt hour
[1] Based on calendar years 2023 and 2024 fuel usage and VMT data.
[2] Based on worst-case phase multiplied by the anticipated 12 development phases.

Development projects would also temporarily increase demands for gasoline and diesel construction equipment. Construction of individual projects accommodated under the Specific Plan would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel and/or gasoline. The use of energy resources by these vehicles would fluctuate according to the phase of construction and would be temporary, and all use of construction equipment would cease upon completion of project construction. Gasoline and diesel usage would also be associated with the transportation of construction employees and equipment to the Plan Area. These transportation energy uses depend on the type and number of trips, VMT, fuel efficiency of vehicles, and travel mode. To limit wasteful and unnecessary energy consumption, the construction contractors are required to minimize nonessential idling of construction equipment during construction in accordance with Section 2449 of the California Code of Regulations, Title 13, Article 4.8, Chapter 9. In addition, electrical energy would be available for use during construction from existing power lines and connections, minimizing or avoiding the use of generators that are less efficient than tying into existing SCE infrastructure. Furthermore, construction trips would not result in unnecessary use of energy since the Plan Area is centrally located and is served by numerous regional freeway systems (including Interstate 710 which is approximately one mile from the Plan Area) that provide direct and efficient routes from various areas of the region. Furthermore, construction activities associated with future land use development projects accommodated under the Specific Plan would cease upon project completion. Overall, construction energy and fuel demands associated with land use developments accommodated under the Specific Plan would not be any more inefficient, wasteful, or unnecessary than similar development projects. Therefore, project-related construction activities would not result in wasteful or unnecessary energy demands, and impacts would be less than significant. Additionally, on-road vehicles associated with construction worker and vendor trips continue to become more fuel efficient over time.

Long-Term Impacts During Operation

Operation of the new development projects accommodated under the Specific Plan would create additional demands for electricity and natural gas compared to existing conditions and would result in increased transportation energy use. Operational use of energy would include heating, cooling, and ventilation of buildings, water heating, operation of electrical systems, use of on-site equipment and appliances, and lighting.

Non-Transportation Energy

The estimated net electricity and natural gas consumption for the Specific Plan is shown in Table 5.4-3.

Table 5.4-3 Building Electricity and Natural Gas Consumption

Land Use	Electricity (kWh/year)	Natural Gas (kBTU/year)
Residential[1]	5,286,360	16,633,370
Amenities and Education[2]	1,029,509	1,698,850
Services/Administration[3]	891,282	731,862
Retail[4]	315,896	38,357
Parking Lot[5]	2,097,880	0
Full Buildout Total[6]	9,620,927	19,102,439
Existing Energy Usage	5,295,391	9,900,123
Net Change	4,325,536	9,202,316

Source: CalEEMod Version 2016.3.2
Notes: kWh=kilowatt hour; kBTU=1,000 British thermal units
[1] Utilizes the apartment mid-rise land use category energy rates.
[2] Utilizes the health club land use category energy rates.
[3] Utilizes the general office land use category energy rates.
[4] Utilizes the regional shopping center land use category energy rates.
[5] Utilizes the enclosed parking structure with elevator land use category energy rates.
[6] Combined energy associated with the remaining existing land uses and the new proposed land uses.

Electricity

Electricity service to the Plan Area would be provided by SCE through connections to existing offsite electrical lines. As shown in the Table 5.4-3, implementation of the Specific Plan would result in a net increase in electricity use by 4,325,536 kWh/year. While the Specific Plan would increase energy demand at the site compared to existing conditions, it would be required to comply with the latest applicable Building Energy Efficiency Standards and CALGreen.

Under the 2019 Building Energy Efficiency Standards, future residential buildings of three stories and less in the Plan Area would be required to install solar PV systems. Furthermore, under the Specific Plan design standards, streetlights will include solar panels and batteries to generate and capture electricity to be later used in the evening to light the way for pedestrians and vehicles. While this design feature would not decrease electricity demand, it would increase the amount of renewable electricity available to offset electricity demand from SCE. In addition, building orientation would be designed to maximize natural daylight and ventilation for the residential units and could contribute in minimizing electricity lighting and cooling. Overall, because the existing buildings were built and designed to comply with older building standards, the newer buildings

would be more energy efficient as they would be constructed in compliance with the Specific Plan design guidelines and energy efficiency regulatory requirements, and would also be more energy efficient due to the mechanical systems utilized (e.g., building insulation) within the building envelope.

Specific Plan operation is expected to result in a net increase of 4.3 million kilowatt hours (kWh) annually at buildout. SCE forecasts that it will have sufficient electricity supplies to meet demands in its service area; and the electricity demand due to the project is within the forecast increase in SCE's electricity demands. Specific Plan development would not require SCE to obtain new or expanded electricity supplies; impacts would be less than significant.

Natural Gas

As shown in Table 5.4-3, implementation of the Specific Plan would result in a net increase in natural gas demand by 9,202,316 kBTU/year compared to the existing uses. The City of Long Beach Gas and Oil Department forecasts that its natural gas supplies will increase by approximately 1 MMCF/day between 2019 and 2035. That amounts to an increase of 370 million kBTU (CGEU 2016). The forecast net increase in natural gas demands due to buildout under the Specific Plan is well within City forecasts of natural gas supplies, and therefore, would not require the City to obtain new or expanded natural gas supplies.

Furthermore, the Specific Plan would comply with the requirements of the current California Building Energy and Efficiency Standards and CALGreen. All new appliances would comply with the 2012 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608).

Compliance with the Building Energy Efficiency Standards would contribute in minimizing natural gas demands. In addition, and as stated, building orientation would be designed to maximize natural daylight, which could also contribute in minimizing natural gas consumption for heating. Overall, as stated above, newer buildings accommodated under the Specific Plan would generally be more energy efficient compared to the existing buildings that would be replaced.

Transportation Energy

Vehicle trips associated with land use development projects accommodated under the Specific Plan would result in the consumption of transportation energy. Because the efficiency of the motor vehicles in use with the Specific Plan is unknown—such as the average miles per gallon—estimates of transportation energy use are based on the overall VMT and related transportation energy use. As shown in Table 5.4-4, implementation of the Specific Plan would result in an overall increase in VMT due to the increase in population and employment anticipated at buildout. However, implementation of the Specific Plan would also provide more employment opportunities and overall, would not hinder City's the jobs-housing ratio trend of moving towards a more balanced ratio (see Impact 5.11-1 of this DEIR). Furthermore, the Specific Plan includes the multi-use Wellness Trail for bicyclists and pedestrians which would implement a multi-modal approach to internal circulation within the Plan Area and prioritize pedestrian and bicycle orientation where feasible. Design features would include installation of traffic calming improvements, increased sidewalk widths, and mixed-use paths. As shown in Table 5.6-7, *Specific Plan Operation-Related VMT*, while total VMT and vehicle trips would increase with implementation of the Specific Plan compared to existing conditions,

VMT per vehicle trip would decrease from 14.07 VMT/vehicle trip to 11.75 VMT/vehicle. The decrease in VMT per vehicle trip indicates the Specific Plan would result in more efficient use of transportation fuels compared to transportation fuel demands associated with the existing uses.

Table 5.4-4 Net Operation-Related Fuel Usage

	Gas		Diesel		Natural Gas		Electricity	
	Annual		Annual		Annual		Annual	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Full Buildout	23,147,479	693,379	1,414,115	101,752	38,033	10,828	1,053,088	316,042
Existing Year 2033[1]	14,379,172	429,882	791,688	54,188	20,741	5,837	654,507	196,424
Net Change	8,768,307	263,497	622,427	47,565	17,292	4,991	398,581	119,618

Source: CalEEMod Version 2016.3.2; EMFAC2017 Version 1.0.2
Notes: VMT=vehicle miles traveled; kWh=kilowatt hour; SP=service population
[1] Based on existing conditions projected to buildout year of 2033 to provide a direct comparison to operation-related fuel usage.

Summary

Overall, regulatory compliance (e.g., Building Energy Efficiency Standards, CALGreen, RPS, and CAFE standards) would increase building energy efficiency and vehicle fuel efficiency and reduce building energy demand and transportation-related fuel usage. Additionally, the Specific Plan includes components associated with its design guidelines, project design features, and planned circulation and mobility improvements that would contribute to minimizing building and transportation-related energy demands overall and demands on nonrenewable sources of energy. These components of the Specific Plan in conjunction with and complementary to regulatory requirements would ensure that energy demand associated with growth under the Specific Plan would not be inefficient, wasteful, or unnecessary. Therefore, energy impacts associated with implementation and operation of land uses accommodated under the Specific Plan would be less than significant.

Impact 5.4-2: The Specific Plan would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency [Threshold E-2])

Impact Analysis: The following evaluates consistency of the Specific Plan with California's RPS program and the energy-related goals and objectives of the City's Sustainable City Action Plan and Draft CAAP.

California Renewables Portfolio Standard Program

The state's electricity grid is transitioning to renewable energy under California's RPS Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The RPS goals have been updated since adoption of Senate Bill 1078 in 2002. In general, California has RPS requirements of 33 percent renewable energy by 2020 (Senate Bill X1-2), 44 percent by 2024, 50 by 2026, 52 percent by 2027, 60 percent by 2030, and 100 percent by 2045. The RPS requirements established under SB 100 are also applicable to publicly owned utilities. The statewide RPS requirements do not directly apply to individual development projects, but rather to utilities and energy providers such as SCE, whose compliance with RPS requirements would contribute to the state objective of transitioning to renewable energy.

The residential land uses accommodated under the Specific Plan would comply with the current and future iterations of the Building Energy Efficiency Standards and CALGreen. Under the 2019 Building Energy Efficiency Standards, future multifamily buildings of three stories and less in the Plan Area would be required to install solar PV systems while non-residential buildings and residential buildings of four stories and more would be required to be solar ready. Furthermore, the Specific Plan design guidelines require streetlights to include solar panels and batteries to generate and store renewable energy, which would be consistent with the statewide goal of transitioning the electricity grid to renewable sources. Therefore, implementation of the Specific Plan would not conflict or obstruct implementation of California's RPS Program, and no impact would occur.

City of Long Beach Sustainable City Action Plan & Draft Climate Action and Adaptation Plan

The Sustainable City Action Plan includes goals related to increasing renewable energy use for the private sector and increasing overall energy efficiency. The CAAP also includes priority mitigation actions focused on energy and renewable energy generation. While many of the goals and priority mitigation actions apply specifically to municipal operations and actions, or public awareness measures, the Specific Plan is generally consistent with the overall objective of these two plans to increase energy efficiency and renewable energy. As stated above, streetlights would be required to include solar panels and batteries to generate and store solar energy. In addition, the Specific Plan design guidelines require proposed developments to have landscapes that include California native or adaptive plants. Furthermore, developments accommodated under the Specific Plan would be required to install low-flow water fixtures. These two components would contribute in conserving water, thereby reducing the amount of energy demand associated with the distribution and treatment of water. Also, as discussed above in Impact 5.4-1, building orientation would be designed to maximize natural daylight and ventilation for the residential units and could contribute in minimizing energy used for lighting, heating, and cooling. Therefore, the Specific Plan would not conflict with City's Sustainable City Action Plan and Draft CAAP, and no impact would occur.

5.4.4 Cumulative Impacts

The areas considered for cumulative impacts to electricity and natural gas supplies are the service areas of SCE and SoCalGas, respectively, described above in Section 5.4.1. Other projects would generate increased electricity and natural gas demands. However, all projects within the SCE and SoCalGas service areas would be required to comply with the Building Energy Efficiency Standards and CALGreen, which would contribute to minimizing wasteful energy consumption. Furthermore, the Specific Plan includes components that would support increasing renewable sources of energy and energy efficiency in addition to active transit that would also contribute to minimizing wasteful energy consumption. Therefore, cumulative impacts would be less than significant, and project impacts would not be cumulatively considerable.

5.4.5 Level of Significance Before Mitigation

With implementation of regulatory requirements, the following impacts would be less than significant: 5.4-1 and 5.4-2.

5.4.6 Mitigation Measures

No mitigation measures are necessary because there were no significant impacts identified under the applicable thresholds.

5.4.7 Level of Significance After Mitigation

Because no mitigation measures are required, impacts are the same as described in Section 5.4.6.

5.4.8 References

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