4.6 Energy

This section describes the existing energy conditions of the project site and vicinity, identifies associated regulatory requirements, identifies project design features for the project, evaluates potential impacts, and includes mitigation measures related to implementation of the project. The analysis included in this section is based on the findings of the documents listed below, as well as publicly available information referenced throughout this section. Sources used for this section include the following:

- **Appendix B-1:** Air Quality and Greenhouse Gas Emissions Modeling and Emissions Estimates (AQ/GHG Modeling); prepared by Dudek; dated March 2025
- **Appendix I:** Traffic Study; prepared by LSA Associates; dated February 2025

4.6.1 Existing Conditions

Electricity

According to the U.S. Energy Information Administration, California used approximately 239,480 gigawatt hours of electricity in 2023 (EIA 2024a). Electricity usage in California for different land uses varies substantially by the types of uses in a building, the type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. In 2023, California was the fourth-largest electricity producer in the nation, but the state was also the nation's third-largest consumer of electricity (EIA 2024b).

Southern California Edison (SCE) provides electricity to many areas in Southern California. SCE, a subsidiary of Edison International, serves approximately 180 cities in 11 counties across Central and Southern California. SCE administers various energy efficiency and conservation programs that may be available to residents, businesses, and other organizations in Orange County (County).

SCE receives electric power from a variety of sources. According to the 2023 SCE Power Content Label, eligible renewable energy accounts for 37.6% of SCE's overall energy resources, with geothermal resources at 5.2%, wind power at 11.7%, eligible hydroelectric sources at 0.7%, and solar energy at 19.8% (SCE 2023). Within the County, annual non-residential electricity use in 2022 was approximately 12.4 billion kilowatt-hours (kWh) per year, while residential electricity use is approximately 7.8 billion kWh per year (CEC 2022a).

Natural Gas

California used approximately 2,087 billion cubic feet of natural gas in 2023 (EIA 2025a). The majority (by number) of California's natural gas customers are residential and small commercial customers (core customers). These customers account for approximately 35% of the natural gas delivered by California utilities (CPUC 2019). Large consumers, such as electric generators and industrial customers (noncore customers), account for approximately 65% of the natural gas delivered by California utilities (CPUC 2021). The California Public Utilities Commission (CPUC) regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. California gas utilities may soon also begin receiving biogas into their pipeline systems (CPUC 2021).

The Southern California Gas Company (SoCalGas) provides Orange County with natural gas service. SoCalGas's service territory encompasses approximately 20,000 square miles and more than 500 communities. In the California Energy Demand mid-energy demand scenario from the 2019 Integrated Energy Policy Report, natural gas demand is projected to have an annual growth rate of 0.03% in SoCalGas's service territory (CEC 2018a). In 2022, SoCalGas delivered approximately 572 million therms (57.2 billion kilo–British thermal units [kBTU]) to the County (CEC 2022b).

Petroleum

According to the U.S. Energy Information Administration, California used approximately 628 million barrels of petroleum in 2022, with the majority (534 million barrels) used for the transportation sector (EIA 2025b). This total annual consumption equates to a daily use of approximately 1.7 million barrels of petroleum. In California, petroleum fuels refined from crude oil are the dominant source of energy for transportation sources. Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. California has implemented policies to improve vehicle efficiency and to support use of alternative transportation, as described in Section 4.6.2.

4.6.2 Relevant Plans, Policies, and Ordinances

Federal

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 FR 62624–63200). Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. In addition to setting increased Corporate Average Fuel Economy (CAFE) standards for motor vehicles, the EISA includes the following other provisions related to energy efficiency:

- Renewable Fuel Standard (RFS) (Section 202)
- Appliance and Lighting Efficiency Standards (Sections 301–325)
- Building Energy Efficiency (Sections 411–441)

The RFS, a federal law, requires ever-increasing levels of renewable fuels to replace petroleum (EPA 2017). The U.S. Environmental Protection Agency (EPA) is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in key ways that laid the foundation for achieving significant reductions of greenhouse gas (GHG) emissions through the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of our nation's renewable fuels sector. The updated program ("RFS2") includes the following:

- EISA expanded the RFS program to include diesel, in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- EISA established new categories of renewable fuel and set separate volume requirements for each one.
- EISA required EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

State

California Environmental Quality Act

In accordance with the California Environmental Quality Act (CEQA) Guidelines and Appendix F, Energy Conservation, of the CEQA Guidelines, in order to ensure that energy implications are considered in project decisions, environmental impact reports (EIRs) must include a discussion of the potential significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides a list of energy-related topics that should be analyzed in an EIR. In addition, while not described as significance thresholds for determining the significance of impacts related to energy, Appendix F provides the following topics that the lead agency may consider in the energy analysis in an EIR, where topics are applicable or relevant to the project:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project's life cycle including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed;
- The effects of the project on local and regional energy supplies and on requirements for additional capacity;
- The effects of the project on peak and base period demands for electricity and other forms of energy;
- The degree to which the project complies with existing energy standards;
- The effects of the project on energy resources; and
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

Warren–Alquist Act

The California Legislature passed the Warren–Alquist Act in 1974, which created the California Energy Commission (CEC). The legislation also incorporated the following three key provisions designed to address the demand side of the energy equation:

- It directed CEC to formulate and adopt the nation's first energy conservation standards for both buildings constructed and appliances sold in California.
- The act removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high-demand projections, and transferred it to a more impartial CEC.
- CEC was directed to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as non-conventional energy sources.

State of California Energy Action Plan

CEC and CPUC approved the first State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure the provision of adequate, reliable, and reasonably priced electrical power and natural gas supplies; it also identified cost-effective and environmentally sound energy policies, strategies, and actions for California's consumers and taxpayers. In 2005, CEC and CPUC adopted a second Energy Action Plan to reflect various policy changes and actions of the prior 2 years.

At the beginning of 2008, CEC and CPUC determined that it was not necessary or productive to prepare a new energy action plan (CPUC 2008). This determination was based, in part, on a finding that the state's energy policies had been significantly influenced by the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (discussed below). Rather than producing a new energy action plan, CEC and CPUC prepared an "update" that examines the state's ongoing actions in the context of global climate change.

Assembly Bill 32, Senate Bill 32, and Assembly Bill 1279

In 2006, the State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020. In 2016, the Legislature enacted Senate Bill (SB) 32, which extended the horizon year of the state's codified GHG reduction planning targets from 2020 to 2030, requiring California to reduce its GHG emissions to 40% below 1990 levels by 2030. In 2022, the Legislature enacted AB 1279, which established the policy of the state to achieve carbon neutrality as soon as possible, but no later than 2045 and maintain net negative GHG emissions thereafter, and to ensure that GHG emissions are reduced at least 85% below 1990 levels by 2045. In accordance with AB 32 and SB 32, the California Air Resources Board (CARB) prepares scoping plans to guide the development of statewide policies and regulations for the reduction of GHG emissions. Many of the policy and regulatory concepts identified in the scoping plans focused on increasing energy efficiencies, using renewable resources, and reducing the consumption of petroleum-based fuels (such as gasoline and diesel). As such, the state's GHG emissions reduction planning framework creates co-benefits for energy-related resources.

California Building Standards

Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically establishes Building Energy Efficiency Standards that are designed to ensure new and existing buildings

in California achieve energy efficiency and preserve outdoor and indoor environmental quality (CEC 2018b). These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC) (and revised if necessary) (PRC Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (PRC Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (PRC Section 25402[d]), and cost effectiveness (PRC Sections 25402[b][2] and [b][3]). These standards are updated to consider and incorporate new energy efficient technologies and construction methods. As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment. The 2022 standards went into effect on January 1, 2023. The 2025 Title 24 building energy efficiency standards were adopted in September 2024 and the non-residential portion of the code will become effective January 1, 2026. With the passage of AB 306, which prohibits the California Building Standards Commission and other state and local agencies from adopting new building standards for residential units from October 1, 2025, to June 1, 2031, the residential portion of the 2025 Title 24 code will not be enacted as originally planned by CEC.

In addition to CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR 11) is commonly referred to as CALGreen and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential, and state-owned buildings, schools, and hospitals. The CALGreen 2022 standards went into effect on January 1, 2023. The 2025 CALGreen proposed standards, adopted in September 2024, will go into effect on January 1, 2026.

Senate Bill 1368

On September 29, 2006, Governor Arnold Schwarzenegger signed into law SB 1368 (Perata, Chapter 598, Statutes of 2006). The law limits long-term investments in baseload generation (minimum level of demand on an electrical grid over a span of time) by the state's utilities to those power plants that meet an emissions performance standard jointly established by CEC and CPUC.

CEC has designed regulations (Perata, Chapter 598, Statutes of 2006) that:

- Establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 pounds carbon dioxide (CO_2) per megawatt-hour. This would encourage the development of power plants that meet California's growing energy needs while minimizing their emissions of GHGs;
- Require posting of notices of public deliberations by publicly owned utilities on long-term investments on the CEC website. This would facilitate public awareness of utility efforts to meet customer needs for energy over the long-term while meeting the state's standards for environmental impact; and
- Establish a public process for determining the compliance of proposed investments with the emissions performance standard (EPS).

Assembly Bill 1493

Adopted in 2002 by the state legislature, AB 1493 (Pavley regulations) required that CARB develop and adopt, no later than January 1, 2005, regulations to achieve the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles.

The first California request to implement GHG standards for passenger vehicles, known as a waiver request, was made in December 2005 and was denied by EPA in March 2008. That decision was based on a finding that California's request to reduce GHG emissions from passenger vehicles did not meet the Clean Air Act requirement of showing that the waiver was needed to meet "compelling and extraordinary conditions."

EPA granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks, and sport utility vehicles on June 30, 2009. On September 24, 2009, CARB adopted amendments to the Pavley regulations that reduced GHG emissions in new passenger vehicles from 2009 through 2016. These amendments were part of California's commitment to a nationwide program to reduce new passenger vehicle GHGs from 2012 through 2016. CARB's September 2009 amendments would allow for California's enforcement of the Pavley rule while providing vehicle manufacturers with new compliance flexibility. The amendments also prepared California to harmonize its rules with the federal rules for passenger vehicles.

It was expected that the Pavley regulations would reduce GHG emissions from California passenger vehicles by about 22% in 2012 and about 30% in 2016, all while improving fuel efficiency and reducing motorists' costs.

Executive Order S-1-07

Issued on January 18, 2007, Executive Order (EO) S-1-07 set a declining Low Carbon Fuel Standard for GHG emissions measured in CO_2-equivalent (CO_2e) grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard was to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation was expected to increase the production of biofuels, including those from alternative sources, such as algae, wood, and agricultural waste. In addition, the Low Carbon Fuel Standard would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The Low Carbon Fuel Standard was anticipated to lead to the replacement of 20% of the fuel used in motor vehicles with alternative fuels by 2020. In 2018, this goal was revised to reduce the carbon intensity of fuels by 20% compared to 2011 by 2030. In 2020, the LCFS met 7.42% of the 7.5% target reduction for the year (CARB 2021a).

Senate Bill 375

In August 2008, the legislature passed, and on September 30, 2008, Governor Schwarzenegger signed, SB 375 (Steinberg), which addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. Regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, as determined by CARB, are required to consider the emission reductions associated with vehicle emission standards (see SB 1493), the composition of fuels (see EO S-1-07), and other CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations are responsible for preparing a Sustainable Communities Strategy (SCS) within their Regional Transportation Plan (RTP). The goal of the SCS is to establish a development plan for the region, which, after considering transportation measures and policies, will

achieve, if feasible, the GHG reduction targets. If an SCS is unable to achieve the GHG reduction target, a metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for "transit priority projects," as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects would not conflict with the SCS or alternative planning strategy.

In September 2010, CARB adopted the SB 375 targets for the regional metropolitan planning organizations. The targets for the Southern California Association of Governments (SCAG) were an 8% reduction in emissions per capita by 2020 and a 13% reduction by 2035. Achieving these goals through adoption of a SCS is the responsibility of the metropolitan planning organizations. SCAG prepared its RTP/SCS, which was adopted by the SCAG Regional Council on April 4, 2012. The plan quantified a 9% reduction by 2020 and a 16% reduction by 2035. On June 4, 2012, the CARB executive officer issued an EO accepting SCAG's quantification of GHG reductions and the determination that the SCS would achieve the GHG emission reduction targets established by CARB. On April 7, 2016, SCAG adopted the 2016–2040 RTP/SCS, which looks to build on the success of the 2012–2035 RTP/SCS. Targets for SCAG region in the updated plan includes an 8% per capita reduction in GHG emissions from automobiles and light trucks by 2020, an 19% reduction by 2035, and a 21% reduction by 2040 compared with 2005 levels (SCAG 2020).

SCAG has developed Connect SoCal, the 2020–2045 RTP/SCS, which is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. Connect SoCal charts a path toward a more mobile, sustainable, and prosperous region by making connections between transportation networks, planning strategies, and the people whose collaboration can improve the quality of life for Southern Californians. Connect SoCal embodies a collective vision for the region's future and is developed with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses, and local stakeholders within the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The SCAG 2020–2045 RTP/SCS was adopted on September 3, 2020.

Truck and Bus Regulation, On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

On December 12, 2008, CARB approved the Truck and Bus Regulation to significantly reduce particulate matter (PM) and oxides of nitrogen (NO_x) emissions from existing diesel vehicles operating in California. Amendments to this regulation were approved by CARB on April 25, 2014.

The regulation applies to nearly all diesel fueled, dual-fueled, or alternative diesel-fueled trucks and buses with a gross vehicle weight rating greater than 14,000 pounds that are privately or federally owned and for privately and publicly owned school buses. The purpose of this regulation is to reduce emissions of diesel PM, NO_x, and other criteria pollutants from in-use diesel-fueled vehicles.

Heavier trucks and buses with a gross vehicle weight rating greater than 26,000 pounds must comply with a schedule by engine model year or owners can report to show compliance with more flexible options. Starting January 1, 2012, heavier trucks were required to meet the engine model year schedule. Fleets that comply with the schedule were required to install the best available PM filter on 1996 model year and newer engines and replace the vehicle 8 years later. Trucks with 1995 model year and older engines were required to be replaced starting in 2015. Replacements with a 2010 model year or newer engines meet the final requirements, but owners can also replace older trucks with newer used trucks that have a future compliance date on the schedule. For example, a replacement with a 2007 model year engine would comply until 2023. By 2023, all trucks and buses were required to have 2010 model year engines, with few exceptions. No reporting is required if this schedule is being met (CARB 2014).

Advanced Clean Cars Program

The Advanced Clean Cars (ACC) I program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package of regulations: the low-emission vehicle regulation for criteria air pollutant and GHG emissions and a technology forcing regulation for zero-emission vehicles (ZEVs) that contributes to both types of emission reductions (CARB 2021b). The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide fuels for clean cars. To improve air quality, CARB implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It was estimated that in 2025 cars would emit 75% less smog-forming pollution than the average new car sold in 2015. The ZEV program acted as the focused technology of the ACC I program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles (EVs) in the 2018 to 2025 model years.

The ACC II program (August 2022) established the next set of low-emission vehicle and zero-emission vehicle requirements for model years after 2025 to contribute to meeting federal ambient air quality ozone (O_3) standards and California's carbon neutrality standards (CARB 2021b). The main objectives of ACC II are as follows:

- Maximize criteria and GHG emission reductions through increased stringency and real-world reductions.
- Accelerate the transition to ZEVs through both increased stringency of requirements and associated actions to support wide-scale adoption and use.

The ACC II rulemaking package also considers technological feasibility, environmental impacts, equity, economic impacts, and consumer impacts.

Advanced Clean Trucks Program

The purpose of the ACT Regulation (June 2020) is to accelerate the market for zero-emission vehicles in the medium- and heavy-duty truck sector and to reduce emissions NO_x, fine particulate matter ($PM_{2.5}$), toxic air contaminants, GHGs, and other criteria pollutants generated from on-road mobile sources (CARB 2021c). Requiring medium- and heavy-duty vehicles to transition to zero-emissions technology will reduce health risks to people living in and visiting California and is needed to help California meet established near- and long-term air quality and climate mitigation targets. The regulation has two components, including (1) a manufacturer sales requirement and (2) a reporting requirement:

1. **Zero-Emission Truck Sales:** Manufacturers who certify Class 2b–8 chassis or complete vehicles with combustion engines will be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55% of Class 2b–3 truck sales, 75% of Class 4–8 straight truck sales, and 40% of truck tractor sales.
2. **Company and Fleet Reporting:** Large employers including retailers, manufacturers, brokers, and others will be required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, will be required to report about their existing fleet operations. This information will help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

Executive Order B-16-12

EO B-16-12 (March 2012) requires state entities under the governor's direction and control to support and facilitate the rapid commercialization of ZEVs. It ordered CARB, CEC, CPUC, and other relevant agencies work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve the following by 2015:

- The state's major metropolitan areas will be able to accommodate ZEVs, each with infrastructure plans and streamlined permitting.
- The state's manufacturing sector will be expanding ZEV and component manufacturing.
- The private sector's investment in ZEV infrastructure will be growing.
- The state's academic and research institutions will be contributing to ZEV research, innovation and education.

CARB, CEC, and CPUC were also directed to establish benchmarks to help achieve the following goals by 2020:

- The state's ZEV infrastructure will be able to support up to one million vehicles.
- The costs of ZEV will be competitive with conventional combustion vehicles.
- ZEVs will be accessible to mainstream consumers.
- There will be widespread use of ZEVs for public transportation and freight transport.
- Transportation sector GHG emissions will be falling as a result of the switch to ZEVs.
- Electric vehicle charging will be integrated into the electricity grid.
- The private sector's role in the supply chain for ZEV component development and manufacturing will be expanding.

Benchmarks were also to be established to help achieve the following goals by 2025:

- Over 1.5 million ZEVs will be on California roads and their market share will be expanding.
- Californians will have easy access to ZEV infrastructure.
- The ZEV industry will be a strong and sustainable part of California's economy.
- California's clean, efficient vehicles will annually displace at least 1.5 billion gallons of petroleum fuels.

On a statewide basis, the EO establishes a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050.

Renewable Energy Sources

SB 1078 established the California Renewables Portfolio Standard (RPS) Program and required that a retail seller of electricity purchase a specified minimum percentage of electricity generated by eligible renewable energy resources as defined in any given year, culminating in a 20% standard by December 31, 2017. These retail sellers include electrical corporations, community choice aggregators, and electric service providers. The bill relatedly required the CEC to certify eligible renewable energy resources, design and implement an accounting system to verify compliance with the RPS by retail sellers, and allocate and award supplemental energy payments to cover above-market costs of renewable energy.

SB 107 (2006) accelerated the RPS established by SB 1078 by requiring that 20% of electricity retail sales be served by renewable energy resources by 2010 (not 2017). Additionally, SB X1-2 (2011) required all California utilities to generate 33% of their electricity from eligible renewable energy resources by 2020. Specifically, SB X1-2 sets a three-stage compliance period: by December 31, 2013, 20% had to come from renewables; by December 31, 2016, 25% had to come from renewables; and by December 31, 2020, 33% had to come from renewables.

SB 350 (2015) expanded the RPS because it requires retail seller and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030, with interim goals of 40% by 2024 and 45% by 2027.

SB 100 (2018) accelerated and expanded the standards set forth in SB 350 by establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 also states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

SB 1020 (September 2022) revises the standards from SB 100, requiring the following percentage of retail sales of electricity to California end-use customers to come from eligible renewable energy resources and zero-carbon resources: 90% by December 31, 2035; 95% by December 31, 2040; and 100% by December 31, 2045 (California Government Code Section 7921.505; California Health and Safety Code Section 38561; California Public Utilities Code Sections 454.53, 583, 454.59, 739.13).

Assembly Bill 1007

AB 1007 (2005) required CEC to prepare a statewide plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). CEC prepared the plan in partnership with the CARB and in consultation with other state agencies, plus federal and local agencies. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Local

City of Irvine General Plan

The City of Irvine (City) General Plan (City of Irvine 2024) includes various policies related to energy conservation (both directly and indirectly). Applicable goals, objectives, and policies from the Environmental Protection and Climate Action Element include the following, which are detailed in Table 4.11-1, General Plan Consistency, in Section 4.11, Land Use and Planning, of this Draft EIR:

Goal 3: Reduce greenhouse gas emissions and mitigate climate change impacts in Irvine to create a more sustainable and resilient community.

Objective EPCA-3: Achieve significant reductions in greenhouse gas emissions across all sectors within Irvine by implementing targeted policies and initiatives.

Policy (a): Promote the transition to renewable energy sources, such as solar, wind, and geothermal, for electricity generation within Irvine.

Policy (b): Encourage the adoption of energy-efficient technologies and practices in buildings, transportation, and industries to reduce reliance on fossil fuels.

Goal 4: Improve air quality and protect public health in Irvine by reducing air pollution and minimizing harmful emissions from various sources.

Objective EPCA-4: Achieve and maintain compliance with air quality standards set by regulatory agencies, such as the Environmental Protection Agency (EPA) and the California Air Resources Board (CARB), to ensure a healthy and sustainable environment for residents.

Policy (c): Encourage the use of clean and renewable energy sources, such as solar, wind, and geothermal, to reduce emissions from energy generation and promote a transition away from fossil fuels.

Goal 6: Reduce energy consumption and promote energy efficiency in Irvine.

Objective EPCA-6: Achieve significant reductions in per capita energy consumption across residential, commercial, and municipal sectors while promoting the adoption of renewable energy sources and energy-efficient technologies.

Policy (a): Continue, through the efforts of CALGreen (California Green Building Standards Code), to enforce energy efficiency standards and building codes for new construction and major renovations to improve the energy performance of buildings and reduce energy demand.

Policy (b): Continue to require energy-efficient building design, insulation, HVAC systems, lighting, and appliances to minimize energy consumption and lower utility costs for residents and businesses.

Policy (c): Continue to promote the adoption of renewable energy systems, such as solar photovoltaic (PV) panels, wind turbines, and geothermal heat pumps, to generate clean and sustainable electricity for onsite consumption or grid injection.

Goal 10: Continue to promote sustainable land use practices in Irvine.

Objective EPCA-10: Implement policies and initiatives that prioritize sustainable land management, smart growth principles, and equitable development strategies to ensure the efficient use of land while protecting environmental quality and promoting community well-being.

Policy (g): Explore the adoption of green building standards, energy-efficient design guidelines, and sustainable construction practices to reduce greenhouse gas emissions, promote energy conservation, and minimize environmental impacts associated with new development and redevelopment projects.

City of Irvine Strategic Energy Plan

The City's Strategic Energy Plan is a proactive plan that analyzes the City's energy sustainability, assesses the feasibility of reductions to energy use and related emissions, and provides recommendations for the community to promote energy conservation and the use of renewable energy sources throughout the City in a cost-effective way (City of Irvine 2020a). The Strategic Energy Plan's recommendations include actions for three main categories—energy supply, buildings, and transportation and land use—and are designed to help the City align itself with the state's reduction targets. The recommendations listed in the Strategic Energy Plan are as follows:

Energy Supply

ES-1: Join a CCE Electricity Supplier

ES-2: Portfolio-wide Procurement for City Facilities

Buildings

B-1: Develop a Community-Facing Energy Upgrade Program

B-2: Reduce or Remove Administrative Obstacles to Energy Storage, Electric Vehicles, and Building Electrification

B-3: Decarbonize City Facilities

B-4: Develop Decarbonization Roadmap

Transportation and Land Use

TLU-1: Reduce emissions from City Fleet Vehicles and Employee Commute

TLU-2: Incentivize Sustainable Transportation Modes for Residents and Businesses

TLU-3: Develop a Comprehensive Electric Vehicle Action Plan

4.6.3 Thresholds of Significance

The City has adopted the following significance criteria used to evaluate the project impacts to energy based on Appendix G of the CEQA Guidelines (City of Irvine 2020b). According to the City's CEQA Manual, a significant impact related to energy would occur if the project would:

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

In addition to addressing the City's adopted CEQA Guidelines, which incorporate Appendix G thresholds, the energy analysis includes factors and considerations from Appendix F of the CEQA guidelines, as appropriate, to assist in answering the Appendix G questions. The factors to evaluate energy impacts in response to Threshold 1 include the project's energy requirements and effects of the project on local and regional energy supplies. The factor to evaluate energy impacts in response to Threshold 2 includes the degree to which the project complies with existing energy standards, as applicable.

Methodology

Construction

The California Emissions Estimator Model (CalEEMod) Version 2022.1.1.29 (CAPCOA 2022) was used to estimate the potential project-energy consumption during construction and operation. Construction of the project would result in petroleum consumption primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. All details specific to construction and operation that are discussed in Section 4.2, Air Quality, of this Draft EIR—specifically under the "Construction Emissions" heading in Section 4.2.3, Thresholds of Significance—are also applicable for the estimation of construction-related energy consumption. Potential energy consumption from project operations were estimated for area sources (landscape maintenance), energy sources (natural gas and electricity), mobile sources, solid waste, and water supply and wastewater treatment.

Potential impacts were assessed through projected traffic trip generation during construction and operation, as detailed in the CalEEMod outputs that were prepared for the project (Appendix B-1, Air Quality Modeling). Information regarding mobile trip generation was provided by the Transportation Impact Assessment prepared for the project (Appendix I, Traffic Study). Fuel consumption from construction equipment was estimated by converting the total CO_2 emissions from each construction phase to gallons using conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton (kg/MT) CO_2 per gallon, and the conversion factor for diesel is 10.21 kg/MT CO_2 per gallon (The Climate Registry 2023). Heavy-duty construction equipment associated with construction activities and haul trucks involved in importing or exporting material to and from the site, such as export of soil from earthwork and grading, are assumed to use diesel fuel. It is assumed that construction workers would travel in the project area in gasoline-powered vehicles. Fuel consumption from worker and vendor trips was estimated by converting the total CO_2 emissions from the construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Worker vehicles are assumed to be gasoline fueled, while vendor and hauling vehicles are assumed to be diesel fueled. The fuel consumption resulting from the project's operational phase would be attributable to vehicle travel within the project area. Similar to construction worker and vendor trips, fuel consumption for operation was estimated by converting the total CO_2 emissions from the project to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel.

Operation

Electricity

The project's operational phase would require electricity for multiple purposes including, but not limited to, building heating and cooling; lighting; appliances, including refrigeration; electronics; equipment; and machinery. Energy would also be consumed during operation of the project related to landscaping equipment, water usage, solid waste disposal, and electric vehicle trips. CalEEMod was used to analyze electrical usage during operation; the default value for electricity consumption for the proposed land uses was updated for the project-based CalEEMod default values from SCE. CalEEMod default values for all land uses were applied, with the exception of the swimming pools and spa, which are assumed to consume natural gas, not electricity.

As discussed in Section 4.6.4, Project Design Features, the project would incorporate project design features (PDFs) to reduce the energy consumption associated with project operations. PDF-AQ/GHG-1 (All-Electric Residential Development), PDF-AQ/GHG-2 (Energy-Efficient Appliances), and PDF-AQ/GHG-3 (Exceedance of Title 24, Part 6 Standards) would prohibit the use of natural gas, require installation of Energy Star appliances within the residential

buildings, and otherwise exceed the requirements of Title 24 by 10% respectively. Because natural gas would not be used within residential buildings at the site, CalEEMod default values of natural gas consumption for residential land uses were converted to electrical demand and accounted for in Appendix B-1. The details of how the project would exceed Part 6 of the Title 24 standards are not currently known. Therefore, to provide a conservative analysis, PDF-AQ/GHG-3 is not quantified. The electricity use from residential land uses is calculated in CalEEMod based on the Residential Appliance Saturation Study. For nonresidential buildings (i.e. the amenity building/clubhouse and pools), CalEEMod energy intensity value (electricity or natural gas usage per square foot per year) assumptions were based on the California Commercial End-Use Survey database.

Solar power generation would be incorporated into the project site via solar panels, which would be located on top of all residential buildings based on available roof space and in accordance with the requirements of Title 24, Part 6.[1] Incorporated on-site solar power generation would effectively reduce the energy demand of the project. However, because solar power generation specifics are unknown at this time, the annual electricity generated by the project was not calculated or analyzed herein. Per CEQA Guidelines Appendix F, this analysis quantifies the project's energy consumption from operations and evaluates the associated impacts on energy resources and requirements, peak and base period demand, and effects on the local and regional energy supplies, and analyzes the project's compliance with existing energy standards.

Natural Gas

Project natural gas consumption is based on the estimated total annual building load summaries from CalEEMod. With the project's incorporation of PDF-AQ/GHG-1 (All-Electric Residential Development), natural gas was not modeled within the residential uses. The energy use from nonresidential land uses (natural gas usage per square foot per year) is calculated in CalEEMod based on the California Commercial End-Use Survey database. Per CEQA Guidelines Appendix F, this analysis quantifies the project's energy consumption from operations and evaluates the associated impacts on energy resources and requirements, peak and base period demand, and effects on the local and regional energy supplies, and analyzes the project's compliance with existing energy standards.

Petroleum

Petroleum would be consumed by project-generated vehicle trips. Such consumption is a function of total vehicle miles traveled (VMT) and estimated vehicle fuel economies for the vehicles accessing the project site. The project would generate an estimated 28,778,411 annual VMT. Similar to construction worker and vendor trips, fuel consumption was estimated by converting the total CO_2 emissions from project mobile sources to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Based on the annual fleet mix provided in EMFAC2021, for buildout of the project, approximately 96% of the fleet mix using fossil fuels (with the exception of natural gas) was assumed to run on gasoline and approximately 4% of the fleet mix was assumed to use diesel (CARB 2025). Per CEQA Guidelines Appendix F, this analysis considers these factors and provides the estimated maximum construction energy consumption for the purposes of evaluating the associated impacts on energy resources and requirements.

[1] Title 24 requires both new single-family and low-rise multifamily residential construction to install solar PV based either on the size of the buildings' solar access roof area (SARA) or based on an equation of three factors: the climate zone of the building, the conditioned floor area of the buildings, and the number of dwelling units. Further, Title 24 requires new single-family residences to be energy storage ready to facilitate future installation of battery storage systems.

4.6.4 Project Design Features

PDFs detailed in Section 4.3, Air Quality, and 4.8, Greenhouse Gas Emissions, of this Draft EIR would be implemented as part of the proposed project. These PDFs include the following:

- PDF-AQ/GHG-1: All-Electric Residential Development
- PDF-AQ/GHG-2: Energy Efficient Appliances
- PDF-AQ/GHG-3: Exceedance of Title 24, Part 6 Standards

4.6.5 Impacts Analysis

1. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less-Than-Significant Impact. Implementation of the project would increase the demand for electricity and natural gas in the City, as well as petroleum consumption during construction and operation.

Construction

Electricity

Temporary electric power for as-needed lighting and electronic equipment, such as computers inside temporary construction trailers, would be required during short-term construction activities. The electricity demand at any given time would vary throughout the construction period based on the construction activities being performed and would cease upon completion of construction. When not in use, electric equipment would be powered off so as to avoid unnecessary energy consumption. There is nothing unusual about construction of the project that would result in a wasteful, inefficient, or unnecessary use of electrical energy. The electricity used for such activities would be temporary, would be substantially less than that required for project operation, would have a negligible contribution to the project's overall energy consumption, and would not be wasteful, inefficient, or unnecessary.

Natural Gas

Natural gas is not anticipated to be required during construction of the project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed under the subsection "Petroleum," below. Any minor amounts of natural gas that may be consumed as a result of project construction would be temporary and negligible and would not have an adverse effect.[2]

Petroleum

The estimated diesel fuel usage from construction equipment and vendor trucks, as well as estimated gasoline fuel usage from worker vehicles, is shown in Table 4.6-1.

[2] Although no natural gas is anticipated to be used during construction because construction equipment is typically diesel fueled, the possibility of natural gas use is acknowledged in the event a natural gas–fueled piece of equipment is used or a natural gas–fueled hot water boiler is used for pipe relining. However, as noted previously, all equipment was assumed to be diesel fueled in CalEEMod.

Table 4.6-1. Total Project Construction Petroleum Demand – Unmitigated (Gallons)

Construction Phase	Off-Road Equipment (Diesel)	Haul Trucks (Diesel)	Vendor Trucks (Diesel)	Worker Vehicles (Gasoline)
2026	84,842	5,908	872	5,969
2027	139,501	738	4,429	117,875
2028	223,940	367	6,975	157,528
2029	173,775	294	4,999	133,693
2030	179,540	303	5,450	136,606
2031	79,536	0	2,171	85,278
2032	16,617	0	453	17,745
Total[a]	**897,750**	**7,610**	**25,347**	**654,694**

Source: Appendix B-1.
Note:
[a] Totals may not sum precisely due to rounding.

In summary, construction associated with the development of the project is estimated to consume a total of approximately 654,694 gallons of gasoline from worker vehicles and 930,707 gallons of diesel for off-road equipment, haul trucks, and vendor trucks, for a total of 1,585,400 gallons of petroleum.

The project would be subject to CARB's In-Use Off-Road Diesel Vehicle Regulation, which applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulation (1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; (2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; (3) restricts adding older vehicles into fleets starting on January 1, 2014; and (4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The fleet must show that either its fleet average index was less than or equal to the calculated fleet average target rate, or the fleet has met the Best Achievable Control Technology requirements. Overall, the project demand would not be unusual compared to overall local and regional demand for energy resources and would not involve characteristics that require equipment that would be less energy efficient than that found at comparable construction sites in the region or state. Although it would not be required to reduce energy impacts to less than significant, the project would include Mitigation Measure (MM) AQ-2 (Additional Construction Equipment Emission Reductions) and MM-AQ-4 (Limits on Truck and Equipment Idling During Construction) (see Section 4.3.6 for full text of these mitigation measures) that would reduce petroleum use during construction activities through use of electric equipment, use of cleaner fueled equipment, and minimizing idling.

Additionally, any future development facilitated by the project would be required to adhere to all federal, state, and local requirements. Considering these requirements, the project would not result in the inefficient, wasteful, or unnecessary consumption of energy during construction.

Operation

Electricity

The operational phase would require electricity for multiple purposes, including building heating and cooling, lighting, appliances, electronics, landscape equipment within the homeowner's association–operated areas, and water and wastewater conveyance. CalEEMod default values for electricity

consumption for the project's land uses were used. The project site is currently used for agriculture and as such would generate minimal emissions from any electrical equipment used. Existing electricity demand was assumed to be negligible and was not calculated for a net analysis. Table 4.6-2 presents the anticipated electricity demand for the project.

Table 4.6-2. Project Annual Operational Electricity Demand

Land Use[a]	Demand (kWh/Year)
Single-family housing	2,813,219
Other asphalt surfaces	0
Parks and open spaces	0
Market rate multifamily housing	2,810,405
Clubhouse/amenity building	64,079
Affordable housing	1,303,915
Swimming pools and spa	0
Total electrical demand for project	**6,991,619**

Source: Appendix B-1.
Notes: kWh = kilowatt-hours.
Table 4.6-2 incorporates PDF-AQ/GHG-1 and PDF-AQ/GHG-2.
[a] The land uses represent surrogate uses from CalEEMod.

As shown in Table 4.6-2, buildout of the project is estimated to have a total electrical demand of 6,991,619 kWh per year (or 1.24 million kWh per year) for project operational usage. As previously discussed, Orange County's annual electricity use was approximately 68 billion kWh in 2022. Therefore, the project's electrical consumption would be a small percentage (0.01%) of the County's current annual use.

In addition, the project would be built in accordance with the current Building Energy Efficiency Standards (Title 24, Part 6) at the time of construction, which include robust requirements for energy efficiency and on-site PV solar infrastructure. Further, the provisions of CALGreen (Title 24, Part 11) apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure. In mixed-occupancy buildings, such as the project, each portion of a building must comply with the specific green building measures applicable to each specific occupancy. Therefore, because of the inherent increase in efficiency mandated by building code regulations, the project would not result in a wasteful, inefficient, or unnecessary use of energy.

For the 2024 fiscal year, SCE had annual electric sales to customers of approximately 81,841,000 MWh (SCE 2024). The project represents approximately 0.008% of the SCE network sales for 2024. Based on CEC estimates in 2022, the peak demand for the SCE planning area was 24,659 MW (CEC 2022a). Under peak conditions, the project would have a daily peak load of 798 kilowatts. In comparison to the SCE planning area peak load in 2022, the project would represent approximately 0.003% of the SCE planning area peak load conditions.

Thus, as per CEQA Guidelines Appendix F, the impacts related to electrical supply and infrastructure capacity and the project's effect on peak and base period demands would be less than significant.

As mentioned in Section 4.6.3, under "Methodology," and discussed in Section 4.3, Air Quality, and Section 4.8, Greenhouse Gas Emissions, the project would implement PDFs that would impact electricity use during operation. PDF-AQ/GHG-1 (All-Electric Residential Development) would reduce

natural gas demand by ensuring that no natural gas or other fossil fuels are consumed as a part of the residential development, and PDF-AQ/GHG-2 (Energy-Efficient Appliances) and PDF-AQ/GHG-3 (Exceedance of Title 24, Part 6 Standards) would reduce energy demand by ensuring building energy efficiency and reducing energy consumption. These PDFs are provided in full in Sections 4.3.4 and 4.8.4, Project Design Features.

Further, as discussed in full in Section 4.8.6, Mitigation Measures, the project would require implementation of mitigation measures that would impact electricity use during operation. MM-GHG-1 (Electrical Vehicle Charging Infrastructure) would facilitate greater adoption and use of EVs by providing EV charging infrastructure that meets or exceeds 2022 California Green Building Standards. MM-GHG-2 (Energy Conservation) would further reduce energy demand by ensuring building energy efficiency. MM-GHG-3 (Water Use Efficiency and Water Conservation) would reduce indirect electricity use by reducing water consumption.

Natural Gas

With the incorporation of PDF-AQ/GHG-1 (All-Electric Residential Development), the project would consume natural gas only for non-residential building operation and swimming pool and spa heating. The estimated natural gas consumption from project operations is shown in Table 4.6-3.

Table 4.6-3. Project Annual Operational Natural Gas Demand

Land Use	Demand (kBTU/Year)
Single-family housing	0
Other asphalt surfaces	0
Parks and open spaces	0
Market rate multifamily housing	0
Clubhouse/amenity building	143,965
Affordable housing	0
Swimming pools and spa	3,071,263
Total natural gas demand for project	**3,215,228**

Source: Appendix B-1.
Note: kBTU = kilo–British thermal units.

As shown in Table 4.6-3, the project would result in consumption of approximately 3,215,228 kBTU of natural gas per year at buildout in 2032. According to SoCalGas data, natural gas demand for the residential sector was less than 220 billion cubic feet (approximately 228 billion British thermal units [BTU]) in 2023 and is forecasted to decline to 188 billion cubic feet (approximately 195 billion kBTU) by 2040 (SoCalGas 2024). Based on the project's estimated natural gas consumption, the project would account for approximately 0.002% of SoCalGas's 2040 residential sector demand by the project's buildout year. Therefore, it is anticipated that SoCalGas's existing and planned natural gas supplies would be sufficient to support the project's demand for natural gas; therefore, per CEQA Guidelines Appendix F, the project would not have a significant effect on local and regional natural gas supplies or require additional capacity.

Petroleum

The fuel consumption resulting from the project's operational phase would be attributable to various vehicles associated with each land use. Petroleum fuel consumption associated with motor vehicles traveling within the City during operation is a function of VMT. Trip generation rates for the project's operational uses were based on the Traffic Study (Appendix I). The estimated fuel use from the project's operational mobile sources is shown in Table 4.6-4.

Table 4.6-4. Annual Mobile Source Petroleum Demand

Fuel	Vehicle MT CO_2	kg CO_2/Gallon	Gallons
Gasoline	8,387.78	8.78	955,328
Diesel	362.84	10.21	35,538
		Total	990,866

Source: Trips and vehicle CO_2 (Appendix B-1); kg CO_2/Gallon (The Climate Registry 2023).
Note: MT = metric ton; CO_2 = carbon dioxide; kg = kilogram.

As shown in Appendix B-1 (CalEEMod outputs are discussed in Section 4.3, Air Quality, and Section 4.8, Greenhouse Gas Emissions, of this Draft EIR), the annual VMT attributable to the project is expected to be 28,778,411 VMT. Countywide, the annual VMT is estimated to be 35,248,964,007 per year in 2032 (CARB 2025). Similar to construction worker and vendor trips, fuel consumption from worker and vendor trips is estimated by converting the total CO_2 emissions from operation of the project to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Based on the annual fleet mix for 2032 in EMFAC, 95.85% of the fleet range from light-duty to medium-duty vehicles and motorcycles are assumed to be fueled by gasoline. The remaining 4.15% of vehicles represent medium-heavy-duty to heavy-duty vehicles and buses and are assumed to run on diesel. The calculated annual mobile source fuel consumption is provided in Table 4.6-4.

As depicted in Table 4.6-4, mobile sources (including from landscaping equipment) from buildout of the project would result in approximately 990,866 gallons of petroleum fuel usage per year. For disclosure, by comparison, California's transportation sector as a whole used approximately 534 million barrels, or approximately 22.4 billion gallons of petroleum in 2022 (EIA 2025b). Based on the EMFAC VMT forecast, in 2032, the County is itself anticipated to consume 1.2 billion gallons of petroleum from mobile sources (CARB 2025). Using this figure, the proposed project mobile sources would comprise approximately 0.08% of the County's forecasted total petroleum consumption in 2032, the year of buildout.

Over the lifetime of the project, the fuel efficiency of vehicles is expected to increase. As such, the amount of petroleum consumed as a result of vehicle trips to and from the project site during operation would decrease over time. As detailed in Section 4.6.2, numerous regulations are in place that require and encourage increased fuel efficiency. For example, CARB has adopted an approach to passenger vehicles that combines the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrid EVs and ZEVs in California, and the ACC II regulation that by 2035, all new passenger cars, trucks, and SUVs sold in California will be zero emissions (CARB 2022). As such, operation of the project is expected to use decreasing amounts of petroleum over time due to advances in vehicle fuel economy standards.

In addition, the project would implement sidewalks, expand the trail system of the Jeffrey Open Space Trail, and facilitate and encourage pedestrian access. In compliance with CALGreen, the project would promote the use of bicycles as an alternative means of transportation by providing short-term and/or long-term bicycle parking accommodations. Facilitating pedestrian and alternative transportation would reduce VMT and associated energy consumption.

In summary, the project would increase petroleum use during operation, but due to efficiency increases the amount of petroleum consumed would diminish over time. As supported by the preceding discussions, project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary, and impacts would be less than significant.

Renewable Energy Potential

As part of the project's design process, the City considered how the project could increase its reliance on renewable energy sources to meet its energy demand. Renewable energy sources that were considered for their potential to be used to power the project, consistent with CEC's definition of eligible renewables, include biomass, geothermal, solar, wind, and small hydroelectric facilities.

Given the project's location, considerable site constraints are anticipated at a parcel level, including incompatibility with on-site and surrounding land uses for large-scale power generation facilities, unknown interconnection feasibility, potential lack of compatibility with utility provider systems, and no known water or geothermal resources to harness, that would eliminate the potential for biomass, geothermal, and hydroelectric renewable energy to be installed in the project area. Regarding wind power, due to the nature of the project area parcels and surrounding land uses, wind turbines are generally anticipated not to be feasible because they represent an incompatible use due to the height of the wind turbine blades and the need to avoid nearby obstacles.[3]

The project would incorporate on-site PV solar power generation, which at a minimum will be provided for newly built residential buildings pursuant to Title 24, Part 6; further, non-residential buildings are anticipated to be solar ready to comply with Title 24 building energy efficiency standards. Additionally, MM-GHG-2 (Energy Conservation) includes energy conservation measures, including installation of solar PV on the proposed on-site amenity building and other energy-reducing measures. As solar power technology improves in the future and regulations require additional solar power generating facilities, it is reasonable to assume that additional solar power infrastructure may be provided to the project site. In addition, the potential for installation of battery storage in future developments, if determined to be a feasible and compatible with the land use of the site, could also be provided, but the scale and level of adoption is unknown at this time. However, at a minimum, new single-family residential construction would be energy storage ready, pursuant to Title 24, Part 6.

As detailed above, mitigation measures required in Section 4.8, Greenhouse Gas Emissions, would change the energy demand profile of the project. Project petroleum consumption is also anticipated to be reduced as a result of implementation of MM-GHG-1, which requires installation of EV charging infrastructure that meets or exceeds CALGreen standards, which is intended to encourage and facilitate transition from fossil-fueled vehicles to EVs. Greater use of EVs would result in a greater consumption of electricity; however, electricity would be provided through on-site solar, thereby reducing the use of fossil fuels for residential or recreational uses on site.

[3] General guidelines for installing a wind turbine are that it should be on a tower with the bottom of the rotor blades at least 30 feet above anything within a 500-foot horizontal radius and it should be sited upwind of buildings and trees (APA 2011; NREL 2015).

Summary

The project would use renewable energy on site as determined to be feasible and would not result in wasteful, inefficient, or unnecessary consumption of energy resources, including electricity or petroleum, during project construction or operation; therefore, impacts would be less than significant.

2. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less-Than-Significant Impact. As detailed in this section, the construction and operation of the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Construction

The project would use construction contractors that demonstrate compliance with applicable regulations. Construction equipment would be required to comply with federal, state, and regional requirements where applicable. With respect to truck fleet operators, EPA and NHTSA have adopted fuel-efficiency standards for medium- and heavy-duty trucks that will be phased in over time. Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018 and result in a reduction in fuel consumption from 6% to 23% over the 2010 baseline, depending on the vehicle type (76 FR 57106–57513). EPA and NHTSA also adopted the Phase 2 heavy-duty truck standards, which cover model years 2021 through 2027 and require the phase-in of a 5% to 25% reduction in fuel consumption over the 2017 baseline depending on the compliance year and vehicle type (81 FR 73478–74274). The energy modeling for trucks does not take into account specific fuel reductions from these regulations because they would apply to fleets as they incorporate newer trucks meeting the regulatory standards; however, these regulations would have an overall beneficial effect on reducing fuel consumption from trucks over time as older trucks are replaced with newer models that meet the standards.

In addition, construction equipment and trucks are required to comply with CARB regulations regarding heavy-duty truck idling limits of 5 minutes per occurrence. Off-road emissions standards would increase equipment efficiencies as they are phased in and less-efficient equipment is phased out of construction fleets. These limitations would result in an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines. Although these requirements are intended to reduce criteria pollutant emissions, compliance with the anti-idling and emissions regulations would also result in the efficient use of construction-related energy. Thus, based on the information above, construction of the project would comply with state or local plans for renewable energy or energy efficiency.

Per CEQA Guidelines Appendix F, construction equipment used for the project would not conflict with the energy standards applicable to construction equipment, including limiting idling fuel consumption and using contractors that comply with applicable CARB regulatory standards that affect energy efficiency. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency regarding during construction, and impacts would be less than significant.

Operation

With implementation of PDF-AQ/GHG-3 (Exceedance of Title 24, Part 6 Standards), the project would exceed the California Building Energy Efficiency Standards (Title 24 CCR Part 6) by 10%. Part 6 of Title 24 specifically establishes energy efficiency standards for residential and non-residential buildings

constructed in the State of California to reduce energy demand and consumption. To achieve a 10% exceedance of the standards in Title 24 Part 6, the project would incorporate strategies that may include, but are not limited to the following (described in more detail below):

1. Sensor-based lighting controls
2. Efficient process equipment
3. Mandatory inspections of energy systems
4. A 20% reduction in indoor water use

These strategies include (1) sensor-based lighting controls—for fixtures located near windows, the lighting would be adjusted by taking advantage of available natural light—and (2) efficient process equipment—improved technology offers significant savings through more efficient processing equipment. Title 24, Part 11, contains voluntary and mandatory energy measures that are applicable to the project under CALGreen. As discussed in Section 4.6.5(1), the project would result in an increased demand for electricity, natural gas, and petroleum. In accordance with Title 24, Part 11, mandatory compliance, the applicant would implement (3) mandatory inspections of energy systems to ensure optimal working efficiency and (4) a 20% reduction in indoor water use. Compliance with all of these mandatory measures would decrease the consumption of electricity, natural gas, and petroleum.

The City of Irvine General Plan features measures related to energy efficiency and construction energy use, such as energy conservation; use of renewable energy; and water conservation (which indirectly effects electricity consumption), as detailed in Section 4.11, Land Use and Planning. Specific General Plan measures applicable to the proposed project are listed in Section 4.6.2. The project would not conflict with any of these applicable policies by promoting the transition to and encouraging the use of clean and renewable energy sources through its implementation of rooftop solar generation and encouraging the adoption of energy-efficient technologies within buildings by meeting and exceeding CALGreen standards by 10%, as detailed in PDF-AQ/GHG-3. Therefore, the project would not conflict with the General Plan measures related to energy efficiency.

Further, as discussed in Section 4.6.2, the City's Strategic Energy Plan provides recommendations for the community to promote energy conservation and the use of renewable energy sources throughout the City (City of Irvine 2020a). The Strategic Energy Plan's recommendations include actions to help the City reduce emissions to meet state reduction targets. The applicable recommended actions are included in Table 4.6-5.

Table 4.6-5. Project Potential to Conflict with the City of Irvine Strategic Energy Plan

Subject Area	Recommended Actions	Potential to Conflict Prior to Mitigation
Energy Supply	ES-1: Join a CCE Electricity Supplier	***No conflict.*** This recommended action would need to be implemented at the municipal, not the project, level. Nonetheless, the underlying goal to transition the City toward using more renewably sourced electricity is supported by the project's incorporation of solar PV power generation on the rooftops of residential buildings, as required by Title 24 standards for residences. By generating electricity to the extent feasible, the project would reduce reliance on the fossil fuel electricity grid.

Table 4.6-5. Project Potential to Conflict with the City of Irvine Strategic Energy Plan

Subject Area	Recommended Actions	Potential to Conflict Prior to Mitigation
Buildings	B-1: Develop a Community-Facing Energy Upgrade Program	***No conflict.*** This recommended action would need to be implemented at the municipal, not the project, level. Nonetheless, the underlying goal to improve the energy efficiency of buildings is supported by the project's incorporation of all-electric residential building designs and installing efficient appliances within residences per PDF-AQ/GHG-1.
	B-2: Reduce or Remove Administrative Obstacles to Energy Storage, Electric Vehicles, and Building Electrification	***No conflict.*** This recommended action would need to be implemented at the municipal, not the project, level. Nonetheless, the underlying goal to electrify the community is supported by the project's incorporation of solar PV power generation on the rooftops of residential buildings per Title 24, Part 6, regulations for residential buildings, and the inclusion of all-electric buildings for residential buildings per PDF-AQ/GHG-1. By generating electricity to the extent feasible, the project intends to reduce reliance on the fossil fuel electricity grid.
Transportation and Land Use	TLU-2: Incentivize Sustainable Transportation Modes for Residents and Businesses	***No conflict.*** The project would not conflict with this recommended action by through compliance with Title 24, Part 6, of the California Code of Regulations, which requires that all single-family residences are EV-ready to support transition towards EV infrastructure.

Source: City of Irvine 2020a.
Note: PV = photovoltaic; EV = electric vehicle.

Therefore, based on the analysis provided in Table 4.6-5, the project would not conflict with the City's Strategic Energy Plan.

On this basis, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. This impact would be less than significant.

Impact Summary

All impacts relating to consumption of energy resources during project construction or operation and potential conflict with or obstruction of state or local plans for renewable energy or energy efficiency would be less than significant.

4.6.6 Mitigation Measures

No mitigation measures are required. However, the project would include implementation of the following mitigation measures from Section 4.3, Air Quality, and Section 4.8, Greenhouse Gas Emissions, to reduce or eliminate impacts related to air quality and GHG emissions, which would result in co-benefits related to energy reductions:

- MM-AQ-2: Additional Construction Equipment Emission Reductions
- MM-AQ-4: Limit Truck and Equipment Idling During Construction
- MM-GHG-1: Electrical Vehicle Charging Infrastructure

- MM-GHG-2: Energy Conservation
- MM-GHG-3: Water Use Efficiency and Water Conservation

4.6.7 Level of Significance After Mitigation

The project would result in less-than-significant impacts related to the potential to result in wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.

The project would result in less-than-significant impacts related to the potential to conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Because energy-related impacts would be less than significant, no mitigation measures are required. However, as noted in Section 4.6.6, the project would include implementation of MM-AQ-2 and MM-AQ-4, and MM-GHG-1 through MM-GHG-3, which would result in co-benefits related to energy reductions. Impacts would be reduced by these mitigation measures and would remain less than significant.

4.6.8 Cumulative Impacts

This section provides an analysis of cumulative impacts from construction and operation of the proposed project and other past, present, and reasonably foreseeable future projects, as required by Section 15130 of the CEQA Guidelines. Where a lead agency concludes that the cumulative effects of a project, taken together with the impacts of other closely related past, present, and reasonably foreseeable future projects, are significant, the lead agency then must determine whether the project's incremental contribution to such significant cumulative impact is "cumulatively considerable" (and thus significant in and of itself).

Cumulative projects that could exacerbate the proposed project's impacts include any projects that could result in wasteful, inefficient, or unnecessary use of energy. However, cumulative projects would be required, as applicable, to conform to current federal, state, and local energy conservation standards, including those identified in earlier portions of this section. For example, future development would be subject to the Title 24 standards in place at the time of construction.

As a result, the proposed project, in combination with other reasonably foreseeable projects, would not cause a wasteful use of energy or other nonrenewable natural resources. Therefore, the energy demand and use associated with the project and cumulative projects would not substantially contribute to a cumulative impact on existing or proposed energy supplies or resources and would not cause a significant cumulative impact on energy resources.

Similarly, the proposed project would not conflict with applicable plans for renewable energy or energy efficiency, because it would be required to include solar power infrastructure and adhere to other building efficiency standards pursuant to Title 24. As such, the project, in combination with other reasonably foreseeable projects, would not conflict with a state or local plan for renewable energy or energy efficiency.

Cumulative energy impacts would be less than significant.

4.6.9 References

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