4.6 ENERGY

This section evaluates energy impacts that would result from implementing the proposed Plan.

4.6.1 EXISTING CONDITIONS

This section provides an overview of existing energy conditions applicable to the proposed Plan within the San Diego region.

STATE ENERGY RESOURCES AND USE

California has a diverse portfolio of energy resources, which produced approximately 2,536 trillion British thermal units[1] (BTUs) in 2017. Excluding offshore areas, the state ranked seventh in the nation in crude oil production, producing the equivalent of 996.4 trillion BTUs in 2017. The state also ranked third in the nation in conventional hydroelectric generation (3,134,000 megawatt hours [MWh]); second in the nation for net electricity generation from renewable resources; and first for production of electricity from solar, geothermal, and biomass resources. Other energy sources in the state include natural gas (236.8 trillion BTUs), nuclear (182.2 trillion BTUs), and biofuels (29.8 trillion BTUs) (U.S. Energy Information Administration 2018).[2]

According to the U.S. Energy Information Administration, California consumed approximately 7,829 trillion BTUs of energy in 2019. Per capita energy consumption (i.e., total energy consumption divided by the population) in California is among the lowest in the country, with 202 million BTU in 2019, which ranked 48th among all states. Natural gas accounted for the majority of energy consumption (28 percent), followed by motor gasoline (22 percent), distillate and jet fuel (15 percent), interstate electricity (9 percent), and nuclear and hydroelectric power (7 percent), with the remaining 19 percent coming from a variety of other sources (U.S. Energy Information Administration 2021a). Figure 4.6-1 provides a breakdown of California energy consumption by source in 2019.

Per capita energy consumption, in general, is declining due to improvements in energy efficiency and design. However, despite this reduction in per capita energy use, the state's total overall energy consumption (i.e., non-per capita energy consumption) is expected to increase over the next several decades due to growth in population, jobs, and vehicle travel. For example, electricity usage is anticipated to grow about 9 to 15 percent between 2020 and 2030 (California Energy Commission 2018).

Figure 4.6-2 provides a breakdown of California energy consumption by sector in 2019. The transportation sector consumed the highest quantity of energy (39.4 percent), followed by the industrial (23.1 percent), commercial (18.8 percent), and residential (18.7 percent) sectors (U.S. Energy Information Administration 2021b).

REGIONAL ENERGY RESOURCES AND USE

In 2019, the San Diego region consumed 19,408 million kilowatt hours (kWh) of electricity (California Energy Commission 2020a), which is approximately 7 percent of the total electricity consumed in California, and

[1]One BTU is the amount of energy required to heat 1 pound of water by 1°F at sea level. BTU is a standard unit of energy that is used in the United States and is on the English system of units (foot-pound-second system).

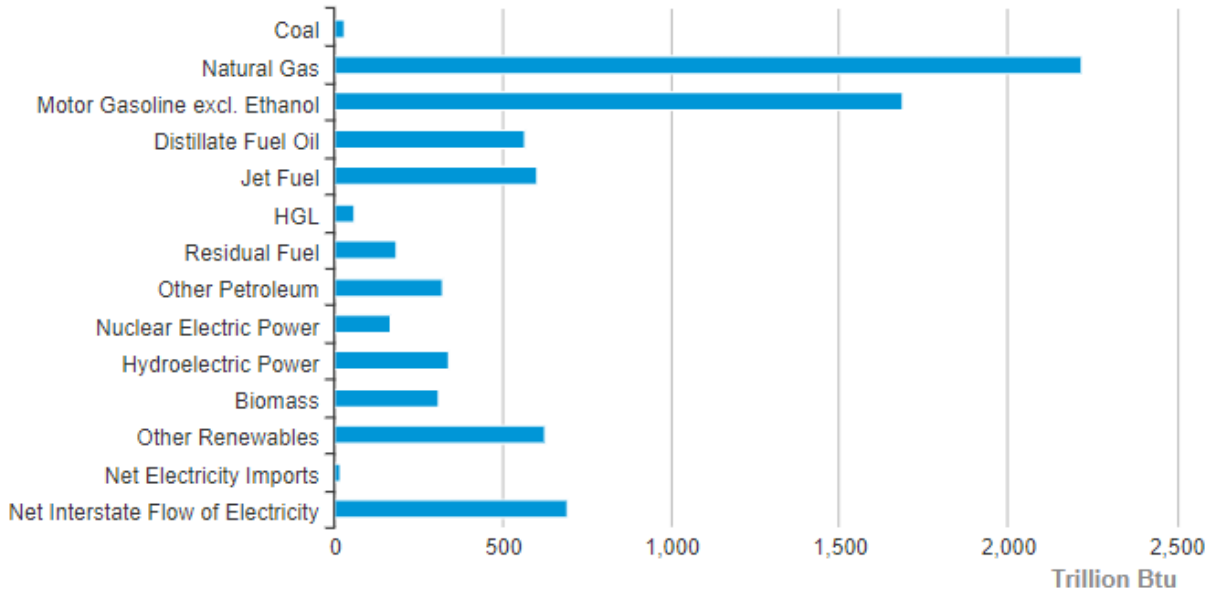
[2]No coal production occurs in California.

534 million therms of gas (California Energy Commission 2020b), or 4 percent of the state's total (U.S. Energy Information Administration 2021a).

The San Diego region is served by San Diego Gas and Electric (SDG&E), which provides energy service to 3.6 million customers (1.4 million accounts) in the region and portions of southern Orange County. The utility has a diverse power production portfolio, composed of a variety of renewable and non-renewable sources. Energy production typically varies by season and by year. Regional electricity loads also tend to be higher in the summer because the higher summer temperatures drive increased demand for air-conditioning. In contrast, natural gas loads are higher in the winter because the colder temperatures drive increased demand for natural gas heating.

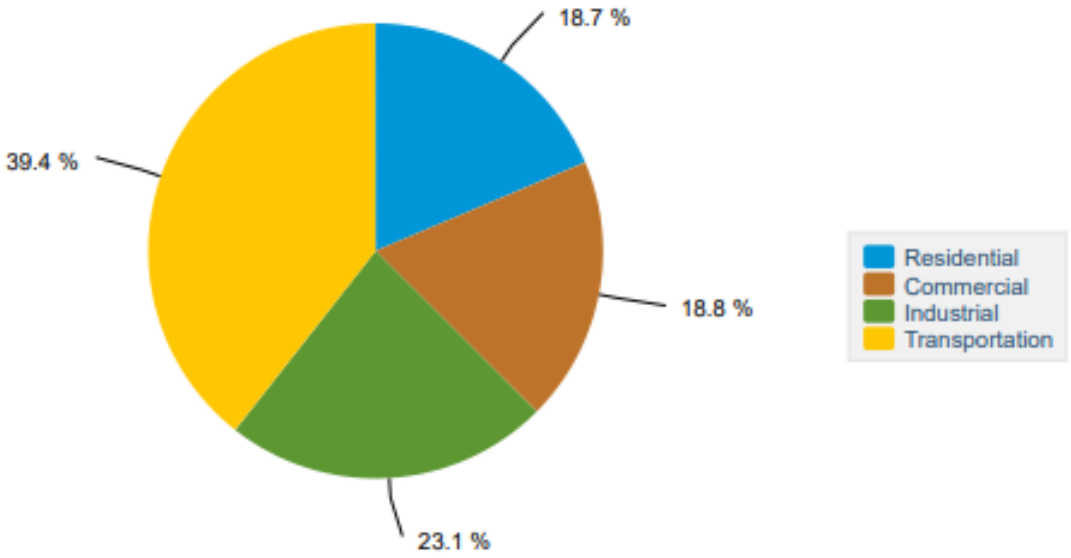
In 2019 (the most recent year for which California Renewables Portfolio Standard [RPS] data is available) approximately 31.3 percent of the electricity SDG&E supplied was from eligible renewable sources, compared to less than 1 percent in 2002 (California Energy Commission 2020c). In 2018, SDG&E programs reduced their consumer electricity use by more than 243 gigawatt hours (GWh), and their gas usage by more than 3.27 million therms (Sempra Energy Company 2020).

Figure 4.6-1. California Energy Consumption Estimates for 2019



Source: U.S. Energy Information Administration 2021a.

Figure 4.6-2. California Energy Consumption by End-Use Sector for 2019



Source: U.S. Energy Information Administration 2021bd.

Based on the California Air Resources Board (CARB) Emission Factor (EMFAC) model, in 2019 onroad motor vehicles in the County consumed approximately 1.4 billion gallons of gasoline and 126 million gallons of diesel fuel (CARB 2021).

ANTICIPATED EFFECTS FROM CLIMATE CHANGE

Climate change may affect energy resources due to sea-level rise submerging coastal lands, more frequent and severe flooding, higher temperatures, and higher incidence of wildfire. The San Diego region is likely to experience sea level rise of up to 1.2 feet by 2050 and up to 4.6 feet by 2100, wetter winters and more intense precipitation that can lead to increased flooding, more intense heat waves and annual average temperatures increases of up to 4.8°F by 2050, and a longer and less predictable fire season (CEP and SDF 2015, Kalansky et al. 2018, OPC 2018). More details on future climate projections are available in Appendix C.

Climate change could lead to an increase in energy usage in California. For example, *Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks of from Climate Change in California* (Moser et al. 2012), explains that increases in average temperature and extreme heat events will drive up the demand for summer cooling. This can occur both in buildings and in transportation (e.g., personal vehicles, buses, subways, etc.). This will be exacerbated by new residential development and expanded use of air conditioning, should the net result of the growth of energy demand from new housing stock outpace energy efficiency gains in the existing housing stock. Growing demand will probably not be offset by the decreased heating needs in winter, particularly because California's residential sector uses relatively little electricity for heating (Moser et al. 2012). Climate impacts on other sectors may also increase energy demand; for example, drought conditions may cause more pumping, conveyance, or treatment of water, which all require energy.

There have been some studies that have attempted to quantify the net effect on energy demand. However, some of these studies are increasingly dated, and none are focused specifically on the San Diego region. As a result, it is difficult to draw conclusions about how much energy usage in the San Diego region will increase due to

climate change. However, these studies do provide some context to the potential extent of energy increases. It is expected that demand for electricity will increase as households operate air conditioners more often, with an estimated increase in household energy usage of 3 percent (Guegan et al. 2012 citing Franco and Sanstad 2006) or 7 percent[3] (Ranson et al. 2014, OPR et al. 2018) on the low end to 70 percent (Auffhammer and Aroonruengsawat 2012[4]) on the high end by 2100. Climate change would cause impacts outside of increased demand for energy. For example, variation in rainfall may alter hydropower generation, storage potential, and generation capacity substantially. In particular, a summer water shortage is of concern because it reduces hydropower capacity when summer energy demand is the highest (Guegan et al. 2012). If hydropower is reduced, it is not clear what energy source would replace it, although the State's renewable energy requirements may help limit the extent that hydropower is replaced by fossil fuels. Moreover, the actual amount of reduction in hydropower due to climate change has not been quantified.

4.6.2 REGULATORY SETTING

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

National Energy Act of 1978

The National Energy Act of 1978 included the Public Utility Regulatory Policies Act (Public Law 95-617), Energy Tax Act (Public Law 95-318), National Energy Conservation Policy Act (Public Law 95-619), Power Plant and Industrial Fuel Use Act (Public Law 95-620), and the Natural Gas Policy Act (Public Law 95-621).

The intent of the National Energy Act was to promote greater use of renewable energy, provide residential consumers with energy conservation audits to encourage slower growth of electricity demand, and promote fuel efficiency. The Public Utility Regulatory Policies Act created a market for nonutility electric power producers to permit independent power producers to connect to their lines and to pay for the electricity that was delivered.

The Energy Tax Act promoted fuel efficiency and renewable energy through taxes and tax credits. The National Energy Conservation Policy Act required utilities to provide residential consumers with energy conservation audits and other services to encourage slower growth of electricity demand.

Energy Policy Act of 1992

The Energy Policy Act of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. The act includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in in metropolitan areas. The act requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are also included in the act. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to

[3] California's Fourth Assessment projects climate change to increase yearly average temperatures in San Diego County by about 7–9 ºF (3.6–5 ºC) by 2100 under representative concentration pathway (RCP) 8.5.

[4] Auffhammer and Aroonruengsawat (2012) did not account for energy efficiency improvements of buildings, equipment, or the electricity system.

consider a variety of incentive programs to help promote AFVs. The act also includes definitions for "alternative fuels," and includes fuels such as ethanol, natural gas, propane, hydrogen, electricity, and biodiesel.

Energy Policy Act of 2005

The Energy Policy Act of 2005, implemented by the U.S. Department of Energy, was intended to establish a comprehensive, long-term energy policy. The Energy Policy Act addresses energy production in the U.S., including oil, gas, coal, and renewable forms of energy, and energy efficiency and tax incentives. Energy efficiency and tax incentive programs include credits for the construction of new energy-efficient homes and the production or purchase of energy-efficient appliances, and loan guarantees for entities that develop or use innovative technologies that avoid the production of GHGs.

Energy Independence and Security Act of 2007

Signed into law in December 2007, the Energy Independence and Security Act was passed to increase the production of clean renewable fuels; increase the efficiency of products, buildings, and vehicles; improve the energy performance of the federal government; and increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy. The Energy Independence and Security Act included the first increase in fuel economy standards for passenger cars since 1975. The act also included a new energy grant program for use by local governments in implementing energy-efficiency initiatives, as well as a variety of green building incentives and programs.

Executive Orders

There are two primary federal EOs related to the energy production, renewable energy, and energy reduction.

- **EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis.** Directs the heads of all agencies to review immediately all agency actions adopted during the former administration that conflict with the current administration's public health, climate, and environmental policy objectives and to take action as appropriate and consistent with applicable law. This EO further directs the heads of the relevant agencies to consider new rules that would suspend, revise, or rescind specific regulations enacted or proposed during the former administration regarding vehicle fuel economy standards, appliance and building efficiency standards, among others, to ensure that such standards cut pollution. EO 13990 repeals many energy-related executive orders from the former administration that sought to advance natural resource development on federal lands, including EO 13783.
- **EO 13834, Efficient Federal Operations.** Designates a Federal Chief Sustainability Officer to head an Office of Federal Sustainability along with Chief Sustainability Officers to head each agency and report to the Chairman of the Council on Environmental Quality regarding implementation of sustainability goals.

Fuel Economy Standards

The National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (EPA) set the Corporate Average Fuel Economy Standards (CAFE) standards to improve the average fuel economy and reduce greenhouse gas (GHG) emissions generated by cars and light duty trucks. NHTSA and EPA amended the fuel efficiency standards for passenger cars and light trucks and established new standards covering model years 2021 through 2026 by maintaining the current model year 2020 standards through 2026 (Safer Affordable Fuel-Efficient [SAFE] Vehicles Rule). NHTSA and EPA also issued a regulation revoking California's Clean Air Act waiver, which had allowed the State to set its own emissions standards, asserting that the waiver was preempted by federal law (SAFE Rule Part One, 84 *Federal Registers* 51310, September 27 2019.).

California, 22 other states, the District of Columbia, and two cities have filed suit against the SAFE Rule Part One (*California et al. v. United States Department of Transportation et al*., 1:19-cv-02826, U.S. District Court for the District of Columbia). The lawsuit requests a "permanent injunction prohibiting Defendants from implementing or relying on the Preemption Regulation," but does not stay its implementation during legal proceedings. Part One of the SAFE Vehicles Rule went into effect on November 26, 2019. SAFE Rule Part Two was finalized on March 31, 2020, and went into effect on June 29, 2020. The SAFE Rule Part Two updates the national fuel economy standards for light duty vehicles from 54 miles per gallon to 40 miles per gallon in future years. The current administration has proposed a new rule that would supersede SAFE Rule Part One and would restore California's waiver to set its own standards. The current administration also plans to propose a new rule to increase the standards substantially compared to the current standards.

For further information on CAFÉ standards refer to Section 4.3, *Air Quality.*

Heavy-Duty Vehicle Program

The EPA and NHTSA also sets fuel efficiency and GHG standards for medium- and heavy-duty trucks. In 2011, EPA and NHTSA finalized a joint rule that established a national program to reduce GHG emissions and improve fuel economy for new medium- and heavy-duty engines and vehicles. This rule—called the Phase 1 standards—requires fuel efficiency standards for engines in model years 2014 through 2018. In 2016, EPA and NHTSA adopted the Phase 2 standards, which require fuel efficiency standards for engines in model years 2018 through 2027 (EPA 2016).

Construction Equipment Emission Standards

The Code of Federal Regulations established tiered emissions standards for construction equipment (i.e., non-road diesel engines) in order to phase in cleaner burning equipment that will reduce nitrogen oxides (NO_X) and particulate matter emissions from exhaust. After 2014, all construction equipment manufactured in the U.S. is required to meet the highest tier of emission standards, Tier 4. The EPA oversees implementation of these regulations (Code of Federal Regulations Chapter 40, Parts 1039, 1065, and 1068). For further information on these construction equipment standards, refer to Section 4.3.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

The State of California has adopted various laws addressing various aspects of energy production, energy conservation, energy efficiency, and renewable energy. Much of this establishes a broad framework for the state's long-term GHG and energy reduction goals and climate change adaptation program. Governors have also issued several Executive Orders (EOs) related to the state's evolving climate change policy. A summary of key laws, regulations, plans, and policies, are relevant to the proposed Plan is provided below, organized by general categories. Additional climate change laws, regulations, plans, and policies affecting the energy sector are reviewed in Section 4.8, *Greenhouse Gas Emissions*.

Executive Orders

There are two primary EOs applicable to the state's efforts on energy efficiency, energy consumption, electric vehicles (EVs) and renewable energy:

- **EO B-18-12 (2012).** Sets GHG and energy consumption reduction targets, in addition to zero net energy targets, for State agencies, departments, and other entities. B-18-12 also requires all new State buildings and major renovations beginning design after 2025 be constructed as zero net energy facilities with an

interim target for 50 percent of new facilities beginning design after 2020 to be zero net energy. State agencies must also take measures toward achieving zero net energy for 50 percent of the square footage of existing state-owned buildings by 2025.

- **EO N-19-19 (2019).** Among other things, this EO required the Department of Finance to create a Climate Investment Framework; required the State Transportation Agency to align transportation spending with achieving the objectives of the Climate Change Scoping Plan (discussed below) and to reduce vehicle miles traveled (VMT) through strategic discretionary investments; directed the Department of General Services to minimize the State government's carbon footprint by, among other things, promoting zero-emission vehicles in government fleets and managing State buildings' energy consumptions; and directed CARB to accelerate California's efforts toward achieving 5 million zero-emission vehicle sales by 2030.

EOs apply to State government but do not apply to other entities.

Legislative GHG Reduction Targets

The State has passed legislation that establishes a broad framework for the long-term GHG reduction and climate change adaptation programs. The following are the primary laws related to GHG reduction targets that are also relevant to California's energy goals.

- **Assembly Bill (AB) 32, Health & Safety Code Section 38500 et seq.** Codified the 2020 reduction target of EO S-03-05 (i.e., by 2020, reach the GHG emissions levels of 1990). AB 32 also gave CARB authority to develop a Scoping Plan that describes the approach California will take to achieve GHG reduction targets.
- **Senate Bill (SB) 32, Health & Safety Code Section 38566.** Codified the 2030 reduction target of EO B-30-15 (i.e., by 2030, reach statewide GHG emission levels of 40 percent below 1990 levels). As part of SB 32, AB 197 of 2016 (Chapter 250, Statutes of 2016) required CARB, in implementing SB 32's 2030 GHG reduction target, to (1) prioritize emissions reductions to consider the "social costs" of GHG emissions and (2) prioritize "direct emission reductions" at large stationary sources and at mobile sources. In 2017, CARB updated the Scoping Plan to achieve the 2030 reduction target.

State Agency GHG Reduction Plans

CARB and other State agencies have adopted various GHG reduction plans. A description of these plans follows. These are discussed in further detail in Section 4.8.

- **AB 32 Scoping Plan.** Identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires CARB and other State agencies to develop and enforce regulations and other initiatives to reduce GHG emissions. The AB 32 Scoping Plan, first adopted in 2008, comprises the state's roadmap for meeting AB 32's reduction target. Specifically, the scoping plan articulates a key role for local governments by recommending that they establish GHG emissions-reduction goals for both their municipal operations and the community that are consistent with those of the State (i.e., approximately 15 percent below current levels) (CARB 2008). The AB 32 Scoping Plan was updated in 2014.
- **2017 Scoping Plan.** Represents the state's roadmap to achieving long-term GHG reduction target of SB 32. As energy is one of the state's largest contributors to GHG emissions, efforts to reduce energy-related emissions are a key component of the Scoping Plan. The actions outlined in the Scoping Plan Update also support California's efforts to build a state-of-the-art energy generation, supply and distribution system that is clean, affordable and reliable. The Scoping Plan Update references a 2013 study by the California Energy Commission (CEC) that shows 12 percent of the total energy used in the state is related to water, with 10 percent associated with water-related end uses (e.g., heating, cooling, pressurizing, and industrial processes) and 2 percent associated with energy used by water and wastewater systems (e.g., pump,

convey, treat). These figures indicate that the greatest potential for water-related energy savings resides with water end users, while water agencies have a role in improving end-user water conservation and in reducing the energy intensity of their portfolios. SB 350 and other regulations are expected to decarbonize the electricity sector over time, which will in turn reduce the consumption of fossil-fuel-based energy to produce water (CARB 2017).

Transportation Planning

- **SB 375, Chapter 728, Statutes of 2008.** Provides for a new planning process that integrates regional transportation, land use, GHG reduction, and housing planning. SB 375 requires regional transportation plans (RTPs) to incorporate a sustainable communities strategy (SCS) that demonstrates how the region would achieve regional GHG emission reduction targets for passenger vehicles set by CARB. CARB revised SANDAG's GHG targets in 2018 to 15 percent reduction in emissions per capita by 2020 and 19 percent by 2035 based on a 2005 baseline.

  In November 2018, CARB released the 2018 Progress Report on California's Sustainable Communities and Climate Protection Act to evaluate the performance of the SCSs prepared pursuant to the first set of reduction targets established by SB 375. The 2018 Progress Report, issued pursuant to SB 150 (Chapter 646, Statutes of 2017), found that Metropolitan Planning Organizations (MPOs) are not on track to meet the GHG reductions expected under SB 375 for 2020 due to an overall increase in statewide VMT per capita. While the state is expected to meet its overall 2020 target due to reductions achieved in the energy sector, the 2018 Progress Report concluded that additional VMT reductions will be needed to meet longer-term State GHG reductions targets for 2030 and 2050 (CARB 2018a).

  Under SB 375, CARB must agree that SCSs are able to meet GHG reduction targets. For this purpose, in September 2019, CARB published updated SCS Program and Evaluation Guidelines (CARB 2019a).

Fuel Economy Standards

- **Advanced Clean Cars Program (Passenger Vehicles).** AB 1493 of 2002 (known as Pavley I, Chapter 200, Statutes of 2002) provided the nation's first GHG standards for automobiles. AB 1493 required CARB to adopt vehicle standards that lowered GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as Pavley II and now referred to as the Advanced Clean Cars Measure Program's Low Emission Vehicle [LEV] III Regulation) was adopted for vehicle model years 2017–2025 in 2012 (13 California Code of Regulations Section 1900 et seq.).

  The SAFE Vehicle Rule Part One (discussed above) revokes California's authority to set its own GHG emissions standards and establish zero-emission vehicle (ZEV) mandates in California, which affects some of the underlying assumptions in CARB's EMFAC models. CARB staff has developed guidance and adjustment factors that need to be applied to EMFAC emissions outputs to adjust for the revised (reduced) ZEV sales in future years and associated increase in emissions.

- **Low Carbon Fuel Standard.** Pursuant to EO S-01-07 and AB 32, CARB developed the Low Carbon Fuel Standard (LCFS) in order to encourage the use of cleaner low-carbon fuels in California, encourage the production of those cleaner fuels, and thereby reduce GHG emissions. The program is based on the principle that each fuel has "life cycle" GHG emissions that includes the production, transportation, and consumption of a given fuel. Each fuel is assigned a carbon intensity score, which is then compared to a declining carbon intensity benchmark for each year. Low carbon fuels below the benchmark generate credits, while fuels above the carbon intensity benchmark generate deficits. Credits and deficits are denominated in metric tons of GHG emissions. Providers of transportation fuels must demonstrate that the mix of fuels they supply for use in California meets the LCFS carbon intensity standards, or benchmarks,

for each annual compliance period. A deficit generator meets its compliance obligation by ensuring that the amount of credits it earns or otherwise acquires from another party is equal to, or greater than, the deficits it has incurred.

- **Medium and Heavy Duty Vehicles.** In December 2008, CARB adopted a new regulation aimed at reducing GHG emissions by improving the fuel efficiency of heavy-duty tractors pulling 53-foot or longer trailers. Increases in fuel efficiency were achieved through improvements in the aerodynamics of the tractor and trailer as well as the use of low rolling resistance tires. The rule went into effect in 2010 and by the end of 2020 was anticipated to have reduced diesel fuel consumption by 500 million gallons in California and 3.3 billion gallons nationwide.

Electric Vehicles

CARB has three different types of ZEV programs: regulatory, incentive, and supporting. As of July 2019, CARB has 28 ZEV programs either in place or under development (CARB 2019b). Key programs are described below.

- **Executive Order B-16-12 (2012).** EO B-16-12 orders State entities under the direction of the Governor, including CARB, the CEC, and the California Public Utilities Commission (CPUC), to support the rapid commercialization of ZEVs. It directs these entities to achieve various benchmarks related to ZEVs.
- **EO B-48-18 (2018).** Sets goals to boost the use of ZEVs, EV charging infrastructure, and hydrogen refueling infrastructure in California. The order will implement the target of 5 million ZEVs on the road by 2030 and 250,000 vehicle charging stations and 200 hydrogen refueling stations by 2025.
- **Zero Emission Vehicle Regulation, 1s California Code of Regulations (CCR) Section 1962 et seq.** Requires manufacturers to sell an increasing number of ZEVs over time. Manufacturers are required to produce a number of ZEVs and plug-in hybrids each year, based on the total number of cars sold in California by the manufacturer. Manufacturers with higher overall sales of all vehicles are required to make more ZEVs. Requirements are in terms of percent credits, ranging from 4.5 percent in 2018 to 22 percent by 2025. Manufacturers are to produce vehicles, and each vehicle receives credits based on its electric driving range. The more range a vehicle has, the more credit it receives. CARB's goal is for a minimum of approximately 1 million ZEVs to be on the road by 2025 based on this regulation. EO B-16-12 calls for 1.5 million ZEVs by 2025 (CARB 2018b).

Renewable Energy

- **Renewables Portfolio Standard.** Earlier legislation established California's RPS. The program sets continuously escalating renewable energy procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities. SB 2 (1X) of 2011 obligated all California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020. The CPUC and CEC are jointly responsible for implementing the program.
- **SB 350 (Chapter 547, Statutes of 2015)**. This bill's key provisions are to require the following by 2030: (1) an RPS of 50 percent and (2) a doubling of efficiency for existing buildings.
- **SB 100 (Chapter 312, Statutes of 2018)**. This bill establishes a new RPS target of 50 percent by 2026, increases the RPS target in 2030 from 50 to 60 percent, and establishes a goal of 100 percent zero-carbon energy sources by 2045.

Building Efficiency

- **California Building Energy Efficiency Standards.** The energy consumption of new residential and nonresidential buildings in California is regulated by the Title 24, Part 6, Building Energy Efficiency

Standards (California Energy Code). CEC updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions. The 2016 California Energy Code was replaced by the 2019 standards, effective January 1, 2020. The 2019 California Energy Code require builders to use more energy-efficient building technologies for compliance with increased restrictions on allowable energy use. Additionally, new residential units will be required to include solar panels, sized to offset the estimated electrical requirements of each unit (24 CCR Part 6, Section 150.1[c]14).

- **California Green Building Standards Code.** California has adopted the Green Building Standards Code (CALGreen) (24 CCR Part 11), which identifies aggressive energy efficiency standards for new residential and non-residential buildings that are continuously updated every few years. The most recent update was the 2019 Building Energy Efficiency Standards, which were adopted in May 2018 and took effect on January 1, 2020. Non-residential buildings will be 30 percent more energy efficient due to the update in HVAC, ventilation, and lighting standards. CALGreen requirements are complementary with the California Energy Code discussed above.

California Energy Commission

- **Warren-Alquist Act (1974).** Passed in 1974 in order to establish the CEC to respond to the energy crisis in the early 1970s and to address the state's unsustainable growing demand for energy resources. The CEC's Chief Counsel's Office publishes updated versions of the Warren-Alquist Act with the latest amendments every 2 years. The most recent version was published in January 2020.
- **Senate Bill 1389, Chapter 568, Statutes of 2002.** The CEC is responsible for, among other things, forecasting future energy needs for the state and developing renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation. SB 1389 (Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report assessing major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The report also provides policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies. The 2020 Integrated Energy Policy Report was adopted in March 2021. Energy topics covered in the report include decarbonizing buildings, integrating renewables, energy efficiency, energy equity, integrating renewable energy, updates on Southern California electricity reliability, climate adaptation activities for the energy sector, natural gas assessment, transportation energy demand forecast, and the California Energy Demand Forecast (CEC 2021).

REGIONAL AND LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

San Diego Association of Governments Climate Action Strategy

In 2010, SANDAG published a Climate Action Strategy (Strategy) that was prepared under a partnership with the CEC (SANDAG 2010). The Strategy is a guidance document and not a binding plan. The Strategy serves as a guide to help policymakers address climate change as they make decisions to meet the needs of our growing population, maintain and enhance our quality of life, and promote economic stability. As stated in the Strategy introduction, the policy measures contained in the Strategy are intended to be a list of potential options (tools in the toolbox) for consideration as SANDAG and local governments update their various plans. The policy measures are not requirements for SANDAG, local governments, or any other entity.

The Strategy identifies goals, objectives, and policy measures in the areas of transportation, land use, buildings, and energy use. Energy measures pertained to reducing direct and water-related energy use in residential and commercial buildings, increasing renewable energy capacity, and protecting energy infrastructure from climate change impacts. Also addressed are measures and resources to help local governments reduce

emissions from their operations and in their communities. The policy measures contained in this document are intended to be a list of potential options to reduce GHG emissions. Because local governments have greater control over some categories of GHG emission sources, the Strategy emphasizes those areas where the greatest impact can be made at the local and regional level. These areas include land use patterns, transportation infrastructure, and related public investment; building construction and energy use; and local government operations.

SANDAG Regional Energy Strategy

The Regional Energy Strategy (RES) serves as an energy policy guide to support decision-making by SANDAG and its member agencies. The 2014 RES updates SANDAG energy strategies adopted in 1994, 2003, and 2009. The RES is structured around 11 major energy topics, such as energy efficiency and conservation, renewable energy, transportation fuels, and land use and transportation planning (SANDAG 2014b).

Regional Alternative Fuel Planning

In 2009, SANDAG developed the *Regional Alternative Fuels, Vehicles and Infrastructure Report*, which is an assessment on how to accelerate deployment of alternative fuel vehicles in and around San Diego. The objectives of the report are to (1) help local governments and other regional stakeholders make informed decisions regarding appropriate alternative fuel technologies, and (2) identify and recommend regional and local government actions that can initially support local alternative fuel fleets and eventually support alternative fuel use by the general public. The report also includes recommendations for alternative fuels and project types. Electricity and natural gas are the top priorities for passenger vehicles, while biodiesel, natural gas, propane, and hybrid technologies are recommended for medium- and heavy-duty vehicles. The report recommends further study of transit stations along rapid bus transit routes, integrating electric charging station siting with the regional transportation network, and truck stop electrification (SANDAG 2009a).

San Diego Regional Plug-In Electric Vehicle Readiness Plan and Plug-In San Diego

In 2012, SANDAG established the San Diego Regional Electric Vehicle Infrastructure Working Group (REVI) as part of a CEC grant to perform regional Plug-In Electric Vehicle (PEV) readiness planning. The REVI completed the San Diego Regional Plug-in Electric Vehicle Readiness Plan, which was accepted by the SANDAG Board in January 2014 (SANDAG 2014a). As part of another CEC grant, SANDAG will build on the success of the REVI and undertake regional readiness planning for all alternative fuels in partnership with the San Diego Regional Clean Cities Coalition. A regional alternative fuels coordinating council will be established to advise on regional alternative fuel infrastructure needs, barriers, and solutions.

With additional funding from the CEC, SANDAG transitioned from readiness planning to implementation via the Plug-in SD initiative. The initiative is a combination of resource development, training, technical assistance, and outreach. See Section 4.8 for further details.

SANDAG Energy Roadmap Program for Local Governments

SANDAG and SDG&E provide free energy assessments and energy management plans to SANDAG member agencies. This Energy Roadmap Program was established in 2010 and provides a framework for local governments to reduce energy use. The goals of the program include categories such as saving energy in city buildings and facilities, demonstrating emerging energy technologies, and greening the city vehicle fleet. SANDAG assists member agencies in developing projects and programs to reduce government spending on utility bills and integrate sustainability, energy efficiency, and emission reductions into general plans.

Local General Plans

Many of the local agencies in the San Diego region have general plan goals, objectives, and policies that specifically address energy use and conservation. The policies set forth in local general plans would have an effect on energy conservation and renewable energy use in the development of new structures and communities within the proposed Plan Area.

These goals and policies include improvements in energy efficiency for new residential and commercial land uses and measures to reduce VMT through land use and transportation planning. Measures included in the general plans would improve energy efficiency, promote renewable energy use, and minimize wasteful, inefficient energy consumption in the proposed Plan Area. As a result of requirements, incentive programs, and educational and outreach programs, general plans would build on federal and State efforts to improve energy efficiency associated with future land uses and transportation projects.

Climate Action Plans

As discussed in more detail in Section 4.8, Climate Action Plans (CAPs), GHG reduction plans, and/or sustainability plans are developed to identify the nature of GHG emissions and to implement policies, actions, and measures to reduce existing and future GHG emissions. Measures included in CAPs would improve energy efficiency, promote renewable energy use, and minimize wasteful, inefficient energy consumption in the proposed Plan Area.

Many jurisdictions have already adopted GHG reduction plans: City of Carlsbad (2020), Chula Vista (2017), City of Del Mar (2016), City of El Cajon (2020), City of Encinitas (2020), City of Escondido (2021), City of La Mesa (2018), City of Lemon Grove (2020), City of National City (2011), City of Oceanside (2019), City of San Diego (2015), City of San Marcos (2020), City of Santee (2019), City of Solana Beach (2017), and City of Vista (2021). The City of Coronado and the County of San Diego are developing CAPs or GHG reduction plans. The City of Poway is the only jurisdiction within the San Diego region that has not developed and has not committed to developing a CAP or GHG reduction plan. Table 4.8-5 in Section 4.8 summarizes GHG reduction planning efforts within the San Diego region. In addition to the efforts of the 18 cities and the County of San Diego, the San Diego Unified Port District and the San Diego County Water Authority have developed GHG inventories and CAPs.

Local Community Choice Energy Programs

The cities of Chula Vista, Encinitas, Imperial Beach, La Mesa, and San Diego formed the SDCP CCE Program, which started delivering power to municipal customers in March 2021. In June 2021 SDCP started providing service to commercial customers, and service to residential customers is anticipated to begin in early 2022. Once fully launched, SDCP will provide electricity service to approximately 770,000 customer accounts. SDCP plans to deliver 55 percent GHG-free electricity in 2021 and supply 100 percent renewable electricity by 2030 or 2035 (SDCP 2021, CalCCA 2021).

Additionally, the cities of Carlsbad, Del Mar, and Solana Beach have formed the CEA, another CCE Program, started delivering power to customers in May 2021. SDCP and CEA work in partnership with San Diego Gas & Electric to deliver GHG-efficient electricity to customers within its member jurisdictions.

4.6.3 SIGNIFICANCE CRITERIA

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of Initial Study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the Appendix G checklist questions.

Checklist questions for energy are provided in Section VI of Appendix G of the CEQA Guidelines. Checklist items were not modified for this analysis. Therefore, implementation of the proposed Plan would have a significant energy impact if it would:

EN-1 Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy during project construction or operations.

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

4.6.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

EN-1 RESULT IN A POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY DURING PROJECT CONSTRUCTION OR OPERATIONS

ANALYSIS METHODOLOGY

This section discusses the construction and operation impacts related to energy from regional growth and land use change, and planned transportation network improvements.

Construction

Construction activities would occur through 2050 at various locations throughout the proposed Plan Area. While the regional GHG inventory (see Appendix F of this EIR) did not provide a direct estimate of construction energy consumption, several typical construction energy sources were indirectly captured.

1. Energy consumption from the construction and mining subcategory of the off-road transportation sector of the GHG inventory are used to estimate energy consumed by construction equipment.[5]
2. Energy consumption estimates for on-road construction vehicles and worker commute vehicles are included in operational estimates for transportation network improvements and programs.
3. The use of electricity for temporary buildings, lighting, and other sources is estimated as part of operational energy consumption for regional growth and land use change.

The location, size, magnitude, and duration of construction activities within the proposed Plan Area due to Plan implementation is unknown at this time. However, construction activities, as compared to operational energy demand, would be short term in nature. Construction energy use related to on-road vehicles and electricity are calculated as part of the operational analysis, as further discussed below. Construction energy use related to

[5] The construction/mining subcategory includes construction equipment, as well as mining equipment not directly related to construction activities. Therefore, the use of the construction/mining subcategory likely overestimates the amount of fuel consumption that would result from construction activities associated with the proposed Plan.

off-road equipment is summed to calculate total and per capita annual energy use and analyzed as part of the operational analysis.

Operation

Estimates of baseline and projected operational energy consumption that were developed as part of the regional GHG inventory were used for the analysis of regional growth and land use change (see Appendix F to this EIR). The following operational energy sources related to regional growth and land use change were quantified as part of this analysis.

- **Electricity and Natural Gas.** Electricity (GWh) and natural gas (million therms) used by regional land uses (commercial, residential, industrial) for heating, cooling, lighting, and other end uses.
- **Water-related Electricity.** Water-related electricity (GWh) refers to energy associated with upstream supply and conveyance, and treatment of water. Electricity used for water distribution and water end-use is captured by the building end use electricity and natural gas source.

Operational energy use for baseline and projected transportation network improvements and programs was estimated as part of the regional GHG inventory (see Appendix F to this EIR). The following operational energy sources related to transportation network improvements and programs were quantified as part of this analysis.

- **On-Road Vehicle Gasoline and Diesel.** Gasoline and diesel fuel consumption (million gallons) associated with operation of the transportation network, including passenger cars, light-duty trucks, medium- and heavy-duty trucks, and buses.
- **Rail Diesel**. Includes combustion of diesel fuels in internal combustion engines from both passenger and freight rail.

There were several GHG emission sources included in the regional GHG inventory (see Appendix F to this EIR) that have energy consumption associated with them but for which there was no activity data provided in the inventory that could be used to back out energy consumption values.

- **Other fuels**. Includes distillate, kerosene, gasoline, liquefied petroleum gas, residual fuel oil, and wood.
- **Off-road transportation.** Includes fuel consumption cargo handling equipment, industrial equipment, airport ground support, pleasure craft, recreational equipment, lawn and garden equipment, agricultural equipment, transport refrigeration units, military tactical support equipment, and other portable equipment. Note that the construction/mining subcategory was used as a proxy for construction equipment energy.
- **Aviation.** Includes jet fuel and aviation gasoline consumption from commercial operations at the San Diego International Airport and McClellan-Palomar Airport.
- **Marine vessels**. Includes fuel consumption by ocean-going vessels and commercial harbor craft, largely attributed to the Port of San Diego.

These sources would result in additional baseline and horizon year energy consumption not captured by the quantified energy consumption provided in this analysis. According to the regional GHG inventory, these sources account for less than 10 percent of the proposed Plan's total GHG emissions (see Appendix F to this EIR). Assuming the emission ratios between sectors are similar to the energy ratios between sectors (e.g., vehicles and building energy account for the majority of activity), these sources would only account for a minor fraction of the proposed Plan's energy use. This small additional energy is therefore not discussed further in the impact analysis.

The determination of whether implementing transportation projects and land use changes reflected in the proposed Plan would result in wasteful or unnecessary energy consumption is based on whether the proposed Plan would result in a decrease in per capita energy consumption. Consistent with Appendix F to the CEQA Guidelines, a per capita analysis is appropriate for the proposed Plan, as that analysis would determine whether the energy use under the proposed Plan is more efficient relative to the 2016 baseline year. The analysis combines electricity (GWh), natural gas (million therms), on-road vehicle fuel consumption (million gallons), and construction equipment diesel consumption (million gallons) into a common unit of energy usage (trillion BTU). Energy consumption from all operational sources was quantified using industry standard emission and conversion factors. A full list of assumptions and energy calculations can be found in Appendix F to this EIR.

IMPACT ANALYSIS

2025

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Construction

Construction related to growth and land use changes and planned transportation improvements would require the use of energy-consuming equipment for site preparation, grading, building assembly, and equipment installation. The transportation of workers and materials to and from project sites would require the consumption of diesel and gasoline fuels. Medium- and heavy-duty trucks and vans with Gross Vehicle Weight Ratings between 8,500 and 33,000 pounds would typically be used. Energy consumption estimates for on-road construction vehicles and worker commute vehicles are included in operational estimates for transportation network improvements and programs. Also, the use of electricity during construction for temporary buildings, lighting, and other sources is estimated as part of operational energy consumption for regional growth and land use change.

A wide variety of equipment powered through the combustion of liquid fuels may be used. Typical construction equipment would include pavers, trenchers, mixers, cranes, dumpers/tenders, excavators, graders, tractors, trucks, forklifts, dozers, loaders, and scrapers. Internal-combustion engines that consume diesel and gasoline typically power these types of equipment and can have outputs ranging from 5 to 750 horsepower. Off-road equipment with diesel engines of 25 horsepower or larger are regulated by CARB for purposes of emissions reductions (13 CCR Section 2449). These regulations require operators to limit idling during operation and to upgrade older equipment with modern engines, which additionally provides benefits for the reduction of fuel consumption.

Construction activities would occur over the duration of the proposed Plan at various locations throughout the proposed Plan Area. The location, size, magnitude, and duration of individual construction activities is unknown at this time. However, construction activities, as compared to operational energy demand, would be short term in nature. The significance determination regarding construction energy is grouped under *Operation* because both construction and operation energy are summed to a total and per capita annual energy consumption.

Operation

With respect to operations of the land use changes and planned transportation improvements, baseline energy consumption was calculated for 2016 and compared to years 2025, 2035, and 2050.

As shown in Table 4.6-1, total energy use would decrease under the proposed Plan for 2025 compared to the 2016 baseline year. During the same time, the regional population would increase. As a result of the total energy decrease and population increase, per capita energy use would decrease from 2016 to 2025.

The decrease in total and per capita energy use is due in part to regulations and programs implemented on the state and regional levels to reduce energy use and emissions of GHGs. These programs include Advanced Clean Cars regulations, the LCFS, energy efficiency standards for buildings, and water conservation measures. In addition, SANDAG's shared mobility strategies have an important role in reducing per capita energy use because they decrease per capita vehicle miles traveled and therefore fuel use. The mobility strategies that were quantified as part of this analysis include vanpool, carshare, pooled rides, and the transportation demand management ordinance.

Lastly, the majority of the housing growth under the proposed Plan would be multi-family development. Due to space efficiency, multi-family units are more efficient than single-family housing on a per unit basis in terms of electricity and natural gas consumption.

2025 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs would not result in an increase in overall per capita energy consumption, or otherwise use energy in an inefficient, wasteful, or unnecessary manner, because per capita energy use would decrease from 2016 to 2025. Therefore, this impact (EN-1) in the year 2025 is less than significant.

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

As shown in Table 4.6-1, total energy use would decrease under the proposed Plan from 2016 to 2035. During the same time, the regional population would increase. As a result of the total energy decrease and population increase, per capita energy use would decrease from 2016 to 2035. The decrease in total and per capita energy use is due in part to regulations and programs implemented on the state and regional levels to reduce energy use and emissions of GHGs. It is also due to the increase in multi-family development under the proposed Plan, as multi-family units are more energy efficient than single-family housing on a per unit basis in terms of electricity and natural gas consumption.

2035 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs would not result in an increase in overall per capita energy consumption, or otherwise use energy in an inefficient, wasteful, or unnecessary manner, because per capita energy use would decrease from 2016 to 2035. Therefore, this impact (EN-1) in the year 2035 is less than significant.

Table 4.6-1
Total and per Capita Energy Use Under the Proposed Plan: 2016 and 2025, 2035, 2050

Category	2016 (Baseline)		2025		2035		2050	
	Energy Use	Trillion BTU	Energy Use	Trillion BTU	Energy Use	Trillion BTU	Energy Use	Trillion BTU
Regional Growth and Land Use Change	--	123	--	122	--	126	--	129
Electricity (GWh)	18,842	64	17,475	60	18,078	62	18,191	62
Natural Gas (million therms)	585	59	629	63	648	65	671	67
Transportation Network Improvements and Programs	--	167~~8~~	--	132~~3~~	--	111~~3~~	--	109~~12~~
Vehicles, Gasoline (million gallons)	1,23~~447~~	1~~4~~850	93~~27~~	112~~3~~	75~~064~~	9~~02~~	72~~339~~	8~~79~~
Vehicles, Diesel (million gallons)	12~~23~~	17	13~~02~~	18	13~~25~~	1~~89~~	14~~35~~	20
Rail, Diesel (million gallons)	11	1	16	2	18	3	19	3
Total Construction (million gallons)	20	3	24	3	29	4	34	5
Total Energy Use	--	29~~24~~	--	25~~89~~	--	24~~13~~	--	24~~35~~
Per Capita Energy Use (metric million BTU/person)	89		7~~4~~5		67		65	
Total Energy Use, Percent Change 2016 to Plan Year	**--**		**-12%**		**-17%**		**-17%**	
Per Capita Energy Use, Percent Change 2016 to Plan Year	**--**		**-16~~7~~%**		**-25%**		**-27%**	

Source: Appendix F
Notes:
2016 population = 3,287,280; 2025 population = 3,470,848; 2035 population = 3,620,348; 2050 population = 3,746,073.
Numbers are rounded off and may not add up to the stated totals.
1 kWh = 3,412 BTU; 1 therm = 99,976 BTU; 1 gallon, gasoline = 120,286 BTU; 1 gallon, diesel = 137,381 BTU.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

As shown in Table 4.6-1, total energy use would decrease under the proposed Plan from 2016 to 2050. During the same time, the regional population would increase. As a result of the total energy decrease and population increase, per capita energy use would decrease from 2016 to 2050. The decrease in total and per capita energy use is due in part to regulations and programs implemented on the state and regional levels to reduce energy use and emissions of GHGs. It is also due to the increase in multi-family development under the proposed Plan, as multi-family units are more energy efficient than single-family housing on a per unit basis in terms of electricity and natural gas consumption.

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs would not result in an increase in overall per capita energy consumption, or otherwise use energy in an inefficient, wasteful, or unnecessary manner, because per capita energy use would decrease from 2016 to 2050. Therefore, this impact (EN-1) in the year 2050 is less than significant.

Exacerbation of Climate Change Effects

The proposed Plan could potentially exacerbate climate change effects on inefficient energy use. The proposed Plan intends to result in a substantial increase in energy efficiency through land use planning strategies and transportation network improvements; this improved energy efficiency would achieve a decrease in per capita energy use even as the proposed Plan results in increasing population, employment, and housing growth. However, climate change may result in an increased demand for energy on a per capita basis; for example, projected hotter temperatures in the San Diego region may incentivize people to use air conditioning more often. This could result in a smaller decrease in per capita energy use than projected. In this case, the proposed Plan would exacerbate the increased demand for energy caused by climate change by stimulating population and housing growth (Moser et al. 2012).

EN-2 CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY

ANALYSIS METHODOLOGY

This analysis evaluates whether implementation of the proposed Plan would obstruct State and local renewable energy and energy efficiency plans, regulations, and policies, discussed above in Section 4.6.2, *Regulatory Setting.* The applicable State and local plans that address renewable energy and energy efficiency are the Warren Alquist Act, Requirements for In-Use Off-Road Diesel-Fueled Fleets, Advanced Clean Cars regulations, the LCFS, CalGreen, the California Energy Code, SB 100, local CAPs, and applicable sections of general plans. The proposed Plan is required to comply with these State and local plans and regulations, all of which are aimed at increasing energy efficiency and renewable energy development. The discussion below further examines consistency with adopted plans and policies related to energy conservation.

IMPACT ANALYSIS

2025

Regional Growth and Land Use Change

Implementation of the proposed Plan's regional growth and land use changes would not conflict with or obstruct State or local plans for increasing energy efficiency, including the Warren-Alquist Act, CalGreen, local CAPs, and applicable sections of local general plans. The Warren-Alquist Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy. As shown in Table 4.6-1, total electricity consumption would decrease between 2016 and 2025. As explained in the impact analysis of EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan is consistent with the Warren-Alquist Act policies. CalGreen includes specific requirements related to recycling, construction materials and energy efficiency standards, which would apply to construction of land use projects, which would help to minimize waste and energy consumption. The land uses constructed under the proposed Plan would also be subject to the energy and GHG reduction policies of a general plan and CAP, if applicable. Many local general plans and CAPs include policies that encourage the energy conservation and energy efficiency in new buildings. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those plans and policies to future development within the proposed Plan Area.

Implementation of the proposed Plan's regional growth and land use changes would not conflict with or obstruct State and local plans for increasing renewable energy, including the California Energy Code, SB 100, local CAPs, and applicable sections of local general plans. The projected land use pattern would be subject to the most recent iteration of the California Energy Code, which requires that single-family residential development include solar photovoltaics. Future land uses would also be required to adhere to future iterations of the California Energy Code, which is updated every 3 years and is expected to become increasingly more stringent over time to further the state's renewable energy and GHG reduction goals. The percent of renewable or GHG-free electricity provided in the region would increase from 2016 through 2025 based on the SB 100 RPS targets, resulting in a reduction in use of nonrenewable energy resources. The land uses constructed under the proposed Plan would also be subject to the renewable energy policies of a general plan and CAP, if applicable. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those policies to future development within the proposed Plan Area. Thus, the proposed Plan's regional growth and land use changes would not conflict with or obstruct a State or local plan for increasing renewable energy or energy efficiency.

Transportation Network Improvements and Programs

Implementation of the proposed Plan's transportation network improvements and programs would not conflict with or obstruct State and local plans for increasing energy efficiency, including the Warrin-Alquist Act, the Requirements for In-Use Off-Road Diesel-Fueled Fleets, and Advanced Clean Cars regulations. As discussed above, the Warren-Alquist Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy. As shown in Table 4.6-1, total gasoline consumption, the primary on-road vehicle fuel in the region, would decrease between 2016 and 2025. As explained in the impact analysis of EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan is consistent with the Warren-Alquist Act policies. In addition, off-road equipment with diesel engines of 25 horsepower or larger are regulated by CARB for purposes of emissions reductions under the Requirements for In-Use Off-Road Diesel-Fueled Fleets. These regulations require operators to limit idling during operation and to upgrade older equipment with modern engines, which additionally provides benefits for the reduction of

fuel consumption. On-road vehicle fuel consumption would be propelled by compliance with the Advances Clean Cars regulations, which would increasingly limit the use of nonrenewable fuel sources by requiring vehicle manufacturers to produce an increasing number of ZEVs.

Implementation of the proposed Plan's transportation network improvements and programs would also not conflict with or obstruct State and local plan for increasing renewable energy, including the LCFS and local general plans and CAPs. The LCFS is designed to decrease the carbon intensity of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduces petroleum dependency and encourages the use of cleaner low-carbon transportation fuels (e.g., hydrogen, electricity, biofuels). In addition, City and County policies determined in their general plans and CAPs to improve the region's EV infrastructure would continue to apply with implementation of the proposed Plan. Thus, the planned transportation network improvements in the proposed Plan would not conflict with a State or regional plan related to the increased use of renewable energy or energy efficiency.

2025 Conclusion

Regional growth and land use change and transportation network improvements and programs would not conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency. Therefore, this impact (EN-2) in the year 2025 is less than significant.

2035

Regional Growth and Land Use Change

Similar to the analysis of Impact EN-2 for the year 2025, implementation of the proposed Plan's regional growth and land use changes through 2035 would not conflict with or obstruct State or local plans for increasing energy efficiency, including the Warren-Alquist Act, CalGreen, local CAPs, and applicable sections of local general plans. The Warren-Alquist Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy. As shown in Table 4.6-1, total electricity consumption would decrease between 2016 and 2035. As explained in the impact analysis of EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan is consistent with the Warren-Alquist Act policies. CalGreen includes specific requirements related to recycling, construction materials and energy efficiency standards, which would apply to construction of land use projects, which would help to minimize waste and energy consumption. The land uses constructed under the proposed Plan would also be subject to the energy and GHG reduction policies of a general plan and CAP, if applicable. Many local general plans and CAPs include policies that encourage the energy conservation and energy efficiency in new buildings. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those plans and policies to future development within the proposed Plan Area.

Implementation of the proposed Plan's regional growth and land use changes would not conflict with or obstruct State and local plans for increasing renewable energy, including the California Energy Code, SB 100, local CAPs, and applicable sections of local general plans. The projected land use pattern would be subject to the most recent iteration of the California Energy Code, which requires that single-family residential development include solar photovoltaics. Future land uses would also be required to adhere to future iterations of the California Energy Code, which is updated every 3 years and is expected to become increasingly more stringent over time to further the state's renewable energy and GHG reduction goals. The percent of renewable or GHG-free electricity provided in the region would increase from 2016 through 2035 based on the SB 100 RPS targets, resulting in a reduction in use of nonrenewable energy resources. The land uses constructed under

the proposed Plan would also be subject to the renewable energy policies of a general plan and CAP, if applicable. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those policies to future development within the proposed Plan Area. Thus, the proposed Plan's regional growth and land use changes would not conflict with or obstruct a State or local plan for increasing renewable energy or energy efficiency.

Transportation Network Improvements and Programs

Similar to the analysis of Impact EN-2 for the year 2025, implementation of the proposed Plan's transportation network improvements and programs through 2035 would not conflict with or obstruct State and local plans for increasing energy efficiency, including the Warrin-Alquist Act, the Requirements for In-Use Off-Road Diesel-Fueled Fleets, and Advanced Clean Cars regulations. As discussed above, the Warren-Alquist Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy. As shown in Table 4.6-1, total gasoline consumption, the primary on-road vehicle fuel in the region, would decrease between 2016 and 2035. As explained in the impact analysis of EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan is consistent with the Warren-Alquist Act policies. In addition, off-road equipment with diesel engines of 25 horsepower or larger are regulated by CARB for purposes of emissions reductions under the Requirements for In-Use Off-Road Diesel-Fueled Fleets. These regulations require operators to limit idling during operation and to upgrade older equipment with modern engines, which additionally provides benefits for the reduction of fuel consumption. On-road vehicle fuel consumption would be propelled by compliance with the Advances Clean Cars regulations, which would increasingly limit the use of nonrenewable fuel sources by requiring vehicle manufacturers to produce an increasing number of ZEVs.

Implementation of the proposed Plan's transportation network improvements and programs would also not conflict with or obstruct State and local plan for increasing renewable energy, including the LCFS and local general plans and CAPs. The LCFS is designed to decrease the carbon intensity of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduces petroleum dependency and encourages the use of cleaner low-carbon transportation fuels (e.g., hydrogen, electricity, biofuels). In addition, City and County policies determined in their general plans and CAPs to improve the region's EV infrastructure would continue to apply with implementation of the proposed Plan. Thus, the planned transportation network improvements in the proposed Plan would not conflict with a State or regional plan related to the increased use of renewable energy or energy efficiency.

2035 Conclusion

Regional growth and land use change and transportation network improvements and programs would not conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency. Therefore, this impact (EN-2) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

Similar to the analysis of Impact EN-2 for the year 2025 and 2035, implementation of the proposed Plan's regional growth and land use changes through 2050 would not conflict with or obstruct State or local plans for increasing energy efficiency, including the Warren-Alquist Act, CalGreen, local CAPs, and applicable sections of local general plans. The Warren-Alquist Act established a State policy to reduce wasteful, uneconomical and

unnecessary uses of energy. As shown in Table 4.6-1, total electricity consumption would decrease between 2016 and 2050. As explained in the impact analysis of EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan is consistent with the Warren-Alquist Act policies. CalGreen includes specific requirements related to recycling, construction materials and energy efficiency standards, which would apply to construction of land use projects, which would help to minimize waste and energy consumption. The land uses constructed under the proposed Plan would also be subject to the energy and GHG reduction policies of a general plan and CAP, if applicable. Many local general plans and CAPs include policies that encourage the energy conservation and energy efficiency in new buildings. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those plans and policies to future development within the proposed Plan Area.

Implementation of the proposed Plan's regional growth and land use changes would not conflict with or obstruct State and local plans for increasing renewable energy, including the California Energy Code, SB 100, local CAPs, and applicable sections of local general plans. The projected land use pattern would be subject to the most recent iteration of the California Energy Code, which requires that single-family residential development include solar photovoltaics. Future land uses would also be required to adhere to future iterations of the California Energy Code, which is updated every 3 years and is expected to become increasingly more stringent over time to further the state's renewable energy and GHG reduction goals. The percent of renewable or GHG-free electricity provided in the region would reach 100 percent by 2050 based on the SB 100 RPS targets, resulting in a reduction in use of nonrenewable energy resources. The land uses constructed under the proposed Plan would also be subject to the renewable energy policies of a general plan and CAP, if applicable. existing CAPS currently do not extend to 2050, but renewable energy measures in these CAPs would likely continue beyond the CAP horizon years. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those policies to future development within the proposed Plan Area. Thus, the proposed Plan's regional growth and land use changes would not conflict with or obstruct a State or local plan for increasing renewable energy or energy efficiency.

Transportation Network Improvements and Programs

Similar to the analysis of Impact EN-2 for the year 2025 and 2035, implementation of the proposed Plan's transportation network improvements and programs through 2050 would not conflict with or obstruct State and local plans for increasing energy efficiency, including the Warrin-Alquist Act, the Requirements for In-Use Off-Road Diesel-Fueled Fleets, and Advanced Clean Cars regulations. As discussed above, the Warren-Alquist Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy. As shown in Table 4.6-1, total gasoline consumption, the primary on-road vehicle fuel in the region, would decrease between 2016 and 2050. As explained in the impact analysis of EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan is consistent with the Warren-Alquist Act policies. In addition, off-road equipment with diesel engines of 25 horsepower or larger are regulated by CARB for purposes of emissions reductions under the Requirements for In-Use Off-Road Diesel-Fueled Fleets. These regulations require operators to limit idling during operation and to upgrade older equipment with modern engines, which additionally provides benefits for the reduction of fuel consumption. On-road vehicle fuel consumption would be propelled by compliance with the Advances Clean Cars regulations, which would increasingly limit the use of nonrenewable fuel sources by requiring vehicle manufacturers to produce an increasing number of ZEVs.

Implementation of the proposed Plan's transportation network improvements and programs would also not conflict with or obstruct State and local plan for increasing renewable energy, including the LCFS and local general plans and CAPs. The LCFS is designed to decrease the carbon intensity of California's transportation

fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduces petroleum dependency and encourages the use of cleaner low-carbon transportation fuels (e.g., hydrogen, electricity, biofuels). In addition, City and County policies determined in their general plans and CAPs to improve the region's EV infrastructure would continue to apply with implementation of the proposed Plan. Thus, the planned transportation network improvements in the proposed Plan would not conflict with a State or regional plan related to the increased use of renewable energy or energy efficiency.

2050 Conclusion

Regional growth and land use change and transportation network improvements and programs would not conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency. Therefore, this impact (EN-2) in the year 2050 is less than significant.

Exacerbation of Climate Change Effects

The proposed Plan is not expected to exacerbate climate change effects that would conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency.