5.5 ENERGY

5.5.1 Environmental Setting

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

In accordance with Appendices F and G of the CEQA Guidelines, this updated Program Environmental Impact Report (PEIR) includes relevant information and analyses that address the energy implications of the General Plan Update and summarizes its anticipated energy needs, impacts, and conservation measures. This section describes existing electricity and natural gas supplies and transmission lines available in the City of Santa Ana (City) and its sphere of influence (plan area), and General Plan Update impacts on such supplies and transmission lines. This section also addresses transportation fuels, such as gasoline and diesel fuel. Information found herein, as well as related aspects of the update's energy implications, are discussed in greater detail elsewhere in this updated Draft PEIR, including Chapter 3, *Project Description*, and Sections 5.2, *Air Quality*, 5.7, *Greenhouse Gas Emissions*, and 5.16, *Transportation.*

5.5.1.1 REGULATORY BACKGROUND

Federal, state, and local laws, regulations, plans, or guidelines related to energy that are potentially applicable to the General Plan Update are summarized herein.

Federal

Energy Independence and Security Act of 2007

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

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

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

State

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, telecommunications, water, railway, and passenger transportation companies. It is a court and an administrative agency, with both legislative and judicial powers. It may take testimony in the same manner as a court, issue decisions and orders, and cite for contempt and subpoena records of regulated utilities.

California Energy Commission

The California Energy Commission (CEC) was created in 1974 as the state's principal energy planning organization to meet the energy challenges facing the state in response to the 1973 oil embargo. The CEC is charged with six basic responsibilities when designing state energy policy:

- Forecast statewide electricity needs.
- License power plants to meet those needs.
- Promote energy conservation and efficiency measures.
- Develop renewable energy resources and alternative energy technologies.
- Promote research, development, and demonstration.
- Plan for and direct the state's response to energy emergencies.

Renewables Portfolio Standard

Senate Bills 1078, 107, X1-2, and Executive Order S-14-08

The California Renewables Portfolio Standard (RPS) Program was established in 2002 under Senate Bill (SB) 1078 (Sher) and 107 (Simitian). The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. Initially under the RPS, certain retail sellers of electricity were required to increase

the amount of renewable energy each year by at least 1 percent to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008, which expanded the state's Renewable Energy Standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). The CPUC is required to provide quarterly progress reports on progress toward RPS goals. This has accelerated the development of renewable energy projects throughout the state. Based on the third-quarter 2014 report, the three largest retail energy utilities provided an average of 20.9 percent of its supplies from renewable energy sources. Since 2003, 15,565 megawatts of renewable energy projects have started operations (CPUC 2016).

Senate Bill 350

SB 350 (de Leon), was signed into law September 2015 and established tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100 (Chapter 312, Statutes of 2018)

On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Additionally, SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

State Alternative Fuels Plan

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

Appliance Efficiency Regulations

California's Appliance Efficiency Regulations (California Code of Regulations [CCR] Title 20, Parts 1600–1608) contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California.

These standards are updated regularly to allow consideration of new energy efficiency technologies and methods (CEC 2017).

Title 24, Part 6, Energy Efficiency Standards

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

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

Title 24, Part 11, Green Building Standards

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

Overall, the code is established to reduce construction waste, make buildings more efficient in the use of materials and energy, and reduce environmental impact during and after construction. CALGreen contains requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency (CBSC 2019b).

Heavy-Duty (Tractor-Trailer) GHG Regulation

The tractors and trailers subject to this regulation must either use EPA SmartWay-certified tractors and trailers or retrofit their existing fleet with SmartWay-verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low–rolling resistance tires. Sleeper cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay-verified, low–rolling resistance tires. There are also requirements for trailers to have low–rolling resistance tires and aerodynamic devices.

The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay consists of three components:

- **SmartWay Transport Partnership.** Freight shippers, carriers, logistics companies, and other stakeholders partner with EPA to measure, benchmark, and improve logistics operations so they can reduce their environmental footprint.

- **SmartWay Brand.** Through SmartWay technology verification and branding, the EPA has accelerated availability, adoption, and market penetration of fuel-saving technologies and operational practices while helping companies save fuel, lower costs, and reduce adverse environmental impacts.

- **SmartWay Global Collaboration.** The EPA works with a broad range of national and global organizations to harmonize sustainability accounting methods in the freight sector. SmartWay also provides support to global policy makers that wish to model transportation sustainability programs after the SmartWay program (USEPA 2020a).

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects, and technical literature review. As a result, the EPA has determined that the following types of technologies provide fuel-saving and/or emission-reducing benefits when used properly in their designed applications, and has verified certain products:

- Idling reduction technologies—i.e., less idling of the engine when it is not needed—would reduce fuel consumption.

- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.

- Low–rolling resistance tires can roll longer without slowing down, which reduces the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.

- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc. that would reduce emissions.

- Federal excise tax exemptions (USEPA 2020b).

Assembly Bill 1493

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

Local

Santa Ana Climate Action Plan

The City adopted its Climate Action Plan (CAP) in December 2015. In 2014, the City Council adopted emissions reduction goals for the CAP. For community-wide GHG emissions, the reduction goal is 15 percent below the baseline year 2008 by 2020, and 30 percent below the baseline year 2008 by 2035. For municipal operations emissions, the reduction goal is 30 percent by 2020 and 40 percent by 2035 (Santa Ana 2015).

Note that since the City adopted the CAP in 2015, California policies have met or surpassed a number of CAP goals (see the previous descriptions of SB 32, AB 197, SB 1383, the State Renewables Portfolio Standard, and the requirement for solar energy facilities on all new homes).

CAP strategies and actions for energy-use reduction are:

- **Property Assessed Clean Energy (PACE) Financing for Commercial Properties.** PACE is an energy-efficiency financing program operated by private contractors in many communities in California. PACE financing is available for a wide range of energy and water-saving measures, and for renewable energy generation. Repayment of loans through the program is made on the property tax bill for the property. The financing can be used for a variety of energy efficiency projects, including air conditioning and heating systems, lighting upgrades, cool roofing materials, and solar installations.

- **Southern California Edison Small and Medium Business Direct Install.** The CPUC authorizes certain energy-efficiency programs through Southern California Edison (SCE). SCE sends trained energy-efficiency contractors to help small businesses (those using up to 199 kilowatts) identify ways to save electricity. SCE provides free upgrades to customers that may include energy-efficient lighting, signage, sensors, refrigeration, sun-blocking window film, and programmable thermostats.

- **Property Assessed Clean Energy Financing for Residential Properties.** PACE will also be applied to residential properties. Projects include air conditioning and furnace upgrades, air duct sealing, insulation, and small solar installations.

- **Solar Photovoltaic Systems for New Private Installs.** Rebates or incentive payments for installation of solar photovoltaic are available as part of the California Solar Incentive program, which is administered by the CEC.

- **Southern California Edison and Southern California Gas Company Residential Programs.** For residential customers, SCE's efficiency programs include rebates for air conditioner replacement, energy-efficient appliances, pool pumps and motors, etc. Southern California Gas Company (SoCalGas) also offers rebates for energy-efficiency upgrades, including furnaces, insulation, and water heaters.

- **Weatherization.** The weatherization program is delivered through the Community Action Partnership and funded through federal grants and local entities. Actions taken in homes can include a number of energy-saving measures, such as air-duct sealing, insulation, window glazing, and tune-up or replacement of air conditioning and heating equipment.

- **Southern California Gas Company Commercial Programs.** For commercial customers, SoCalGas offers rebates for replacement of inefficient equipment, including water heaters, boilers, and food service equipment.

- **Streetlight Purchase and Retrofit.** SCE owns and operates over 11,000 streetlights in Santa Ana. This measure provides for the City to purchase these streetlights and convert them from high-pressure sodium lamps to light-emitting diode.

- **Benchmarking and Retrocommissioning.** Benchmarking is tracking the energy performance of commercial buildings on an ongoing basis. The Energy Star Portfolio Manager is a free tool for benchmarking and gives an energy performance score between 1 and 100. A score of 75, for example, means that the building performs better than 75 percent of similar buildings. Retrocommissioning is testing and tuning building systems to ensure they operate as designed. For this measure, the City would pass an ordinance requiring that all nonresidential buildings larger than 10,000 square feet report their Portfolio Manager results every seven years, and that buildings with a score of less than 75 must complete retrocommissioning.

- **Solar Hot-Water Heating Systems for Laundromats.** SoCalGas currently offers a rebate for commercial installation of solar hot-water heating systems. For this measure, the City will directly contact laundromat owners and encourage them to take advantage of this rebate.

- **Green Business Challenge Program.** A Green Business Challenge establishes friendly competition between businesses to improve performance in energy efficiency, water conservation, waste reduction, and other areas. Businesses receive recognition for participating, and the City recognizes those that achieve the largest GHG emissions reduction.

Santa Ana Municipal Code

Chapter 8, Article XVI of the Santa Ana Municipal Code, Green Building Standards Code, incorporates the California Green Building Standards Code by reference.

5.5.1.2 EXISTING CONDITIONS

Electricity

Southern California Edison

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

- 36 percent renewable, consisting mostly of solar and wind
- 4 percent large hydroelectric
- 17 percent natural gas
- 6 percent nuclear
- 37 percent unspecified sources—that is, not traceable to specific sources (SCE 2019)[2]

Estimated Existing Electricity Demand

Total estimated existing (2020) electricity demand in Santa Ana, based on data provided by SCE, is estimated at 1,570,457,233 kilowatt hours (kWh) per year, as shown in Table 5.5-1, *Estimated Existing Electricity Demand.*

Table 5.5-1 Estimated Existing Electricity Demand

Area	Electricity Usage, kWh per year (Subtotal)
City of Santa Ana[1]	
Residential	380,621,219
Nonresidential	1,189,836,014
Total	1,570,457,233

Source:
1 Electricity total makes use of a seven-year (2012–2018) annual electricity consumption average based on data provided by SCE

1 One GWh is equivalent to one million kilowatt-hours.
2 The electricity sources listed herein reflect changes after the 2013 closure of the San Onofre Nuclear Generating Station, which is owned by SCE.

Renewable Energy

In addition to the renewable energy sources obtained by SCE, 1.9 megawatts of solar capacity have been installed in Santa Ana since 2008. These installations are estimated to produce a reduction in GHGs equivalent to 5,751 metric tons of carbon dioxide (CO_2) per year (Santa Ana 2015).

Natural Gas

SoCalGas provides natural gas service in the City of Santa Ana and offers a variety of rebate programs to encourage energy-efficient home improvements and the purchase of energy-saving appliances. It also administers a no-cost, energy-saving installation program regulated by the CPUC. SoCalGas maintains transmission and distribution lines throughout the City.

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

Existing Estimated Natural Gas Demands

Existing natural gas demands in the City, based on data provided by SoCalGas, are estimated at 48.9 million therms per year, as shown in Table 5.5-2, *Estimated Existing Natural Gas Demand.*

Table 5.5-2 Estimated Existing Natural Gas Demand

Area	Natural Gas Usage, therms per year (Subtotal)
City	
Residential	21,783,050
Nonresidential	27,074,864
Total	48,857,914

Source:
[1] Natural gas total makes use of a five-year (2014–2018) natural gas consumption average based on data provided by SoCalGas.

Transportation Fuels

Table 5.5-3, *Existing Operation-Related Annual Fuel Usage*, shows the fuel usage associated with vehicle miles traveled (VMT) currently generated under existing baseline conditions based on fuel usage data obtained from EMFAC2017 (v. 1.0.2) and VMT data provided by IBI Group (see Volume IV, Appendix K). VMT is based on vehicle trips beginning and ending in the city boundaries and from external/internal trips (i.e., trips that either begin or end in the city).

Table 5.5-3 Existing Operation-Related Annual Fuel Usage

	Gas		Diesel		Compressed Natural Gas		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Existing Baseline	3,687,441,808	148,001,638	224,263,378	19,896,581	5,115,903	1,576,272	41,450,939	13,850,850

Source: EMFAC2017, version 1.0.2.
Note: VMTs based on daily VMT provided by IBI Group. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

5.5.2 Thresholds of Significance

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

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

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

5.5.3 Regulatory Requirements and General Plan Update Policies

5.5.3.1 REGULATORY REQUIREMENTS

RR E-1 Construction activities will be conducted in compliance with California Code of Regulations Section 2485, which requires that nonessential idling of construction equipment be restricted to five minutes or less.

RR E-2 At least 65 percent of all nonhazardous construction and demolition waste from nonresidential construction associated with future development in the plan area shall be recycled and/or salvaged for reuse in line with the 2016 California Green Building Standards Code Section 5.408 (California Code of Regulations, Title 24, Part 11).

RR E-3 New buildings implemented as part of the General Plan Update are required to achieve the current California Building Energy and Efficiency Standards (California Code of Regulations, Title 24, Part 6) and California Green Building Standards Code (California Code of Regulations, Title 24, Part 11).

RR E-4 Any appliances associated with development in the Plan Area shall meet the requirements of the 2012 Appliance Efficiency Regulations.

RR E-5 Development under the General Plan Update shall support the goals of the renewables portfolio standard, SB 350, and SB 100 to achieve a tiered increase in the use of renewable energy to 60 percent by 2030, and 100 percent by 2045.

RR E-6 State buildings developed as part of the General Plan Update are required to implement the standards set forth in Executive Order S-20-04. The order established energy savings targets for state facilities, declared the "Silver" level of LEED as the minimum performance standard for new buildings, and to required state government to purchase ENERGY STAR products when cost effective.

RR E-7 Development under the General Plan Update shall be in compliance with state and local solid waste regulations including AB 939, AB 341, AB 1327, AB 1826, and Section 5.408 of 2016 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11).

5.5.3.2 GENERAL PLAN UPDATE POLICIES

The following are relevant policies of the Santa Ana General Plan Update, which may contribute to reducing potential energy impacts.

Conservation Element

- **Policy 1.2 Climate Action Plan.** Consistency with emission reduction goals highlighted in the Climate Action Plan shall be considered in all major decisions on land use and investments in public infrastructure.
- **Policy 1.4 Development Standards.** Support new development that meets or exceeds standards for energy-efficient building design and site planning.
- **Policy 1.6 New and Infill Residential Development.** Promote development that is mixed-use, pedestrian-friendly, transit oriented, and clustered around activity centers.
- **Policy 1.8 Promote Alternative Transportation.** Promote use of alternate modes of transportation in the City of Santa Ana, including pedestrian, bicycling, public transportation, car sharing programs and emerging technologies.
- **Policy 1.9 Public Investment Alternative Transportation Infrastructure.** Continue to invest in infrastructure projects that support public transportation and alternate modes of transportation in the City of Santa Ana, including pedestrian, bicycling, public transportation, car sharing programs, and emerging technologies.
- **Policy 1.10 Transportation Management.** Continue to support and invest in improvements to the City's Transportation Management System, including projects or programs that improve traffic flow and reduce traffic congestion.
- **Policy 1.11 Public Investment in Low- or Zero Emission Vehicles.** Continue to invest in low-emission or zero-emission vehicles to replace the City's gasoline powered vehicle fleet and to transition to available clean fuel sources such as bio-diesel for trucks and heavy equipment.
- **Policy 1.12 Sustainable Infrastructure.** Encourage the use of low or zero emission vehicles, bicycles, non-motorized vehicles, and car-sharing programs by supporting new and existing development that

includes sustainable infrastructure and strategies such as vehicle charging stations, drop-off areas for ride-sharing services, secure bicycle parking, and transportation demand management programs.

- **Policy 1.14 Transportation Demand Management.** Require and incentivize projects to incorporate Transportation Demand Management (TDM) techniques.
- **Policy 3.1 Interagency Coordination.** Consult with regional agencies and utility companies to pursue energy efficiency goals and expand renewable energy strategies.
- **Policy 3.2 Education Programs.** Support education programs to provide information on energy conservation and alternatives to non-renewable energy sources.
- **Policy 3.3 Development Patterns**. Promote energy efficient-development patterns by clustering mixed use developments and compatible uses adjacent to public transportation.
- **Policy 3.4 Site Design.** Encourage site planning and subdivision design that incorporates the use of renewable energy systems.
- **Policy 3.5 Landscaping.** ~~Encourage~~ Promote and encourage the planting of native and diverse tree species to improve air quality, reduce heat island effect, reduce energy consumption, and contribute to carbon mitigation with special focus in environmental justice areas.
- **Policy 3.6 Life Cycle Costs.** Encourage construction and building development practices that use renewable resources and life cycle costing in construction and operating decisions.
- **Policy 3.7 Energy Conservation Design and Construction.** Incorporate energy conservation features in the design of new construction and rehabilitation projects.
- **Policy 3.8 Energy-Efficient Public Facilities.** Promote and encourage efficient use of energy and the conservation of available resources in the design, construction, maintenance, and operation of public facilities, infrastructure, and equipment.
- **Policy 3.9 Energy Generation in Public Facilities.** Encourage and support the generation, transmission, use, and storage of locally-distributed renewable energy in order to promote energy independence, efficiency, and sustainability.
- **Policy 3.10 Energy Conservation in Public Projects.** Work with businesses and contractors that use energy-efficient practices in the provision of services and equipment for city construction projects.
- **Policy 3.11 Energy-Efficient Transportation Infrastructure.** Continue to support public and private infrastructure for public transportation such as bus routes, rail lines, and the OC Streetcar.

Economic Prosperity Element

- **Policy 2.9 Energy Conservation.** Collaborate with utility providers and regional partners to encourage business and industry to improve performance in energy efficiency, water conservation, and waste reduction.

- **Policy 2.10 Green Business.** Support the growth of a diverse green business sector that facilitates and promotes environmental sustainability and creates a competitive advantage for business attraction activities.

Land Use Element

- **Policy 1.5 Diverse Housing Types.** Incentivize quality infill residential development that provides a diversity of housing types and accommodates all income levels and age groups.

- **Policy 1.6 Transit Oriented Development.** Encourage residential mixed-use development, within the City's District Centers and Urban Neighborhoods, and adjacent to high quality transit.

- **Policy 1.7 Active Transportation Infrastructure.** Invest in active transportation connectivity between activity centers and residential neighborhoods to encourage healthy lifestyles.

- **Policy 2.5 Benefits of Mixed Use.** Encourage infill mixed-use development at all ranges of affordability to reduce vehicle miles travelled, improve jobs/housing balance, and promote social interaction.

- **Policy 2.10 Smart Growth.** Focus high density residential in mixed-use villages, designated planning focus areas, Downtown Santa Ana, and along major travel corridors.

- **Policy 4.3 Sustainable Land Use Strategies.** Encourage land uses and strategies that reduce energy and water consumption, waste and noise generation, soil contamination, air quality impacts, and light pollution.

- **Policy 4.4 Natural Resource Capture.** Encourage the use of natural processes to capture rainwater runoff, sustainable electric power, and passive climate control.

- **Policy 4.5 VMT Reduction.** Concentrate development along high-quality transit corridors to reduce vehicle miles traveled (VMT) and transportation related carbon emissions.

~~Open Space Element~~

- ~~**Policy 1.6 Sustainable Landscape.** Promote citywide use of drought tolerant landscape and development practices for wise water use and energy consumption.~~

Public Services Element

- **Policy 1.7 Sustainable and Resilient Practices.** Require ~~Use sustainable and energy efficient building and maintenance practices as part of~~ the development or rehabilitation of any public facility or capital improvement to incorporate site design and building practices that promote sustainability, energy efficiency, and resiliency.

Urban Design Element

- **Policy 1.6 Active Transportation Infrastructure.** Support the creation of citywide public street and site amenities that accommodate and promote an active transportation-friendly environment.
- **Policy 2.10 Greening the Built Environment.** Promote planting of shade trees and require, where feasible, preservation and site design that uses appropriate tree species to shade parking lots, streets, and other facilities with the goal of reducing the heat island effect.
- **Policy 2.11 Sustainable Practices.** Encourage sustainable development through the use of drought tolerant landscaping, permeable hardscape surfaces, and energy efficient building design and construction.
- **Policy 3.10 Coordinated Street Improvement Plans.** Coordinate citywide landscape medians and street trees with land use plans and development projects.
- **Policy 5.4 Intersections for all Travel Modes.** Strengthen active transportation connections and amenities at focal intersections to promote a pleasant and safe experience for non-motorized forms of travel.

5.5.4 Environmental Impacts

5.5.4.1 METHODOLOGY

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

- **Energy.** Energy use for residential and nonresidential land uses in the city are based on natural gas usage data provided by SoCalGas and electricity usage data provided by SCE, which may be found in Volume III, Appendix C. Natural gas use is based on a five-year average (2014 to 2018) and electricity use is based on a seven-year average (2012 to 2018) to account for fluctuation in annual use from natural variations in climate. Year 2045 residential energy and nonresidential energy forecasts are adjusted for increases in housing and employment, respectively.

- **On-Road Vehicle Fuel Usage.** City fuel usage associated with VMT is based on fuel usage data obtained from EMFAC2017, version 1.0.2, for calendar years 2020 and 2045 and on VMT data provided by IBI Group (see Volume IV, Appendix K).

5.5.4.2 IMPACT ANALYSIS

The following impact analysis addresses thresholds of significance for which the Notice of Preparation disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

Impact 5.5-1: Implementation of the General Plan Update would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. [Threshold E-1]

Short-Term Construction Impacts

Development projects constructed under the General Plan Update would create temporary demands for electricity. Natural gas is not generally required to power construction equipment, and therefore is not anticipated during construction phases. Electricity use would fluctuate according to the phase of construction. Additionally, it is anticipated that most electric-powered construction equipment would be hand tools (e.g., power drills, table saws, compressors) and lighting, which would result in minimal electricity usage during construction activities.

Development projects would also temporarily increase demands for energy associated with transportation. Transportation energy use depends on the type and number of trips, VMT, fuel efficiency of vehicles, and travel mode. Energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel or gasoline. The use of energy resources by these vehicles would fluctuate according to the phase of construction and would be temporary. It is anticipated that most off-road construction equipment, such as those used during demolition and grading, would be gas or diesel powered. In addition, all operation of construction equipment would cease upon completion of project construction. Furthermore, the construction contractors are anticipated to minimize nonessential idling of construction equipment during construction, in accordance with Section 2449 of 13 CCR Article 4.8, Chapter 9. Such required practices would limit wasteful and unnecessary energy consumption. Projects within the City would be similar to projects currently in development within Santa Ana. No projects consisting of multiple phases over an extended period are anticipated.

Long-Term Impacts During Operation

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

Nontransportation Energy

As previously stated, the existing electricity use within the city totals 1,570,457,233 kWh annually. Electrical service to the city is provided by SCE through connections to existing off-site electrical lines and new on-site infrastructure. As shown in Table 5.5-4, *Year 2045 Forecast Electricity Consumption*, by horizon year 2045, electricity use in the city would increase by 260,755,497 kWh/year, or approximately 17 percent, from existing conditions.

Table 5.5-4 Year 2045 Forecast Electricity Consumption

Area	Electricity Usage, kWh per year (Subtotal)		
	Existing Baseline[1]	Horizon Year 2045 Forecast[2]	Net Change
City			
Residential	380,621,219	555,787,557	175,166,337
Nonresidential	1,189,836,014	1,275,425,174	85,589,160
Total	1,570,457,233	1,831,212,730	260,755,497

1 Electricity usage is provided by SCE.
2 Residential energy and nonresidential energy forecasts are adjusted for increases in housing and employment, respectively, in the city and do not account for reductions due to increase in energy efficiency from compliance with the Building Energy Efficiency Standards and CALGreen.

As shown in Table 5.5-5, *Year 2045 Forecast Natural Gas Consumption*, existing natural gas use in the city totals 48,857,914 therms annually. By 2045, natural gas use in the city would increase by 11,972,406 therms annually, or approximately 25 percent, from existing conditions.

Table 5.5-5 Year 2045 Forecast Natural Gas Consumption

Area	Natural Gas Usage, therms per year (Subtotal)		
	Existing Baseline[1]	Horizon Year 2045 Forecast[2]	Net Change
City			
Residential	21,783,050	31,807,865	10,024,814
Nonresidential	27,074,864	29,022,456	1,947,592
Total	48,857,914	**60,830,320**	**11,972,406**

1 Natural gas usage data provided by SoCalGas.
2 Residential energy and nonresidential energy forecasts are adjusted for increases in housing and employment, respectively, in the city and do not account for reductions due to increase in energy efficiency from compliance with the Building Energy Efficiency Standards and CALGreen.

While the electricity and natural gas demand for the city would increase compared to existing conditions, developments accommodated under the General Plan Update would be required to comply with the current and future updates to the Building Energy Efficiency Standards and CALGreen, which would contribute in reducing the energy demands shown in Tables 5.5-3 and 5.5-4. New and replacement buildings in compliance with these standards would generally have greater energy efficiency than existing buildings. It is anticipated that each update to the Building Energy Efficiency Standards and CALGreen will result in greater building energy efficiency and move closer toward buildings achieving zero net energy.

In addition to the Building Energy Efficiency Standards and CALGreen, the General Plan Update includes the goals and policies to increase energy efficiency and reduce wasteful, inefficient use of energy resources. The

conservation element policies focus on coordinating with agencies to pursue energy-efficient goals and strategies, promoting energy-efficient development patterns and site designs, and expanding renewable energy strategies (policies 3.1, 3.3, 3.4, 3.7, 3.8, 3.9, 3.10). The economic prosperity element, policy 2.9, suggests collaborating with utility providers and regional partners to encourage energy efficiency in business and industry. The land use element, policy 4.3, will encourage land use strategies that reduce energy while the public services element, policy 1.7, and urban design element, policy 2.11, will promote use of sustainable and energy-efficient building and maintenance practices through building design, construction, and development. Encouraging sustainable and energy-efficient building practices and using more renewable energy strategies will further reduce energy consumption within the City and move closer toward achieving zero net energy.

Transportation Energy

The growth accommodated under the General Plan Update would consume transportation energy (e.g., gasoline, diesel, compressed natural gas, and electricity) from the use of motor vehicles. Table 5.5-6, *Operation-Related Annual Fuel Usage: Net Change from Existing,* shows the net change in VMT, fuel usage, and fuel efficiency under horizon year 2045 General Plan Update conditions from existing baseline year 2020 conditions and existing uses under year 2045 conditions.

Table 5.5-6 Operation-Related Annual Fuel Usage: Net Change from Existing

Fuel Type	Existing Baseline Year 2020	Existing Year 2045[1]	Project Horizon Year 2045	Net Change from Existing Baseline Year 2020	Net Change from Existing Year 2045
Gasoline					
VMT[2]	3,687,441,808	3,471,552,120	3,505,587,082	(181,854,726)	34,034,962
Gallons	148,001,638	92,891,225	93,801,926	(54,199,711)	910,702
Miles Per Gallon	24.91	37.37	37.37	12.46	0
Diesel					
VMT[2]	224,263,378	291,979,782	294,842,340	70,578,962	2,862,558
Gallons	19,896,581	17,946,794	18,122,744	(1,773,837)	175,950
Miles Per Gallon	11.27	16.27	16.27	5.00	0
Compressed Natural Gas					
VMT[2]	5,115,903	6,570,424	6,634,840	1,518,937	64,416
Gallons	1,576,272	1,928,457	1,947,363	371,092	18,907
Miles Per Gallon	3.25	3.41	3.41	0.16	0
Electricity					
VMT[2]	41,450,393	188,169,702	190,014,511	148,563,572	1,844,808
kWh	13,850,850	50,665,611	51,162,334	37,311,485	496,724
Miles Per kWh	2.99	3.71	3.71	0.72	0
Total VMT	3,958,271,482	3,958,272,028	3,997,078,773	38,806,745	38,806,745

Source: EMFAC2017 Version 1.0.2.
Notes: () represents a negative value.
[1] Represents existing uses as they currently exist in baseline year 2020 operating under year 2045 conditions.
[2] Based on daily VMT provided by IBI Group. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

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As shown in Table 5.5-6, when compared to existing baseline year 2020 conditions, the General Plan Update would result in an overall decrease in VMT (181,854,726 miles) and fuel usage (54,199,711 gallons) for gasoline-powered vehicles while VMT for diesel-, compressed natural gas-, and electric-powered vehicles would increase. However, although VMT for diesel-powered vehicles would increase by 70,578,962 miles, overall fuel usage would decrease by 1,773,837 gallons and fuel efficiency would increase by 5 miles per gallon (mpg). While VMT and fuel usage for compressed natural gas- and electric-powered vehicles would both increase, the efficiency of these vehicles would also increase by 3.41 mpg and 3.71 mpg, respectively, compared to 2020 conditions. The decrease in VMT and fuel usage for gasoline-powered vehicles and increase in VMT and fuel usage for electric-powered vehicles are primarily based on the assumption in EMFAC that a greater mix of light-duty automobiles would be electric-powered in future years based on regulatory (e.g., Advanced Clean Cars) and consumer trends. Compared to existing uses under year 2045 conditions, the General Plan Update would result in an increase in VMT and fuel usage for all fuel types (see "Net Change from Existing Year 2045" column). However, the fuel efficiency will be the same, and implementation of the General Plan Update would not result in less efficiency in transportation fuel usage.

The overall VMT as shown in the table would be primarily attributable to the overall growth associated with the General Plan Update. While VMT and fuel usage would generally increase from implementation of the General Plan Update, as shown in Table 5.5-6, fuel efficiency of vehicles under year 2045 conditions would improve compared to baseline year 2020. Additionally, as stated, the fuel efficiency between the General Plan Update and existing uses under horizon year 2045 conditions would be the same. The improvement in fuel efficiency would be attributable to regulatory compliance (e.g., CAFE standards) that trend toward producing cars that are more fuel efficient and the natural turnover of older, less-fuel-efficient vehicles for newer, more-fuel-efficient vehicles. The CAFE standards are not directly applicable to residents or land use development projects, but to car manufacturers. Thus, residents and employees of the City do not have direct control in determining the fuel efficiency of vehicles manufactured and that are made available. However, compliance with the CAFE standards by car manufacturers would ensure that vehicles produced in future years have greater fuel efficiency and would generally result in an overall benefit of reducing fuel usage by providing the population of the City more fuel-efficient vehicle options.

Although VMT associated with electric vehicles (EV) and thus electricity usage would increase under the with-project horizon year 2045 scenario when compared to existing baseline, it is also anticipated that EVs will improve in energy efficiency. In conjunction with the regulatory (i.e., RPS, SB 350, and SB 100) and general trend toward increasing the supply and production of energy from renewable sources, it is anticipated that a greater share of electricity used to power EVs will be from renewable sources in future years (e.g., individual photovoltaic systems, purchased electricity from a Community Choice Aggregation (CCA), and/or purchased electricity from SCE that is generated from renewable sources).

In addition to regulatory compliance that would contribute to more fuel-efficient vehicles and less demand in fuels, the General Plan Update includes policies that will contribute to minimizing overall VMT, and thus fuel usage associated with the City. These proposed policies focus on minimizing VMT through land use and transportation planning efforts that work in conjunction. The General Plan Update includes Conservation Element Policy 1.6 and Land Use Element Policies 1.6, 2.5, 2.10, and 4.5 that focus on situating residential uses near commercial and office land uses and encouraging mixed-used development and placing these

developments near high-quality transit facilities and corridors. Placing residential and nonresidential uses near each other to create self-sustaining communities and neighborhoods and offering mixed-used developments, could result in shorter distances traveled between where people work and live and to amenities. The shorter distances reduce VMT by reducing the average vehicle trip distance traveled. It also encourages people to forego vehicle travel altogether and either bike, walk, or take public transportation, which would also contribute to minimizing VMT. Furthermore, proposed policies in the General Plan Update also include improving public transportation and active transit (e.g., biking and walking) infrastructure in the city (e.g., conservation element policies 1.8, 1.9, 1.10, 1.14, 3.3, and 3.11; urban design element policies 1.6 and 5.4). Improving the public transportation and active transit infrastructure in conjunction with creating more self-sustaining neighborhoods and communities will encourage more non-single-occupancy passenger vehicle travel, which would further contribute to minimizing VMT. Moreover, the General Plan update includes proposed conservation element policies 1.11 and 1.12, which focus on increasing the use of clean fuel and electric vehicles by supporting the installation of electric vehicle infrastructure.

Summary

Overall, regulatory compliance (e.g., Building Energy Efficiency Standards, CALGreen, RPS, and CAFE standards) will increase building energy efficiency and vehicle fuel efficiency and reduce building energy demand and transportation-related fuel usage. Additionally, the General Plan Update includes policies related to land use and transportation planning and design, energy efficiency, public and active transit, and renewable energy generation that will contribute to minimizing building and transportation-related energy demands overall and demands on nonrenewable sources of energy. Implementation of proposed policies under the General Plan Update in conjunction with and complementary to regulatory requirements, will ensure that energy demand associated with growth under the General Plan Update would not be inefficient, wasteful, or unnecessary. Therefore, energy impacts associated with implementation and operation of land uses accommodated under the General Plan Update would be less than significant.

Level of Significance Before Mitigation: With the implementation of RR E-1 through RR E-4, RR E-6, RR E-7, and the policies listed above, Impact 5.5-1 would be less than significant.

Impact 5.5-2: The General Plan Update would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. [Threshold E-2]

California Renewables Portfolio Standard Program

The state's electricity grid is transitioning to renewable energy under California's RPS Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. As stated, the RPS goals have been updated since adoption of SB 1078 in 2002. In general, California has RPS requirements of 33 percent renewable energy by 2020 (SB X1-2), 40 percent by 2024 (SB 350), 50 percent by 2026 (SB 100), 60 percent by 2030 (SB 100), and 100 percent by 2045 (SB 100). SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. The statewide RPS requirements do not directly apply to individual development projects, but to utilities and energy providers such as SCE, whose compliance with RPS requirements would contribute to the

State of California objective of transitioning to renewable energy. The land uses accommodated under the General Plan Update would comply with the current and future iterations of the Building Energy Efficiency Standards and CALGreen. Furthermore, as discussed for Impact 5.5-1, the General Plan Update includes conservation element policies 3.1, 3.3, 3.4, 3.6, and 3.9, which would support the statewide goal of transitioning the electricity grid to renewable sources. Therefore, implementation of the General Plan Update would not conflict with or obstruct implementation of California's RPS program, and no impact would occur.

City of Santa Ana Climate Action Plan

Adopted by the City of Santa Ana in December 2015, the CAP provides a comprehensive strategy for the reduction of GHG emissions to improve quality of life and promote economic prosperity throughout the City (Santa Ana 2012). To ensure an effective and efficient CAP, the City would modify measures based on their efficacy and add new measures based on future developments.

The General Plan Update includes goals and policies that increase energy efficiency and use of renewable sources of energy throughout the City. As discussed for Impact 5.5-1, these policies would involve implementing sustainable building and maintenance practices, improving transportation infrastructure and management to support alternate modes of transportation, reducing VMT, and encouraging mixed-use development. In addition, Goal 3 of the conservation element offers policies to reduce consumption of and reliance on non-renewable energy and support the development and use of renewable energy sources. Goal 3 of the public service element has policies to supply, maintain, and expand City services and infrastructure improvements through innovative funding options and sustainable practices. Of these policies, policies 1.12 of the conservation element, 1.7 of the public services element, and 2.11 of the urban design element would encourage sustainable design for building design and development and for transportation infrastructure. These goals and policies would contribute to the reduction in energy demand throughout the city. Thus, implementation of the General Plan Update would not interfere with the goals and measures of the City's CAP, and no impact would occur.

Level of Significance Before Mitigation: With the implementation of RR E-5 and policies listed above, Impact 5.5-2 would be less than significant.

5.5.5 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: 5.5-1 and 5.5-2.

5.5.6 Mitigation Measures

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

5.5.7 Level of Significance After Mitigation

Impacts would remain less than significant.

5.5.8 References

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