

4.6 ENERGY

This section describes existing energy conditions, identifies associated regulatory requirements, evaluates potential project and cumulative impacts, and identifies mitigation measures for any significant or potentially significant impacts related to implementation of the Sustainability Policy and Regulatory Update of the County of Santa Cruz (County) General Plan and Local Coastal Program (LCP) and County Code (Sustainability Update or project). The analysis is based on energy consumption modeling conducted for the proposed project (see Appendix I).

4.6.1 Environmental Setting

4.6.1.1 Electricity

According to the U.S. Energy Information Administration (EIA), California used approximately 255,224 gigawatt hours of electricity in 2018 (EIA 2020a). Electricity usage in California for different land uses varies substantially by the types of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Due to the state's energy efficiency building standards and efficiency and conservation programs, California's electricity use per capita in the residential sector is lower than any other state except Hawaii (EIA 2020b).

Pacific Gas and Electric Company (PG&E) provides electrical and natural gas service to Santa Cruz County. Incorporated in California in 1905, PG&E is one of the largest combination natural gas and electric utilities in the United States. It currently provides service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. The service area includes 106,681 circuit miles of electric distribution lines, 18,466 circuit miles of interconnected transmission lines, 42,141 miles of natural gas distribution pipelines, and 6,438 miles of transportation pipelines. PG&E and other utilities in the state are regulated by the California Public Utilities Commission (CPUC) (PG&E 2018).

The California Renewables Portfolio Standard (RPS) Program establishes a goal for California to increase the amount of electricity generated from renewable energy resources to 20% by 2010 and to 33% by 2020. Recent legislation revised the current RPS target for California to obtain 50% of total retail electricity sales from renewable sources by 2030, with interim targets of 40% by 2024, and 45% by 2027 (CPUC 2016). PG&E receives electric power from a variety of sources. According to PG&E's power content label for 2018, 39% of PG&E power came from eligible renewable energy sources in 2017, including biomass/waste, geothermal, small hydroelectric, solar, and wind sources (PG&E 2019).

Monterey Bay Community Power (MBCP) was formed in March 2017 as a joint powers authority to provide locally controlled, 100% carbon-free electricity to residents and businesses in Monterey, San Benito, and Santa Cruz counties. MBCP recently underwent a name change to Central Coast Community Energy (3CE). 3CE operates through the Community Choice Energy (CCE) model established by the State of California. The CCE model enables communities to choose clean-source power at a cost equivalent to PG&E while retaining

PG&E’s role in maintaining power lines and providing customer service. The CCE model helps ensure local economic vitality because surplus revenues that would normally flow to PG&E will stay in the community. 3CE started serving electricity to customers beginning spring 2018, with current PG&E customers automatically switched over (3CE 2021a).

PG&E customers consumed a total of 80,369 million of kilowatt hours (kWh) of electricity in 2018 (CEC 2020a). In Santa Cruz County, PG&E reported an annual electrical consumption of approximately 1,213 million kWh in 2018, with 667 million kWh for non-residential use and 546 million kWh for residential use (CEC 2020b).

4.6.1.2 Natural Gas

According to the EIA, California used approximately 2,136.907 million cubic feet of natural gas in 2018 (EIA 2020c). The majority of California’s natural gas customers are residential and small commercial customers (core customers). These customers accounted for approximately 35% of the natural gas delivered by California utilities (CPUC 2020). Large consumers, such as electric generators and industrial customers (noncore customers), accounted for approximately 65% of the natural gas delivered by California utilities (CPUC 2020). CPUC regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. California gas utilities may soon also begin receiving biogas into their pipeline systems (CPUC 2020).

PG&E customers consumed approximately 479,286 million cubic feet of natural gas in 2018 (CEC 2020c). PG&E had delivered approximately 5,200 million cubic feet to Santa Cruz County, with 2,100 million cubic feet for non-residential use and 3,100 million cubic feet for residential use (CEC 2020d).

4.16.1.3 Transportation-Related Energy Consumption

According to the EIA, California used approximately a total of 681 million barrels of petroleum in 2018, with the majority (584 million barrels) used for the transportation sector (EIA 2020d). This total annual consumption equates to a daily use of approximately 1.9 million barrels of petroleum.¹ California consumes approximately 78.6 million gallons of petroleum per day, which adds up to an annual consumption of 28.6 billion gallons of petroleum. In California, petroleum fuels refined from crude oil are the dominant source of energy for transportation sources. Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. California has implemented policies to improve vehicle efficiency and to support use of alternative transportation. As such, the California Energy Commission (CEC) anticipates an overall decrease of gasoline demand in the state over the next decade.

¹ There are 42 U.S. gallons in a barrel.

4.6.2 Regulatory Framework

4.6.2.1 Federal Regulations

Federal Energy Policy and Conservation Act

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

Energy Independence and Security Act

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

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

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

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

- EISA expanded the RFS program to include diesel in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- EISA established new categories of renewable fuel and set separate volume requirements for each one.

- EISA required the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

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

4.6.2.2 State Regulations

Warren-Alquist Act

The California legislature passed the Warren-Alquist Act in 1974. The Warren-Alquist Act created the CEC. The legislation also incorporated the following three key provisions designed to address energy demand:

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

State of California Energy Action Plan

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

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

Senate Bills 1078 (2002), 107 (2006), X1-2 (2011), 350 (2015) and 100 (2018)

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

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

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

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

Consequently, utility energy generation from non-renewable resources is expected to be reduced based on implementation of the RPS requirements described above.

Assembly Bill 32 (2006) and Senate Bill 32 (2016)

In 2006, the state legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020. In 2016, the Legislature enacted SB 32, which extended the horizon year of the state's codified GHG reduction planning targets from 2020 to 2030, requiring California to reduce its GHG emissions to 40% below 1990 levels by 2030. In accordance with AB 32 and SB 32, the California Air Resources Board (CARB) prepares scoping plans to guide the development of statewide policies and regulations for the reduction of GHG emissions. Many of the policy and regulatory concepts identified in the scoping plans focused on increasing energy efficiencies, using renewable resources, and reducing the consumption of petroleum-based fuels (such as gasoline and diesel). As such, the state's GHG emissions reduction planning framework creates co-benefits for energy-related resources.

California Building Standards

Part 6 of Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Part 6 establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 6 is updated periodically to incorporate and consider new energy efficiency technologies and methodologies. The current Title 24 standards are the 2019 Title 24 Building Energy Efficiency Standards, which became effective January 1, 2020. In general, single-family residences built to the 2019 standards are anticipated to use approximately 7% less energy (due to energy efficiency measures) than those built to the 2016

standards; if rooftop solar electricity generation is factored in, single-family residences built under the 2019 standards will use approximately 53% less energy than those under the 2016 standards (CEC 2018). Nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018).

Title 24 also includes Part 11, California’s Green Building Standards (CALGreen). CALGreen establishes minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The 2019 CALGreen standards are the current applicable standards. For residential projects, some of the key mandatory CALGreen 2019 standards involve electric vehicle (EV) charging for new construction, water conserving plumbing fixtures and fittings, water efficient landscaping, and construction waste management. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, EV charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (Cal. Code Regs. tit. 24, § 11).

State Vehicle Standards

In response to the transportation sector accounting for more than half of California’s carbon dioxide (CO₂) emissions, AB 1493 was enacted in 2002. AB 1493 required CARB to set GHG emissions standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emissions standards for motor vehicles manufactured in 2009 and all subsequent model years. The 2009 to 2012 standards resulted in a reduction in approximately 22% of GHG emissions compared to emissions from the 2002 fleet, and the 2013 to 2016 standards resulted in a reduction of approximately 30% compared to the 2002 fleet.

In 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global-warming gases with requirements for greater numbers of zero-emissions vehicles into a single package of standards called Advanced Clean Cars. By 2025, when the rules would be fully implemented, new automobiles would emit 40% fewer global-warming gases and 75% fewer smog-forming emissions (CARB 2020). However, in 2018, the EPA and National Highway Traffic Safety Administration published the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, which revoked California’s authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. California and 22 other states, as well as the District of Columbia and four cities, filed suit against the EPA. Since a petition for reconsideration of the rule is pending ongoing litigation, the effect of the SAFE Vehicles Rule on the Advanced Clean Cars program is yet to be determined.

Although the primary focus of the state’s vehicle standards is on the reduction of air pollutants and GHG emissions, the reduction in demand for petroleum-based fuels is also a benefit of these standards.

4.6.2.3 Local Regulations

Metropolitan Transportation Plan/Sustainable Communities Strategy

The Association of Monterey Bay Area Governments (AMBAG) is the Metropolitan Planning Organization (MPO) for the region, which includes Monterey, San Benito, and Santa Cruz counties. AMBAG adopted the Monterey Bay 2040 Moving Forward – 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (2040 MTP/SCS), the implementation of which is anticipated to achieve a 4%-per-capita reduction and nearly 7%-per-capita reduction in GHG emissions from passenger vehicles by 2020 and 2035, respectively (AMBAG 2018). The 2040 MTP/SCS outlines the region’s proposed transportation network, emphasizing multimodal system enhancements, system preservation, and improved access to high quality transit, as well as land use development that complements this transportation network (AMBAG 2018). These transportation strategies would reduce vehicle-miles traveled (VMT) and associated petroleum fuels.

County of Santa Cruz Climate Action Strategy

The County Board of Supervisors approved the County’s Climate Action Strategy (CAS) on February 26, 2013 (Santa Cruz County 2013). The CAS outlines the County’s course of action to reduce GHG emissions produced by governmental operations and community activities within unincorporated Santa Cruz County, and includes energy-consumption-reduction measures. The CAS identifies the following eight strategies for the reduction of GHGs from energy use, as well as several related actions for achieving the strategies:

- Develop a Community Choice Aggregation (CCA) Program, if feasible.²
- Increase energy efficiency in new and existing buildings and facilities.
- Enhance and expand the Green Business Program.
- Increase local renewable energy generation.
- Public education about climate change and the impacts of individual actions.
- Continue to improve the Green Building Program by exceeding the minimum standards of the state green building code (CALGreen).
- Form partnerships and cooperative agreements among local governments, educational institutions, non-governmental organizations, and private businesses as a cost-effective way to facilitate mitigation and adaptation.
- Reduce energy use for water supply through water conservation strategies.

See Section 4.8, Greenhouse Gas Emissions, for a more detailed description of the County’s CAS.

County of Santa Cruz General Plan/Local Coastal Program

The County of Santa Cruz General Plan/LCP is a comprehensive, long-term planning document for the unincorporated areas of the county and includes the County’s LCP, which was certified by the California Coastal Commission in 1994. The County General Plan/LCP provides policies and programs to establish guidelines for

² This was subsequently completed with the formation of MBCEP in 2017.

future growth and all types of physical developments. The existing Conservation and Open Space, Public Safety, and Parks, Recreation, and Public Facilities Elements of the County's General Plan/LCP include policies that address energy use and renewable resources. However, the proposed project includes new Agriculture, Natural Resources + Conservation (ARC) and Built Environment (BE) Elements that would replace the existing Conservation and Open Space Element and Land Use Element, respectively, with amendments to some of the existing goals, policies, and implementation strategies as described in Chapter 3 of this EIR. Energy usage is addressed in amendments to the ARC Element (agricultural practices), the BE Element (energy efficiency in built structures), and in the Parks, Recreation + Public Facilities Element (renewable energy sources). These revisions and relevant policies are further reviewed in Section 4.1.3.3 below.

4.6.3 Impacts and Mitigation Measures

4.6.3.1 Thresholds of Significance

The thresholds of significance used to evaluate the impacts of the proposed project related to energy are based on Appendix G of the CEQA Guidelines and, if applicable, other agency standards, as listed below. A significant impact would occur if the project would:

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

4.6.3.2 Analytical Methods

Potential Growth Assumptions

The proposed project would not directly result in new development but could indirectly lead to future development and redevelopment throughout the county, primarily within urban areas within the County's urban services line, which could result in impacts related to energy consumption. The proposed project does not include amendments to the SCCC that affect energy demand or consumption. The County Design Guidelines component of the proposed project does not include guidelines related to energy consumption.

As described in the Section 4.0, Introduction to Analyses, this EIR estimates of the potential to accommodate approximately 4,500 housing units throughout the county over existing conditions as shown on Table 4.0-2, with approximately 75% projected to occur within urban areas. This EIR estimates the potential to accommodate approximately 6,210,000 square feet of non-residential uses as shown on Table 4.0-3, with approximately 60% expected to occur within urban areas. These forecasts provide an estimate of potential growth that could occur as a result of adoption and implementation of the proposed Sustainability Update for the purpose of evaluation in this EIR. This estimate of growth may or may not occur, and this estimate does not establish a limit to development. Annual limits for residential units are

set annually by the County pursuant to Measure J and SCCC provisions as explained in Section 4.13 of this EIR, Population and Housing. Additionally, some of this projected development and growth would occur under the existing General Plan/LCP without the proposed project.

Energy Demand Methodology

This analysis used the California Emissions Estimator Model (CalEEMod) Version 2020.4.0, which is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions associated with the construction and operational activities (including energy usage) from a variety of land use projects, such as residential, commercial, and industrial facilities. For the proposed project, no specific development projects are proposed, and no project-site specific development applications have been submitted to the County. Construction energy demand cannot be determined in the absence of specific development projects with identified construction schedules, equipment, and vehicles. As such, this energy assessment is based on long-term operations. A brief overview of the methodology applied to assess the proposed project’s potential operational energy impacts is provided below:

- **Electricity:** The current Title 24, Part 6 standards, referred to as the 2019 Title 24 Building Energy Efficiency Standards, became effective on January 1, 2020. The current version of CalEEMod assumes compliance with the 2019 Title 24 Building Energy Efficiency Standards, which were conservatively applied to both the Project (2040) and Existing (2019) land use scenarios. Electricity required to supply, treat, distribute water and for wastewater treatment was also estimated using CalEEMod.
- **Natural Gas:** Project (2040) and Existing (2019) scenario land use natural gas usage data were determined using CalEEMod based on the 2019 Title 24 Building Energy Efficiency Standards.
- **Petroleum:** Potential impacts were assessed through projected traffic trip generation and VMT for the Project (2040) and Existing (2019) scenarios, as provided by the CalEEMod outputs (Appendix I) and traffic data for the project (Appendix G-3). Fuel consumption from vehicle trips was estimated by converting the total CO₂ emissions anticipated to be generated during each to gallons using conversion factors for CO₂ to gallons of gasoline or diesel. (The conversion factor for gasoline is 8.78 kilograms per metric ton CO₂ per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO₂ per gallon (The Climate Registry 2021).) The default fleet mix from CalEEMod was assumed, and data from CARB’s Emissions FACTor 2017 (EMFAC2017) model³ for the county was used to determine the proportion of gasoline and diesel-powered vehicles to estimate total petroleum consumption.

EIR Notice of Preparation Comments

Public and agency comments were received during the public scoping period in response to the Notice of Preparation (NOP), which is included in Appendix A. A summary of the comments received during the

³ EMFAC is a database of emission factors and other information, such as vehicle population by fuel type, for on-road vehicles.

scoping period for this environmental impact report (EIR), as well as written comments received, are included in Appendix B. Comments related to energy included the following:

- Questions about whether new construction would be required to include solar power and achieve zero carbon emissions.
- Questions about what new standards or incentives could be incorporated into building requirements to ensure that new developments use solar panels and exceed energy efficiency and GHG reduction standards.
- Residential and commercial uses could improve their energy efficiency.
- The EIR should analyze incorporating small power-generating micro-grid projects and identify key areas for this.
- The EIR should analyze restricting building height to no more than three stories for solar benefit.
- Even though Monterey Bay Community Power claims 100% green power, energy demand and use should be addressed in the EIR.

4.3.3.3 Project Impact Analysis

Impact ENE-1: Wasteful, Inefficient, or Unnecessary Energy Consumption (Significance Threshold ENE-1). Adoption and implementation of the proposed Sustainability Update would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. *(Less than Significant)*.

Electricity

Project (2040) and Existing (2019) scenario land uses would require electricity for multiple purposes including, but not limited to, building heating and cooling, lighting, appliances, and electronics. Additionally, the supply, conveyance, treatment, and distribution of water used by the land uses would indirectly result in electricity usage (see Appendix I for calculations). Table 4.6-1 presents the net increase in electricity demand for the project.

According to these estimations, land uses under the Project (2040) scenario would consume approximately 868,276,380 kWh per year. The electricity consumption of land uses under the Existing (2019) scenario was estimated to be approximately 758,610,167 kWh per year. As such, the net increase in electricity consumption for the proposed project would be 109,666,214 kWh per year.⁴

⁴ Notably, the use of CalEEMod to estimate energy is conservative, since it is based on land use inputs and statewide usage factors for residential and non-residential development rather than actual usage data for the county. For example, the AMBAG County of Santa Cruz 2019 Community-Wide Greenhouse Gas Inventory Report (AMBAG 2021) estimated an actual non-governmental community-wide electricity demand in the county of 483,791,954 kWh per year for 2019, as compared to the 758,610,167 kWh per year estimated with CalEEMod existing conditions. However, CalEEMod was used in order to provide an “apples-to-apples” comparison for the Existing (2019) and Project (2040) scenarios.

Table 4.6-1. Annual Electricity Demand

Scenario	kWh/Year
Project (2040)	
Buildings	791,495,300.00
Water/Wastewater	76,781,080.36
Total Project Demand	868,276,380.36
Existing (2019)	
Buildings	692,216,740.00
Water/Wastewater	66,393,426.55
Total Existing Use Demand	758,610,166.55
Net Increase in Electricity Demand (Project minus Existing)	109,666,213.82

Source: Appendix I.

Note: kWh = kilowatt-hour.

However, future growth would occur under the existing General Plan/LCP without the proposed project, and, therefore, a portion of the net increase of electricity use would be attributable to the anticipated land use development under the existing General Plan/LCP. Thus, a comparison of electricity consumption under the proposed project versus that under the existing General Plan/LCP would result in a reduced net increase in energy as compared to Table 4.6-1. In addition, the electricity demand calculation for the Project (2040) and Existing (2019) scenarios assumes compliance with the Title 24 standards for 2019. Of note, application of the 2019 Title 24 standards to the Project (2040) land uses would be conservative since future land uses will be required to comply with the then-current (i.e., higher efficiency) standards. In addition, assuming the 2019 Title 24 standards for the Existing (2019) land uses is also conservative, since many of the uses were constructed according to previous (i.e., less efficient) standards. As such, the proposed project's net increase in electricity consumption would be lower than what is shown in Table 4.6-1.

In summary, although electricity consumption in the county would increase in the Project (2040) scenario, land uses to be developed would be required to comply with the efficiency standards of the California Building Code (Title 24 Part 6 and Part 11), and the additional electricity demand for the proposed project would not be unusual or wasteful as compared to overall local and regional demand for energy resources. In addition, the proposed project includes a number of amended policies in the County's General Plan/LCP that seek to improve energy efficiency and encourage alternative energy, as summarized on Table 4.6-2, which would also serve to reduce/minimize energy consumption. For these reasons, electricity consumption of the proposed project would not be considered inefficient or wasteful, and impacts would be less than significant.

Table 4.6-2. Proposed and Retained Policies that Avoid/Minimize Energy Impacts

Potential Impact	Policies
<p>Wasteful, inefficient, or unnecessary consumption of energy resources</p>	<ul style="list-style-type: none"> • Encourage energy-efficient and resource protection agricultural practices such as organic farming, integrated pest management, biodynamic cultivation, and utilization of agricultural wastes and crop residues for fertilizer and on-site energy production, (ARC-1.5) • Encourage building and site designs that conserve energy (Objective BE-4.2) • Encourage development that is aligned with the County CAS. (BE-4.2.1) • Enable passive solar heating and lighting through building location, orientation and massing. Achieve r energy conservation with energy-efficient building envelopes, lighting, heating, cooling, and ventilation systems, and renewable energy design components. (BE-4.2.7) • Provide infrastructure to support and incentivize zero and low emissions vehicles (plug in and hybrid plug-in vehicles). (AM-10.1.4) • Encourage energy-efficient and resource protective agricultural practices. (ARC-1.5.1) • Encourage use of alternative energy sources to maximize energy efficiency. (ARC-2.1.5) • Encourage open ventilation in greenhouses and fans that maximize energy efficiency. (ARC-2.1.6) • Promote the reclamation and reuse of energy. (PPF-4.3.1) • Encourage industrial developments to spearate toxins from waste wateer in order to facilitate sewage conversion for energy. (PPF-4.3.4) • Consider the development of municipal solar utilities to increase access to renewable energy sources. (PPF-4.6.8) • Support increased energy efficiency in new and existing buildings and public facilities. (PPF-4.6.9)

Natural Gas

Natural gas consumption during operation of land uses under the Project (2040) and Existing (2019) scenarios would be required for various purposes, including building heating and cooling. CalEEMod was used to estimate natural gas demand for both scenarios (see Appendix I for calculations). Table 4.6-3 presents the net increase in natural gas demand for the proposed project.

According to these estimations, natural gas demand under the Project (2040) scenario would consume approximately 2,058,293,500 kBtu per year. Under the Existing (2019) scenario, it is estimated that 1,787,878,700 kBtu per year is used by the existing uses. As such, the net increase in natural gas consumption for the proposed project would be 270,414,800 kBtu per year.⁵ However, future growth would

⁵ As with electricity, the use of CalEEMod to estimate natural gas is conservative, since it is based on land use inputs and statewide usage factors for residential and non-residential development, rather than actual usage data for the County. However, CalEEMod was used in order to provide an “apples-to-apples” comparison for the Existing (2019) and Project (2040) scenarios.

occur under the existing General Plan/LCP without the proposed project, and, therefore, a portion of the net increase of natural gas use would be attributable to the anticipated land use development under the existing General Plan/LCP. Thus, a comparison of natural gas demand under the proposed project versus that under the existing General Plan/LCP would result in a reduced net increase in energy as compared to Table 4.6-3.

Table 4.6-3. Annual Operational Natural Gas Demand

Scenario	kBtu/Year
Project (2040) Buildings	2,058,293,500.00
Existing (2019) Buildings	1,787,878,700.00
Net Increase in Natural Gas Demand (Project minus Existing)	270,414,800.00

Source: Appendix I.

Note: kBtu = thousand British thermal units.

According to these estimations, natural gas demand under the Project (2040) scenario would consume approximately 2,058,293,500 kBtu per year. Under the Existing (2019) scenario, it is estimated that 1,787,878,700 kBtu per year is used by the existing uses. As such, the net increase in natural gas consumption for the proposed project would be 270,414,800 kBtu per year.⁶ However, future growth would occur under the existing General Plan/LCP without the proposed project, and, therefore, a portion of the net increase of natural gas use would be attributable to the anticipated land use development under the existing General Plan/LCP. Thus, a comparison of natural gas demand under the proposed project versus that under the existing General Plan/LCP would result in a reduced net increase in energy as compared to Table 4.6-3.

As described above, application of the 2019 Title 24 standards to the Project (2040) land uses would be conservative since future land uses will be required to comply with the then-current (i.e., higher efficiency) standards. In addition, assuming the 2019 Title 24 standards for the Existing (2019) land uses is also conservative, since many of the uses were constructed according to previous (i.e., less efficient) standards. As such, the proposed project’s net increase in natural gas consumption would be lower than what is shown in Table 4.6-3.

In summary, although natural gas consumption in the county would increase from buildout of the Project (2040) scenario, land uses to be developed would be required to comply with the efficiency standards of the California Building Code (Title 24 Part 6 and Part 11), and the additional demand for the proposed project would not be unusual or wasteful as compared to overall local and regional demand for energy resources. For these reasons, the natural gas consumption of the proposed project would not be considered inefficient or wasteful, and impacts would be less than significant.

⁶ As with electricity, the use of CalEEMod to estimate natural gas is conservative, since it is based on land use inputs and statewide usage factors for residential and non-residential development, rather than actual usage data for the county. However, CalEEMod was used in order to provide an “apples-to-apples” comparison for the Existing (2019) and Project (2040) scenarios.

Petroleum

Petroleum fuel consumption associated with motor vehicles traveling to and from land uses in the county under the Project (2040) and Existing (2019) scenarios is a function of the VMT and vehicle fuel efficiency. The daily VMT attributable to the Project (2040) is estimated to be 5,660,807 VMT, and daily VMT attributable to the Existing (2019) uses is estimated to be 5,074,497 VMT (Kimley-Horn, personal communication, September 2021). The fuel estimates for the Project (2040) and Existing (2019) uses were back calculated based on the total CO₂ emissions from CalEEMod and are provided in Table 4.6-4.

As depicted in Table 4.6-4, the land uses under the Project (2040) scenario would consume approximately 50,959,910 gallons of petroleum per year during operation and the Existing (2019) scenario is estimated to consume approximately 76,147,492 gallons of petroleum per year.⁷ As such, the proposed project would lead to an annual net reduction of 25,187,582 gallons of petroleum consumption.

Table 4.6-4. Annual Operational Petroleum Demand

Scenario	Vehicle MT CO ₂	Kg CO ₂ /Gallon	Gallons
Project (2040)			
Gasoline	432,248.15	8.78	49,230,996.63
Diesel	17,652.21	10.21	1,728,913.47
Total Project Petroleum Use			50,959,910.10
Existing (2019)			
Gasoline	637,136.79	8.78	72,566,832.71
Diesel	36,558.53	10.21	3,580,659.20
Total Existing Petroleum Use			76,147,491.91
Net Change in Petroleum Demand (Project minus Existing)			(25,187,581.81)

Sources: Trips and vehicle CO₂ (Appendix I; kg CO₂/Gallon (The Climate Registry 2020).

Notes: MT = metric ton; CO₂ = carbon dioxide; kg = kilogram.

(Parentheses) indicate a negative number (i.e., reduction).

As indicated in Table 4.6-4, operation of the proposed project is expected to use decreasing amounts of petroleum over time, primarily due to advances in fuel economy and the increasing use of EVs. As discussed under Section 4.6.2, there are numerous regulations in place that require and encourage increased fuel efficiency. For example, CARB has adopted an approach to passenger vehicles that combines the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrids and zero-emissions vehicles in California (CARB 2011). Also, use of transit and non-vehicular modes of transportation is anticipated to increase over time, as local and regional plans and policies facilitating increased use and development of transit and non-vehicular transportation modes are implemented. Finally, development accommodated by the proposed project is the type of compact land use development that is encouraged

⁷ The back calculation to estimate petroleum based on the total CO₂ from CalEEMod is conservative, since it is based on land use inputs and statewide usage factors for residential and non-residential development, rather than actual usage data for the county. However, CalEEMod was used in order to provide an “apples-to-apples” comparison for the Existing (2019) and Project (2040) scenarios.

by AMBAG to reduce VMT, and the project also includes the expansion of multi-modal transportation options in order to achieve the energy use and GHG reductions from the land use and transportation sectors.

Given these considerations, the petroleum consumption associated with the proposed project would not be considered inefficient or wasteful, and impacts would be *less than significant*.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Impact ENE-2: Conflict with Energy Plans (Significance Threshold ENE-2). Adoption and implementation of the proposed Sustainability Update would not result in conflicts with or obstruct a state or local plan for renewable energy or energy efficiency. (*Less than Significant*).

Land uses to be developed under the Project (2040) scenario would be subject to and would comply with, at a minimum, the California Building Energy Efficiency Standards (24 CCR, Part 6). Part 6 of Title 24 establishes energy efficiency standards for residential and non-residential buildings constructed in California in order to reduce energy demand and consumption. Part 6 is updated periodically to incorporate and consider new energy efficiency technologies and methodologies. As such, land uses under the proposed project would comply with the then-current California code requirements for energy efficiency at the time of development.

Part 11 of Title 24 sets forth voluntary and mandatory energy measures that are applicable to the proposed project under CALGreen. CALGreen institutes mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential, high-rise residential, state-owned buildings, schools, and hospitals, as well as certain residential and non-residential additions and alterations.

Furthermore, as explained in Section 4.6.1, 3CE started providing clean energy to the county as of 2018. 3CE is on a pathway to 60% clean and renewable energy by 2025 and 100% clean and renewable energy by 2030 (3CE 2021b). Although residents and commercial tenants are automatically enrolled into the default tier of 3CE, recognizing the diverse needs of the community, customers can either stay with the default tier, opt out of using 3CE altogether, or opt up to 100% clean and renewable energy. Overall, however, the county's procurement of energy through 3CE and the projected 100% clean and renewable energy sourcing by 2030 will give customers the option of purchasing this clean energy 15 years ahead of California's SB 100 requirement of zero carbon energy by 2045.

Lastly, the County adopted its CAS in 2013, which sets forth strategies and actions the County can take in order to reduce GHG emissions. The County has implemented a variety of strategies from the plan to achieve GHG reductions, efforts which will continue in the future. The proposed project will not conflict with the County's ability to implement the CAS.

Because the land uses to be developed under the proposed project would comply with all applicable energy standards and regulations and policies within the proposed General Plan/LCP amendments also focus on compact growth, efficient energy use, and renewable energy, the project would result in a *less-than-significant impact* associated with the potential to conflict or obstruct a state or local plan for renewable energy or energy efficiency.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

4.6.3.4 Cumulative Impact Analysis

The proposed project, in combination with past, present, and reasonably foreseeable future development, would not result in a significant cumulative impact related to energy. The geographic area considered for the analysis of cumulative energy impacts is Santa Cruz County. Potential cumulative impacts on energy would result if the proposed project, in combination with past, present, and future projects, would result in the wasteful or inefficient use of energy. Significant energy impacts could result from development that would not incorporate sufficient building energy efficiency features, achieve building energy efficiency standards, or if projects result in the unnecessary use of energy during construction or operation.

As discussed in Impact ENE-1 and Impact ENE-2, the proposed project would not result in wasteful, inefficient, or unnecessary use of energy, nor would it conflict with an applicable plan. The cumulative projects listed in Table 4.0-1 consist of residential, commercial, mixed-use, and transportation projects in the county. While some of these projects could result in increases in energy consumption during their operation, the increased demand is also anticipated to be minimal relative to statewide energy usage and would not contribute to any potentially significant cumulative energy impacts. It is also noted that any commercial and residential cumulative projects that may take place in the county that include long-term energy demand would be subject to CALGreen, which provides energy efficiency standards. In addition, cumulative projects would be required to meet or exceed the Title 24 building standards, as applicable, further reducing the inefficient use of energy. Future development would also be required to meet even more stringent requirements, including the objectives set forth in the December 2017 CARB Scoping Plan and Part 6 of Title 24 of the California Code of Regulations, which seek to make all newly constructed residential homes produce a sustainable amount of renewable energy through the use of on-site photovoltaic solar systems. Furthermore, various federal and state regulations, including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and Low Emission Vehicle Program, would serve to reduce the transportation fuel demand of cumulative projects.

For the reasons above, the proposed project, together with the cumulative projects, would not result in wasteful, inefficient, or unnecessary use of energy or conflicts with applicable plans, and would not result in a significant cumulative impact related to energy.

4.6.4 References

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