3.6 ENERGY

This section was prepared pursuant to CEQA Guidelines Section 15126 and Appendix G of the CEQA Guidelines, which require that EIRs include a discussion of the potential energy impacts of projects, with emphasis on considering whether implementation of the 2021 LRDP would result in inefficient, wasteful, and unnecessary consumption of energy. The section discusses the energy impacts from the implementation of the 2021 LRDP. Detailed calculations and results can be found in Appendix F of this EIR.

Energy related to land development is primarily associated with direct energy consumption for space heating and cooling, and indirect energy consumed in generation of electricity at power plants. Transportation energy use is related to the efficiency of cars, trucks, and public transportation; choice of travel modes (e.g., automobile, carpool, vanpool, and transit); and miles traveled by these modes. Energy is also consumed during construction and routine operation and maintenance of land uses.

Comments received on the NOP (see Appendix B) expressed interest in the 2021 LRDP's consideration of energy efficiency, renewable energy use, and compliance with the City of Santa Cruz's (City) Electrification Ordinance for all new construction. As a state entity, UC Santa Cruz follows energy efficiency guidelines presented in the University of California (UC) Sustainable Practices Policy, which is considered consistent with the local ordinance. The UC's and UC Santa Cruz's energy efficiency policies are discussed in more detail below.

3.6.1 Regulatory Setting

FEDERAL

Energy Policy and Conservation Act, and CAFE Standards

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Pursuant to this Act, the National Highway Traffic and Safety Administration, part of the U.S. Department of Transportation (DOT), is responsible for revising existing fuel economy standards and establishing new vehicle economy standards.

In October 2012, the U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHSTA), on behalf of the Department of Transportation, issued final rules to further reduce greenhouse gas (GHG) emissions and improve corporate average fuel economy (CAFE) standards for light-duty vehicles for model years 2017 and beyond (77 FR 62624). NHTSA's CAFE standards have been enacted under the Energy Policy and Conservation Act since 1978. This national program requires automobile manufacturers to build a single light-duty national fleet that meets all requirements under both federal programs and the standards of California and other states. This program would increase fuel economy to the equivalent of 54.5 miles per gallon (mpg) limiting vehicle emissions to 163 grams of carbon dioxide (CO_2) per mile for the fleet of cars and light-duty trucks by model year 2025 (77 FR 62630).

Safer Affordable Fuel-Efficient Vehicles Rule

On August 2, 2018, NHTSA and EPA proposed the Safer Affordable Fuel-Efficient Vehicle Rule (SAFE Rule). This rule addresses emissions and fuel economy standards for motor vehicles and is separated in two parts. Part One addresses emission standards, while Part Two addresses CAFE standards for passenger cars and light trucks for model years 2021 to 2026. This rulemaking proposes new CAFE standards for model years 2022 through 2026 and would amend existing CAFE standards for model year 2021. The proposal would retain the model year 2020 standards (specifically, the footprint target curves for passenger cars and light trucks) through model year 2026, but comment is sought on a range of alternatives discussed throughout the proposed rule. The final SAFE Rule Part Two was released on March 31, 2020. The outcome of any pending or potential lawsuits (and how such lawsuits could delay or affect its implementation) are unknown at this time.

Energy Policy Act of 1992 and 2005

The Energy Policy Act of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. The act includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. The act requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are also included in the act. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 is designed to improve vehicle fuel economy and help reduce U.S. dependence on oil. It represents a major step forward in expanding the production of renewable fuels, reducing dependence on oil, and confronting global climate change. The act increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly fivefold increase over current levels; and reduces U.S. demand for oil by setting a national fuel economy standard of 35 mpg by 2020—an increase in fuel economy standards of 40 percent.

By addressing renewable fuels and the CAFE standards, the Energy Independence and Security Act of 2007 builds upon progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century.

STATE

Warren-Alquist Act

The 1974 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The creation of the act occurred as a response to the state legislature's review of studies projecting an increase in statewide energy demand, which would potentially encourage the development of power plants in environmentally sensitive areas. The act introduced State policy for siting power plants to reduce potential environmental impacts, and additionally sought to reduce demand for these facilities by directing CEC to develop statewide energy conservation measures to reduce wasteful, inefficient, and unnecessary uses of energy. Conservation measures recommended establishing design standards for energy conservation in buildings that ultimately resulted in the creation of the Title 24 Building Energy Efficiency Standards (California Energy Code), which have been updated regularly and remain in effect today. The act additionally directed CEC to cooperate with the Office of Planning and Research (OPR), the California Natural Resources Agency (CNRA), and other interested parties in ensuring that a discussion of wasteful, inefficient, and unnecessary consumption of energy is included in all environmental impact reports required on local projects.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to Assembly Bill (AB) 2076 (Chapter 936, Statutes of 2000), CEC and the California Air Resources Board (CARB) prepared and adopted a joint agency report in 2003, *Reducing California's Petroleum Dependence*. This report includes recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita vehicle miles traveled (VMT) (CEC and CARB 2003). Further, in response to CEC's 2003 and 2005 *Integrated Energy Policy Reports* (IEPR), the Governor directed CEC to develop a long-term plan to increase alternative fuel use. A performance-based goal of AB 2076 was to reduce the State's petroleum demand to 15 percent below 2003 demand by 2030.

Integrated Energy Policy Report

Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) required CEC to: "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety" (Public Resources Code Section 25301(a)). This work culminated in the IEPR. CEC adopts an IEPR every two years and an update every other year. The 2019 IEPR is the most recent IEPR, which was adopted January 21, 2020. The 2019 IEPR provides a summary of priority energy issues currently facing the State, outlining strategies and recommendations to further the State's goal of ensuring reliable, affordable, and environmentally responsible energy sources.

Renewables Portfolio Standard

The State passed legislation referred to as the Renewables Portfolio Standard (RPS) that requires increasing use of renewable energy to produce electricity for consumers. California utilities are required to generate 33 percent of their electricity from renewables by 2020 (SB X1-2 of 2011); 52 percent by 2027 (SB 100 of 2018); 60 percent by 2030 (also SB 100 of 2018); and 100 percent by 2045 (also SB 100 of 2018). More detail about these regulations is provided in Section 3.8, "Greenhouse Gas Emissions."

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030. It also establishes energy efficiency targets that achieve statewide, cumulative doubling of the energy efficiency savings in electricity and natural gas end uses by the end of 2030.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required CEC to prepare a State plan to increase the use of alternative fuels in California. CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other State, federal, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes the costs to California and maximizes the economic benefits of in-state production. The plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuel use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation to public health and environmental quality.

Executive Order S-06-06

Executive Order S-06-06, signed on April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs State agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The Executive Order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 75 percent of its biofuels within California by 2050. The Executive Order also calls for the State to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies those barriers and recommends actions to address them so that the State can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 plan and provides a more detailed action plan to achieve the following goals:

- increase environmentally- and economically-sustainable energy production from organic waste;
- encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications;
- create jobs and stimulate economic development, especially in rural regions of the state; and
- reduce fire danger, improve air and water quality, and reduce waste.

As of 2018, 2.4 percent of the total electricity system power in California was derived from biomass (CEC 2019a).

California Energy Efficiency Action Plan

The 2019 California Energy Efficiency Action Plan has three primary goals for the State: double energy efficiency savings by 2030 relative to a 2015 base year (per SB 350), expand energy efficiency in low-income and disadvantaged communities, and reduce GHG emissions from buildings. This plan provides guiding principles and recommendations on how the State would achieve those goals. These recommendations include:

- identifying funding sources that support energy efficiency programs,
- identifying opportunities to improve energy efficiency through data analysis,
- using program designs as a way to encourage increased energy efficiency on the consumer end,
- improving energy efficiency through workforce education and training, and
- supporting rulemaking and programs that incorporate energy demand flexibility and building decarbonization (CEC 2019b).

California Building Energy Efficiency Standards (Title 24, Part 6)

The energy consumption of new residential and nonresidential buildings in California is regulated by the State's Title 24, Part 6, Building Energy Efficiency Standards (California Energy Code). The California Energy Code was established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and non-residential buildings. CEC updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions.

The 2019 California Energy Code was adopted by CEC on May 9, 2018 and applies to projects constructed after January 1, 2020. The 2019 California Energy Code is designed to move the State closer to its zero-net energy goals for new residential development. It does so by requiring all new residences to install enough renewable energy to offset all the electricity needs of each residential unit (CCR, Title 24, Part 6, Section 150.1(c)4). CEC estimates that the combination of mandatory on-site renewable energy and prescriptively required energy efficiency standards will result in a 53 percent reduction in energy consumption in new residential construction as compared to the 2016 California Energy Code. Non-residential buildings are anticipated to reduce energy consumption by 30 percent as compared to the 2016 California Energy Code primarily through prescriptive requirements for high-efficiency lighting (CEC 2018). The California Energy Code is enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in the California Energy Code.

Assembly Bill 32, Senate Bill 32, and Climate Change Scoping Plan and Update

In December 2008, CARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons (MMT) of carbon dioxide equivalent (CO_2e) emissions, or approximately 21.7 percent from the state's projected 2020 emission level of 545 $MMTCO_2e$ under a business-as-usual scenario (this is a reduction of 47 $MMTCO_2e$, or almost 10 percent, from 2008 emissions). In May 2014, CARB released and has since adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate progress that has been made between 2000 and 2012 (CARB 2014). According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 (CARB 2014). The update also reports the trends in GHG emissions from various emission sectors (e.g., transportation, building energy, agriculture).

In August 2016, SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020, were signed into law. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction to at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by Executive Order B-30-15 for 2030, which set the next interim step in the State's continued efforts to pursue the long-term target expressed in Executive Orders S-3-05 and B-30-15 of 80 percent below 1990 emission levels by 2050. Achievement of these goals will have the co-benefit

of reducing California's dependence on fossil fuels and making land use development and transportation systems more energy efficient.

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan), prepared by CARB, outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and "substantially advance toward our 2050 climate goals" (CARB 2017:1, 3, 5, 20, 25–26). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste). The State is on target to meet the SB X1-2 33-percent renewable energy target by 2020 and will continue to increase statewide renewable electricity to 60 percent by 2030 and to 100-percent carbon-free electricity by 2045, pursuant to SB 100 of 2018. Additionally, the State will further its climate goals through improving the energy efficiency of residential and nonresidential buildings by continual updates (i.e., every 3 years) to the California Energy Code, which contains mandatory and prescriptive energy efficiency standards for all new construction.

More details about the statewide GHG reduction goals and 2017 Scoping Plan measures are provided in the regulatory setting in Section 3.8, "Greenhouse Gas Emissions," of this Draft EIR.

Senate Bill 375 of 2008

SB 375, signed into law in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. It requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy or Alternative Planning Strategy, showing prescribed land use allocation in each MPO's Regional Transportation Plan. CARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks for 2020 and 2035. Implementation of SB 375 will have the co-benefit of reducing California's dependence on fossil fuels and making land use development and transportation systems more energy efficient.

Executive Order B-18-12: Green Building Action Plan

In April 2012, Executive Order B-18-12 was issued, which requires State agencies to implement green building practices to improve energy, water, and materials efficiency; improve air quality and working conditions for State employees; reduce costs to the State; and reduce environmental impacts from State operations. Among other actions, Executive Order B-18-12 requires State agencies to reduce agency-wide water use by 10 percent by 2015 and 20 percent by 2020, as measured against a 2010 baseline. The Executive Order directs new State buildings designed after 2025 to be constructed as Zero Net Energy (ZNE) facilities, with an interim target of 50 percent of new facilities beginning design after 2020 to be ZNE. The Executive Order also calls for State agencies to identify and pursue opportunities to provide electric vehicle charging stations at employee parking facilities in new buildings.

Senate Bill 743 of 2013

SB 743 of 2013 required that the Governor's OPR propose changes to the State CEQA Guidelines to address transportation impacts in transit priority areas and other areas of the state. In response, Section 15064.3, which requires that transportation impacts no longer consider congestion but instead focus on the impacts of VMT, was added to the State CEQA Guidelines in December 2018. In support of these changes, OPR published its *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which recommends that the transportation impact of a project be based on whether the project would generate a level of VMT per capita (or VMT per employee or some other metric) that is 15 percent lower than that of existing development in the region (OPR 2017:12–13) or that a different threshold based on substantial evidence be used. OPR's technical advisory explains that this criterion is consistent with Public Resources Code (PRC) Section 21099, which states that the criteria for determining significance must "promote the reduction in greenhouse gas emissions" (OPR 2017:18). More detail about SB 743 is provided in the regulatory setting of Section 3.16, "Transportation, Circulation, and Parking."

Executive Order B-48-18: Zero-Emission Vehicles

On January 26, 2018, Governor Brown signed Executive Order B-48-18 requiring all State entities to work with the private sector to have at least 5 million zero-emission vehicles (ZEVs) on the road by 2030, as well as install 200

hydrogen fueling stations and 250,000 electric vehicle (EV) charging stations by 2025. It specifies that 10,000 of the EV charging stations should be direct current fast chargers. This order also requires all State entities to continue to partner with local and regional governments to streamline the installation of ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a *Plug-in Charging Station Design Guidebook* and update the *2015 Hydrogen Station Permitting Guidebook* (Eckerle and Jones 2015) to aid in these efforts. All State entities are required to participate in updating the *2016 Zero-Emissions Vehicle Action Plan*, along with the *2018 ZEV Action Plan Priorities Update*, which includes and extends the 2016 ZEV Action Plan (Governor's Interagency Working Group on Zero-Emission Vehicles 2016, 2018), to help expand private investment in ZEV infrastructure with a focus on serving low-income and disadvantaged communities.

Executive Order N-79-20

Governor Gavin Newsom signed Executive Order N-79-20 in September 2020, which sets a statewide goal that 100 percent of all new passenger car and truck sales in the state will be zero-emissions by 2035. It also sets a goal that 100 percent of statewide new sales of medium- and heavy-duty vehicles will be zero emissions by 2045, where feasible, and for all new sales of drayage trucks to be zero emissions by 2035. Additionally, the Executive Order targets 100 percent of new off-road vehicle sales in the state to be zero emission by 2035. CARB is responsible for implementing the new vehicle sales regulation.

UNIVERSITY OF CALIFORNIA

UC Santa Cruz Climate and Energy Strategy

UC Santa Cruz's 2017 Climate and Energy Strategy (CES) serves as the campus's climate action plan and addresses how the campus would achieve its two climate and energy goals: achieving carbon neutrality by 2025 from Scope 1 and Scope 2 sources and mitigating the impacts of the Cap and Trade Regulation (UCSC 2017). The strategies to meet these goals include the following:

- Double the pace of implementation of energy efficiency projects that qualify for funding through the Higher Education Energy Efficiency Partnership (Strategic Energy Partnership) program.
- Install up to 4.4 megawatts (MW) solar photovoltaic panels (3.3 MW of which would be installed on main residential campus, with an additional 1.1 MW at Westside Research Park and the Long Marine Lab at the Coastal Science Campus) through execution of a Power Purchase Agreement.
- Establish energy use intensity (EUI) targets for new capital projects that achieve the UC Sustainable Practices Policy "stretch targets" at a minimum, and strive to achieve a 60 percent reduction in EUI below 1999 benchmarks (by building type) in conjunction with achieving Net Zero Site Source targets for major capital projects.

University of California Sustainable Practices Policy

At the direction of The Regents of the University of California, UCOP developed a Sustainable Practices Policy which establishes sustainability goals to be achieved by all campuses, medical centers, and the Lawrence Berkeley National Laboratory within the UC system. The policy is regularly updated, with the most recent update occurring in July 2020. The policy goals encompass nine areas of sustainable practices: green building, clean energy, transportation, climate protection, sustainable operations, waste reduction and recycling, environmentally preferable purchasing, sustainable foodservice, sustainable water systems (UCOP 2020). The policy includes the following provisions relevant to the reduction of GHG emissions:

A. Green Building Design

New Buildings

1. All new building projects, other than acute care facilities, shall be designed, constructed, and commissioned to outperform the California Energy Code energy-efficiency standards by at least 20 percent or meet the whole-building energy performance targets listed in Table 1 of Section V.A.3 in the SPP (summarized in Table 3.6-1, below).

Table 3.6-1 UC Whole Building Energy Performance Targets (Excerpt of Table 1 of Section V.A.3, UCOP SPP)

Years Budget Approved	Compliance Target	Stretch Target
2019-2020	55%	40%
2021-2022	50%	35%
2023-2024	45%	30%
2025 or after	40%	25%

These targets are set relative to benchmarks published in *UC Building 1999 Energy Benchmarks by Campus* (e.g., 40% compliance target means a 60% reduction from the 1999 energy benchmarks) (Sahai et al. 2014)

Source: UCOP 2020

The whole-building energy performance targets are expressed as a percentage of the sum of the Annual Electricity and Annual Thermal targets (converted to thousand British Thermal Units per gross square feet per year [kBTU/gsf-yr]) presented in Table 1 of *UC Building 1999 Energy Benchmarks by Campus* (Sahai et al. 2014). While "compliance targets" reflect the required increase in efficiency, "stretch targets" are much more ambitious goals and may require a fundamental change in approach to achieve.

The UC will strive to design, construct, and commission buildings that outperform California Energy Code energy efficiency standards by 30 percent or more, or meet the stretch whole-building energy performance targets listed in Table 3.6-1, whenever possible, within the constraints of program needs and standard budget parameters.

2. No new building or major renovation that is approved after June 30, 2019 shall use onsite fossil fuel combustion (e.g., natural gas) for space and water heating (except those projects connected to an existing campus central thermal infrastructure). Projects unable to meet this requirement shall document the rationale for this decision as described in Section V.A.4.
3. All new buildings will achieve a U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) "Silver" certification at a minimum. All new buildings will strive to achieve certification at a USGBC LEED "Gold" rating or higher, whenever possible within the constraints of program needs and standard budget parameters.
4. The University of California will design, construct, and commission new laboratory buildings to achieve a minimum of LEED "Silver" certification as well as meeting at least the prerequisites of the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria (EPC)7. Laboratory spaces in new buildings also shall meet at least the prerequisites of Labs21 EPC. Design, construction, and commissioning processes shall strive to optimize the energy efficiency of systems not addressed by the California Energy Code energy efficiency standards.
5. All new building projects will achieve at least two points within the available credits in LEED-BD+C's Water Efficiency category.

B. Clean Energy

1. Energy Efficiency: Each location will implement energy efficiency actions in buildings and infrastructure systems to reduce the location's energy use intensity by an average of least 2 percent annually.
2. On-campus Renewable Electricity: Campuses and health locations will install additional on-site renewable electricity supplies and energy storage systems whenever cost-effective and/or supportive of the location's Climate Action Plan or other goals.
3. Off-campus Clean Electricity: By 2025, each campus and health location will obtain 100 percent clean electricity. By 2018, the UC's Wholesale Power Program will provide 100 percent clean electricity to participating locations.

4. On-campus Combustion: By 2025, at least 40 percent of the natural gas combusted on-site at each campus and health location will be biogas.

D. Sustainable Transportation

1. Each location will reduce GHG emissions from its fleet and report annually on its progress. Locations shall implement strategies to reduce fleet emissions and improve fuel efficiency of all university-owned or operated fleet vehicles and equipment where practical options exist through acquisition and fleet operation protocols.
    a. By 2025, zero emission vehicles or hybrid vehicles shall account for at least 50 percent of all new light-duty vehicle acquisitions.
2. The UC recognizes that single-occupant vehicle (SOV) commuting is a primary contributor to commute GHG emissions and localized transportation impacts.
    a. By 2025, each location shall strive to reduce its percentage of employees and students commuting by SOV by 10 percent relative to its 2015 SOV commute rates;
    b. By 2050, each location shall strive to have no more 40 percent of its employees and no more than 30 percent of all employees and students commuting to the location by SOV.
3. Consistent with the State of California goal of increasing alternative fuel – specifically electric vehicle usage, the UC shall promote purchases and support investment in alternative fuel infrastructure at each location.
    a. By 2025, each location shall strive to have at least 4.5% of commuter vehicles be Zero Emission Vehicles (ZEV).
    b. By 2050, each location shall strive to have at least 30% of commuter vehicles be ZEV.

In particular, through targets established with respect to Green Building Design, UC Santa Cruz is committed to achieving a USGBC LEED "Silver" certification or higher with new construction, which would carry forward to structures and facilities constructed under the 2021 LRDP.

UC Santa Cruz Energy Efficiency Programs

The UC Santa Cruz Energy Management department is currently leading several efforts related to energy efficiency for LRDP area. These efforts focus on energy efficiency projects, building commissioning, behavioral change towards higher conservation, installation of onsite renewable generation, and procurement of renewable energy. The main residential campus is currently in Year 3 of a multi-year project to retrofit all campus buildings to high efficiency LED lighting with integrated daylighting/ occupancy controls. These projects will substantially reduce campus energy usage, especially during times of peak demand for the campus and the state. A co-benefit of these LED projects will be decreased maintenance (waste reduction) and increased lighting quality (daylighting and higher quality lighting) for occupants.

UC Santa Cruz is also focusing on the commissioning and renovation of its district utility systems, specifically to improve the operation of the main residential campus' campus-wide heating and cooling loops, through a combination equipment upgrades and system optimization. These systems are two of the highest energy using systems on the main residential campus, and these projects will result in significant energy/carbon savings.

In 2019, UC Santa Cruz vehicles consumed approximately 72,000 gallons of diesel. In recognition of the need for greater sustainability, UC Santa Cruz transferred to using biodiesel. Biodiesel is generally characterized as a renewable fuel derived from agricultural waste, like corn stalks and grain chaffs. Biodiesel emits between 50 and 90 percent less carbon than traditional diesel, so this shift in fuel type reduces UC Santa Cruz's annual fleet emissions by at least 25 percent annually. A typical blend might be "B20" (i.e., 20 percent biodiesel and 80 percent diesel). UC Santa Cruz is using a higher-quality product called RD99, which is 99 percent biofuel.

To encourage the use of electric (zero-emission) vehicles, UC Santa Cruz's Transportation and Parking Services (TAPS) has installed a number of EV charging stations on campus. Fourteen EV charging stations are located at the Core West Parking Structure, eight EV charging stations are located at the Coastal Science Campus, and 40 new EV

charging stations were installed in the East Remote parking lot. TAPS will be required to electrify the campus shuttle fleet by 2040.

The UC Santa Cruz Energy Department is also continuing its work on improving measurement and monitoring of campus utility usage, through its SkySpark Analytics platform and Beacon AMA water analytics systems. These analytical packages are being expanded to capture electricity, natural gas, sewer, and water usage in higher granularity, resulting in improved analytics to identify and resolve efficiency issues on campus. The SkySpark system is configured with automated "sparks", which will allow campus personnel to identify energy waste faster, while the Beacon AMA system performs the same function on water usage.

UC Santa Cruz Campus Standards Handbook

UC Santa Cruz's Campus Standards Handbook contains building design standards for all buildings constructed and operated by the university. These include design guidelines for construction materials, finishes, furnishings, emergency response, plumbing, heating and ventilation, automation, electrical, and communications. The design guides require new buildings to be energy efficient to meet the most stringent standards available under Title 24. The handbook also requires that any buildings achieving LEED certification, achieve no less than LEED Silver level. (UCSC 2019).

LOCAL

As noted in Section 1.1 of the Introduction, UC Santa Cruz, a constitutionally created State entity, is not subject to municipal regulations of surrounding local governments for uses on property owned or controlled by UC Santa Cruz that are in furtherance of the university's education purposes. However, UC Santa Cruz may consider, for coordination purposes, aspects of local plans and policies of the communities surrounding the campus when it is appropriate and feasible, but it is not bound by those plans and policies in its planning efforts.

3.6.2 Environmental Setting

ENERGY USE, FACILITIES AND SERVICES IN THE LRDP AREA

During the 2018 calendar year, the UC Santa Cruz campus used a total of 48.5 gigawatt-hours (GWh) of electricity (33.2 GWh campus-generated and 15.3 GWh imported) and 4,954,650 therms of natural gas. The average daily energy usage was 132,821 kWh/day of electricity and 13,574 therms/day of natural gas (UCSC 2020).

Electric and natural gas services in UC Santa Cruz are purchased from Pacific Gas and Electric Company (PG&E). A natural gas turbine engine located at the Central Heat Plant, a canopy solar panel array located in the East Remote Parking lot, and a solar panel array located on top of McHenry Library, also generate electricity on the main residential campus. The natural gas turbine operates on natural gas purchased from PG&E, and produces enough electricity to meet about half of the main residential campus demand. The turbine operates as a cogeneration unit and generates both power and heat. Captured waste heat produced by the turbine during electricity generation provides heat to campus buildings on Science Hill and in parts of the central portion of the main residential campus (UCSC 2020). The cogeneration unit provides backup electricity for emergencies, as well as supplements the electricity purchased from PG&E. Power provided by PG&E enters the Slug Substation, which is located at the southeastern edge of campus, at 21 kilovolts (kV) and is routed to the Merrill Substation, which utilizes two transformers to reduce the voltage to 12 kV, which is then distributed to campus buildings via four feeders (UCSC 2017, 2020). Electrical power is provided to Westside Research Park via a 21 kV line located in Natural Bridges Drive. The UC Santa Cruz Energy Services Unit manages the utility bills and master meters data for PG&E natural gas and electricity entering the main residential campus.

Natural gas is used by UC Santa Cruz to run the cogeneration unit on the main residential campus, as well as its two natural gas compressors, which maximize the turbine's fuel efficiency. Natural gas is delivered to the campus from PG&E through a high-pressure transmission line running south of Mission Street, along the railroad tracks, which

feeds an 8-inch line running along the west side of the campus to the cogeneration plant (UCSC 2011). PG&E also provides natural gas service to Westside Research Park.

ALTERNATIVE FUELS

A variety of alternative fuels are used to reduce demand for petroleum-based fuel. The use of these fuels is encouraged through various statewide regulations and plans (e.g., Low Carbon Fuel Standard, AB 32 Scoping Plan). Conventional gasoline and diesel may be replaced (depending on the capability of the vehicle) with many transportation fuels, including:

- biodiesel,
- electricity,
- ethanol (E-10 and E-85),
- hydrogen,
- natural gas (methane in the form of compressed and liquefied natural gas),
- propane,
- renewable diesel (including biomass-to-liquid),
- synthetic fuels, and
- gas-to-liquid and coal-to-liquid fuels.

California has a growing number of alternative fuel vehicles through the joint efforts of CEC, CARB, local air districts, federal government, transit agencies, utilities, and other public and private entities. As of July 2020, California contained approximately 27,000 alterative fueling stations, of which 578 are within 30 miles of UC Santa Cruz (AFDC 2020).

UC Santa Cruz is also undertaking numerous steps towards alternative fuels and energy sources. Currently, all of UC Santa Cruz's diesel fleet utilizes renewable diesel. Of the 250 light-duty vehicles (less than 8,300 lb gross vehicle weight [GVWR]) that are operated by the campus, 80 are electric or gasoline-hybrids (Diamantopoulos, pers. comm., 2020). UC Santa Cruz is also currently in the process of converting its light-duty fleet vehicles to zero emission or hybrid vehicles. In addition, a 2.1 megawatt (MW) facility is nearing operation at the East Remote parking lot of the main residential campus to offset electricity demands of the campus.

EXISTING UCSC MEDIUM VOLTAGE POWER DISTRIBUTION SYSTEMS

The UCSC campus is served from the off-campus utility provider, Pacific Gas & Electric (PG&E), at 21,600 volts (21 kV nominal), three-phase, via two separate feeders terminating outside the SLUG-1 Substation located at the southeastern edge of the campus. Existing peak electrical demands are approximately 11.3 mega volt ampere (MVA). Of that demand, approximately 4.1 MW is generated onsite by the campus Fackler Cogeneration Plant. Based on the preliminary 2021 LRDP space projections, the 2040 campus peak electrical demand is estimated to be 27 MVA. The campus has decided that all new buildings will be entirely electric with no gas heating or hot water. This has been accounted for in the future demand estimates. The existing 12 kV feeder has a peak capacity of approximately 16 MVA so additional capacity will be required to support the planned campus growth.

3.6.3 Environmental Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

Based on Appendix G of the State CEQA Guidelines, 2021 LRDP implementation would result in a significant energy impact if it would:

- result in the wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources during project construction or operation; or
- conflict, or create an inconsistency, with any applicable plan, policy, or regulation adopted for the purpose of avoiding or mitigating environmental effects related to energy use.

ANALYSIS METHODOLOGY

Construction

Regarding energy use (e.g., fuel use) during construction, it is assumed that only diesel fuel would be used in construction equipment, vendor trucks, and haul trucks and gasoline fuel in on-road vehicles for worker commute trips, based on modeling described in the air quality and greenhouse gas analyses in Section 3.3,"Air Quality" and Section 3.8 "Greenhouse Gas Emissions and Climate Change". Diesel and gasoline fuel use from construction was estimated by dividing the CO_2 emission results from the modeling conducted by a factor of 10.21 kg CO_2 per gallon for diesel and 8.78 kg CO_2e per gallon for gasoline, available from the Climate Registry Default Emission Factors (The Climate Registry 2020).

Operations

Operation of campus buildings and other facilities anticipated under the 2021 LRDP would require electricity and natural gas usage for lighting, space and water heating, appliances, lab equipment, water conveyance, and landscaping maintenance equipment. Project operation would include consumption of diesel and gasoline fuel from on-road vehicles. Building energy use was mainly estimated using CalEEMod v. 2016.3.2 (CAPCOA 2016), assuming that the land uses within the campus would meet the 2019 Title 24 standards. This standard was chosen because the UCOP Sustainable Practices Policy allows campuses to choose between achieving energy usage rate 20 percent better than the current Title 24 building energy efficiency standards or meeting the UC Whole Building Performance Targets. A comparison of the energy usage rates of these two standards shows that the 2019 Title 24 standards would result in lower total energy use than the performance targets under UCOP's Sustainable Practices Policy, as shown in Table 3.6-2 (UCOP 2020). Thus, using the 2019 Title 24 standards in the energy modeling conservatively represents the minimum building energy efficiency standards that the 2021 LRDP would need to achieve.

Table 3.6-2 Comparison of Energy Efficiency Standards for Buildings Operating under the 2021 LRDP

Land Use	Gross Square Feet	2019 Title 24 Standards (kWh/gsf/yr)	2019 Title 24 Standards (therms/gsf/yr)	UC Whole Building Performance Target for Buildings Built in 2025 and beyond (60% below 1999 energy benchmarks) (kWh/gsf/yr)	UC Whole Building Performance Target for Buildings Built in 2025 and beyond (60% below 1999 energy benchmarks) (therms/gsf/yr)
Faculty Housing	676,923	2.75	0.06	3.12	0.13
Student Housing	1,933,846	2.61	0.05	3.12	0.13
Facilities and Operations	89,082	5.32	0.18	4.44	0.09
Student Support Services	935,554	5.32	0.18	4.44	0.09
Parking Lot	1,876,275	0.35	0.00	0.35	0.00
Instruction & Research	1,734,420	5.32	0.18	14.40	0.74
Academic & Admin Support	1,985,289	5.05	0.16	4.44	0.09
Weighted Average		3.5	0.10	5.11	0.21

Notes: kWh = kilowatt hours, gsf = gross square feet, yr = year

See Appendix C for additional calculation details.

Source: UCOP 2020, Data modeled and compiled by Ascent Environmental in 2020, based on modeling conducted in CalEEMod Version 2016.3.2.

While the UC Sustainable Practices Policy requires all new buildings to be fully electric and not heated using natural gas, the policy includes exceptions for "projects connected to an existing central thermal infrastructure" and projects unable to meet the requirement use must provide a rationale of the decision behind the use of natural gas (UCOP 2020:9). Due to these exceptions, it was assumed that the natural gas turbine located in the Central Plant cogeneration facility, which provides both electricity and heat, would increase natural gas consumption in proportion to the total anticipated increase in energy use (i.e., total BTU increase in electricity and natural gas demand) (See Table 3.3-5 in Section 3.3, "Air Quality"). Conservatively, three new natural gas boilers were assumed to operate to supply heat for the new facilities under the 2021 LRDP. Twenty-four natural gas new emergency generators and three new natural gas standby generators would be operated under the 2021 LRDP on a temporary basis and provide electricity during power outages. Appendix D2 discusses the detailed methodology on how the number of new equipment and increase in energy use at the existing natural gas turbine were determined.

Transportation fuel-use estimates were calculated by applying average fuel usage rates per vehicle mile to VMT data related to the 2021 LRDP (see Section 3.16, "Transportation," for an explanation of the assumptions behind the VMT modeling). CARB's EMFAC model includes average fuel usage rates by vehicle class, fuel type (e.g., diesel, gasoline, electric, and natural gas), speed bin, calendar year, and county. EMFAC also estimates vehicle activity rates by vehicle class and fuel types (e.g., heavy-duty diesel VMT, light-duty natural gas VMT). The project traffic consultant provided daily VMT attributable to the trips entering and exiting the UC Santa Cruz campus. See Appendix F of this EIR for calculation details.

Diesel fuel use in the new emergency generators operating under the 2021 LRDP was based on the CalEEMod default assumptions. Although CalEEMod was used to calculate emissions from emergency generators, CalEEMod does not provide fuel estimates for these equipment types. Like the construction fuel estimates, fuel use related to the occasional operation of emergency generators was estimated based on a factor of 0.05 gallons of diesel fuel per horsepower-hour available from the SCAQMD's CEQA Air Quality Handbook (SCAQMD 1993: Table A9-3E). See Section 3.3 "Air Quality" for a description of assumptions used for stationary sources.

The Campus Up to 4 megawatts (MW) of on-campus solar photovoltaic electricity generation, producing an estimated 5,718 MWh/year assuming a yield of 1,448 kWh/kWdc, is also being considered for the Campus under the CES (UCSC 2017). UC Santa Cruz is also in the process of installing the aforementioned, on-site (2.1 MW) solar array above the East Remote parking lot. Solar arrays would also be installed on the campus as part of the Student Housing West project to provide some of the electricity needed in the new housing. Though solar facilities may be installed on campus as part of the 2021 LRDP, it is conservatively assumed that those facilities would not be operated as part of the analysis in this section.

ISSUES NOT EVALUATED FURTHER

All issues related to energy listed under the significance criteria above are addressed in this section.

IMPACTS AND MITIGATION MEASURES

Impact 3.6-1: Result in Unnecessary, Inefficient, and Wasteful Use of Energy

Implementation of the 2021 LRDP would increase electricity and natural gas consumption in the LRDP area relative to existing conditions during construction, as well as long-term operation of the main residential campus and Westside Research Park. The 2021 LRDP is committed to meeting the UC Sustainable Practices Policy and the UC Santa Cruz Campus Standards Handbook (including achievement of LEED Silver standards at minimum) in all new/renovated facilities, which is designed to reduce the wasteful use of materials (through recycling building materials) and increase building energy efficiency (i.e., 60 percent more efficient than the *1999 Energy Benchmarks*). Therefore, implementation of the 2021 LRDP would not result in wasteful, inefficient, and unnecessary consumption of energy, and impacts would be **less than significant**.

Appendix G of the State CEQA Guidelines requires the consideration of the energy implications of a project. CEQA requires mitigation measures to reduce "wasteful, inefficient and unnecessary" energy usage (PRC Section 21100, subdivision (b)(3)). Neither the law nor the State CEQA Guidelines establish criteria that define wasteful, inefficient, or unnecessary use. Compliance with CCR Title 24 Energy Efficiency Standards would result in energy-efficient buildings, and as described below, UC Santa Cruz is committed to achievement of higher standards. However, compliance with building codes does not adequately address all potential energy impacts during construction and operation. For example, energy would be required to transport people and goods to and from the project site. Energy use is discussed by anticipated use type below.

Construction-Related Energy

Energy would be required to construct or renovate buildings and modify facilities under the 2021 LRDP, operate and maintain construction equipment, and transport construction materials. The one-time energy expenditure required to construct buildings and infrastructure associated with the 2021 LRDP would be non-recoverable. Most energy consumption during construction would result from operation of off-road construction equipment and on-road vehicle trips associated with commutes by construction workers and haul trucks trips. An estimated 172,000 gallons of diesel and 22,000 gallons of gasoline would be consumed to enable construction of new land uses, including academic and administrative space and other facilities that could be developed under the 2021 LRDP.

Construction equipment use and associated energy consumption would be typical of that associated with construction of new residential and educational land uses. In other words, there are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than those used at comparable construction sites in other parts of the State. Idling of on-site equipment during construction would be limited to no more than five minutes in accordance with California Code of Regulations Title 13, Section 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. Further, on-site construction equipment may include alternatively-fueled vehicles (such as natural gas) where feasible.

Finally, the selected construction contractors would use the best available engineering techniques, construction and design practices, and equipment operating procedures, thereby ensuring that the wasteful consumption of fuels and use of energy would not occur. Energy efficiency is also expected for the off-site production of construction materials, based on the economic incentive for efficiency and cost savings. Non-renewable energy would not be consumed in a wasteful, inefficient, or unnecessary manner when compared to other construction sites in the region.

Operational Building Energy and Stationary Sources

Campus development under the 2021 LRDP would increase electricity and natural gas consumption in the LRDP area relative to existing conditions. Table 3.6-3 summarizes the levels of energy consumption associated with the operation of new facilities built under the 2021 LRDP.

Table 3.6-3 Net Building Energy Consumption associated with 2021 LRDP Implementation

New Facilities under the 2021 LRDP	Electricity[1] (MWh/year)	Natural Gas[1] (therms/year)
Faculty & Staff Housing	1,860	34,643
Student Housing	5,051	85,841
Facilities & Operations	474	14,705
Student Support and Public Services	4,980	154,436
Parking Lots	657	—
Instruction and Research	9,233	286,308
Academic and Administrative Support	10,027	298,033
Total Energy Consumption	32,283	873,967

Notes: Totals may not sum due to rounding. gallons/year = gallons per year; MWh/year = megawatt-hours per year; LRDP = Long Range Development Plan

[1] Values based on UC Santa Cruz meeting 2019 Title 24 standards, as modeled in CalEEMod Version 2016.3.2.

Source: Calculations by Ascent Environmental in 2020.

As shown in Table 3.6-3, the 2021 LRDP would result in an increase of 32 GWh of electricity and 873,967 therms of natural gas per year related to the operation of new facilities built under the 2021 LRDP. In addition to on-site use of natural gas, such as in furnaces, a majority of the anticipated natural gas usage under the 2021 LRDP would be used by three new natural gas boilers, a 25 percent increase in existing natural gas turbine use, and 27 new emergency and standby generators, as shown in Table 3.3-5 in Section 3.3, "Air Quality". The values shown in Table 3.6-3 break down the anticipated demand in energy by facility type, but this breakdown is not indicative of where the natural gas combustion would occur. The natural gas boilers and turbines centralize much of the natural gas use and provide distributed heat and electricity to multiple campus facilities.

The 2021 LRDP and development considered part of plan implementation would be subject to attainment of LEED Silver standards and meeting the building energy efficiency standards specified under the UC's Sustainable Practices Policy. The implementation of the UC Sustainable Practice Policy and UC Santa Cruz Campus Standards Handbook, which require UC Santa Cruz to build energy-efficient buildings that use less electricity, would reduce fossil fuel consumption (UCOP 2020). In addition, UC Santa Cruz would continue to implement the conservation and efficiency programs identified above and increase the use of renewable energy.

Operational Transportation Energy

Table 3.6-4 summarizes the projected gasoline, diesel, natural gas, and electricity usage associated with the net increase in transportation generated at build-out of the 2021 LRDP in 2040 compared to existing conditions. With full implementation, the 2021 LRDP would result in the net consumption of 980,939 gallons of gasoline per year, 171,906 gallons of diesel per year, 10,511 diesel equivalent gallons of natural gas, and 632,651 kWh per year.

Table 3.6-4 Net Transportation Energy Consumption with 2021 LRDP Implementation

Vehicle Category	Gasoline (gal/year)	Diesel (gal/year)	Natural Gas (DEG/year)	Electric (kWh/year)
Passenger Vehicles	939,553	18,558	7,840	632,651
Trucks with 2 axles	25,810	14,118	—	—
Trucks with 3 axles or more	15,576	139,230	2,670	—
Total (All Vehicle Types)	980,939	171,906	10,511	632,651

Notes: gal/year = gallons per year; DEG = diesel equivalent gallons; kWh = kilowatt hours

Source: Data provided by Ascent Environmental, Inc. in 2020 based on modeling using vehicle miles travelled data from Fehr and Peers and EMFAC2017 emission factors.

As shown in Table 3.6-4, trucks with two or more axles account for approximately 17 percent of total transportation-related gasoline and diesel use during operation of new development under the 2021 LRDP. The numbers reflected in Table 3.6-4 are based on the assumption that the mix of vehicle types would likely be similar to the 2018-2019 academic year. The analysis also includes an assumption that additional vehicle usage would be associated with all-electric vehicles. With most trips taken via non-vehicular modes of transportation, trips generated by operation of uses anticipated under the 2021 LRDP would not be considered inefficient, wasteful, and unnecessary. As discussed in Section 3.16, unmitigated "Transportation" VMT per capita for trips coming to and from the UC Santa Cruz campus would be 7.9 for the entire campus with implementation of the 2021 LRDP, which is 13 percent less than the existing VMT per capita average of 9.1, demonstrating that campus vehicle trips and the fuel/energy usage associated with them under the 2021 LRDP would be more efficient.

Summary

According to Appendix G of the State CEQA Guidelines, the means to achieve the goal of conserving energy include decreasing overall per capita energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. Table 3.6-5 compares the per-capita energy consumptions between existing and 2021 LRDP conditions. Transportation diesel, natural gas and electricity use is excluded from the analysis here because the data for existing conditions was not readily available for comparison and they make up only a small portion of total energy use—the net increase in transportation diesel, natural gas, and electricity use under 2021 LRDP implementation account for less than five percent of total energy use.

Table 3.6-5 Per-Capita Annual Energy Consumption with 2021 LRDP Implementation Compared to Existing Conditions

Annual Energy Metrics	2019 Existing	2040 Net Increase (with 2021 LRDP)	Percent Change
Building Electricity Use (kWh)	48,479,557	32,282,652	NA
Building Natural Gas Use (therms)	4,954,650	873,967	NA
Transportation Gasoline Use (gal)[1]	2,580,660	980,939	NA
Total MMBTU[2]	983,050	320,033	NA
Population	22,344	12,830	NA
kWh per capita	2,170	2,516	16%
therms per capita	222	68	-69%
Gasoline gallons per capita	115	76	-34%
MMBTU per capita	44	25	-43%

Notes: gal = gallons; kWh = kilowatt hours; MMBTU = million British thermal units; NA = not applicable

[1] Includes both fleet and non-fleet mobile fuel use.

[2] Excludes transportation-related diesel, natural gas, and electricity use.

Source: Data provided by Ascent Environmental, Inc. in 2020.

As discussed above, energy would be required during the 2021 LRDP's construction and operational phases. Construction-related energy would be used during construction activities and not represent a long-term increase in demand. Additionally, construction activities conducted on-campus would not result in unusual or unique construction requirements that would result in potential wasteful energy use/consumption. Best available control technology would be used by contractors, as well as conformance to applicable requirements like MBARD requirements related to equipment idling, such that the inefficient or wasteful use in energy during construction would not occur.

Operational energy demand would result from building energy use and increases in vehicular traffic. However, as shown in Table 3.6-5, the per-capita energy consumption under the 2021 LRDP would be lower than existing conditions by approximately 43 percent. UC Santa Cruz would comply with the most current energy-efficient standard by achieving energy efficiency rates as required under the UC Sustainable Practice Policy Green Building targets. UC Santa Cruz is also committed to achieving LEED Silver status at minimum and is required to meet at the most current Title 24 building energy efficiency standards at minimum. Both the building energy efficiency and LEED targets are designed to reduce energy waste and increase building energy efficiently.

As demonstrated in the increase in electricity demand per capita compared to the decrease in natural gas demand per capita in Table 3.6-5, the energy designs standards would favor electric appliances over natural gas ones. This along with the additional on-campus solar energy generation considered under the 2021 LRDP and the utility-level renewables target under SB 100 would help the campus to reduce its dependence on fossil fuels and increase its reliance on renewable energy sources. The incorporation of design features, consistent with those mentioned above and in combination with State energy efficiency requirements, would reduce per-capita energy use related to the 2021 LRDP. For the reasons explained above, energy consumption under the 2021 LRDP through construction, building and facility operations, and transportation would not be considered wasteful, inefficient, or unnecessary. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.6-2: Conflict, or Create an Inconsistency, with any Applicable Plan, Policy, or Regulation Adopted for the Purpose of Avoiding or Mitigating Environmental Effects Related to Energy

Campus development under the 2021 LRDP would be required to comply with increasingly stringent building and vehicle efficiency standards that would reduce energy consumption to be consistent with applicable plans, policies, and regulations. New development under the 2021 LRDP would also include design features that would reflect UC Santa Cruz's goal to meet the UC Carbon Neutrality Initiative, as written into the UC Sustainable Practices Policy Green Building and Climate Action targets. Thus, this impact would be **less than significant**.

Development under the 2021 LRDP would, at minimum, meet the most current Title 24 building energy efficiency standards to reduce energy use, which establish minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building installation and roofing, and lighting. The Western Area Power Administration, which provides energy service to the campus, is subject to California's Renewable Portfolio Standard (RPS) to increase procurement from eligible renewable energy resource to 50 percent of total procurement by 2030 and 100 percent by 2045 under SB 100. Furthermore, federal and State regulations including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and Low Emission Vehicle Program would reduce the transportation fuel demand. Under the 2021 LRDP, design features that reduce energy use, improve energy efficiency, and increase reliance on renewable energy sources would be incorporated into new building projects to meet the goals of the UC Carbon Neutrality Initiative as written into the UC Sustainable Practices Policy, as well as meeting the whole-building energy performance targets listed in Table 1 of Section V.A.3 in the SPP.

The adherence to the increasingly stringent building and vehicle efficiency standards, as well as 2021 LRDP design features consistent with UC Carbon Neutrality goals and UC Santa Cruz's 2017 Climate & Energy Strategy (CES), would reduce energy consumption to be consistent with applicable plans, policies, and regulations adopted for avoiding or mitigating environmental effects related to energy. Therefore, the impact would be **less than significant**.

Mitigation Measures

No mitigation is required.