3.5 ENERGY

This section evaluates whether implementation of the proposed project would result in inefficient, wasteful, and unnecessary consumption of energy. The capacity of existing and proposed infrastructure to serve the project is evaluated in Section 3.12, "Utilities and Service Systems." Detailed calculations and results can be found in Appendix B.

No comments were received during public review of the NOP related to energy.

3.5.1 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.

The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Compliance with the CAFE standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the country. The U.S. Environmental Protection Agency calculates a CAFE value for each manufacturer based on the city and highway fuel economy test results and vehicle sales. Based on information generated under the CAFE program, DOT is authorized to assess penalties for noncompliance.

Energy Policy Act of 1992 and 2005

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally-fueled fleets in metropolitan areas. EPAct 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 EPAct. 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 Energy Independence and Security Act of 2007 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 miles per gallon 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 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The act established state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The California Public Utilities Commission regulates privately owned utilities in the energy, rail, telecommunications, and water fields.

State of California Energy Action Plan

CEC is responsible for preparing the state energy plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 2003 California Energy Action Plan (2008 update). The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs; and encouragement of urban design that reduces vehicle miles traveled (VMT) and accommodates pedestrian and bicycle access.

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*. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT (CEC and CARB 2003). A performance-based goal of AB 2076 was to reduce 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" (PRC Section 25301[a]). This work culminated in the Integrated Energy Policy Report (IEPR).

CEC adopts an IEPR every two years and an update every other year. The 2020 IEPR is the most recent IEPR, which was adopted March 2021. The 2020 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. Energy topics covered in the report include progress toward Statewide renewable energy targets and issues facing future renewable development; efforts to increase energy efficiency in existing and new buildings; progress by utilities in achieving energy efficiency targets and potential; improving coordination among the State's energy agencies; streamlining power plant licensing processes; results of preliminary forecasts of electricity, natural gas, and transportation fuel supply and demand; future energy infrastructure needs; the need for research and development efforts to Statewide energy policies; and issues facing California's nuclear power plants (CEC 2020).

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).

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, Statues 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 nonpetroleum 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 greenhouse gas (GHG) emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

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 to provide energy efficiency standards for residential and nonresidential 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 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). 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 current California Energy Code will require builders to use more energy-efficient building technologies for compliance with increased restrictions on allowable energy use. The core focus of the building standards has been efficiency, but the 2019 Energy Code ventured into onsite generation by requiring solar photovoltaic (PV) on new homes, providing significant GHG savings. The most recent is the 2022 California Energy Code which advances the onsite energy generation progress started in the 2019 California Energy Code by encouraging electric heat pump technology and use, establishing electric-ready requirements when natural gas is installed, expanding solar PV system and battery storage standards, and strengthening ventilation standards to improve indoor air quality. The CEC estimates that the 2022 California Energy Code will save consumers $1.5 billion and reduce GHGs by 10 million metric tons (MMT) of carbon dioxide-equivalent (CO_2e) over the next 30 years (CEC 2021).

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 dependency of 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 *2022 Draft Scoping Plan Update* (2022 Scoping Plan Update) assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The proposed 2022 Scoping Plan Update focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities (CARB 2022). The Draft 2022 Scoping Plan Update and associated environmental documentation were released for public review on May 10, 2022. The comment period ended June 24, 2022.

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 dependency of fossil fuels and making land use development and transportation systems more energy efficient.

Senate Bill 743 of 2013

SB 743 of 2013 required that the Governor's Office of Planning and Research (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. Agencies have until July 1, 2020, to implement these changes but can also choose to implement these changes immediately. 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 PRC Section 21099, which states that the criteria for determining significance must "promote the reduction in greenhouse gas emissions" (OPR 2017:18). This metric is intended to replace the use of delay and level of service to measure transportation-related impacts.

CALIFORNIA STATE UNIVERSITY

California State University Sustainability Policy

In the Spring of 2022, The California State University (CSU) Board of Trustees adopted the revised version of the CSU system-wide Sustainability Policy which was updated from the 2014 version and became effective March 23, 2023. The policy aims to reduce the environmental impact of construction and operation of buildings and to integrate sustainability across the curriculum. The CSU Sustainability Policy established the following goals related to energy:

- reduce GHG emissions 80 percent below 1990 levels by 2040,
- procure 60 percent of energy supply from renewable sources by 2030,

- increase on-site energy generation from 32 to 80 megawatts by 2030, and
- promote use of alternative fuels and transportation programs.

Energy Use Index

Energy use is the primary metric used by the CSU to track progress toward energy conservation goals, referred to as the Energy Use Index (EUI). EUI represents total annual electricity and natural gas use per square foot of building space, measured in British thermal units per square foot. To normalize this metric between different CSU campuses, the square footage is adjusted to prorate or remove buildings and structures that are very low or zero energy users, such as parking structures, stadiums, and farm buildings such as barns and storage sheds. The last two CSU Executive Orders on energy and sustainability (i.e., 917 of 2004, 987 of 2006) established goals to reduce British thermal units per square foot by 15 percent over two consecutive 5-year periods.

Executive Order 987

Executive Order 987 is the CSU Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management. Cal Poly Humboldt operates under this Executive Order, which sets minimum efficiency standards for new construction and renovations, and establishes operating practices intended to ensure CSU buildings are used in the most energy efficient and sustainable manner possible while still meeting the programming needs of Cal Poly Humboldt.

Cal Poly Climate Action Plan

The Cal Poly Humboldt Climate Action Plan 2.0 (CAP 2.0) intends to build upon the first CAP released by Cal Poly Humboldt in 2017, which targeted the reduction of greenhouse gas emissions to 1990 levels by 2020, and to become carbon neutral by 2050. Cal Poly Humboldt was successful in achieving the 2020 goal. The CAP 2.0 outlines strategies to achieve carbon neutrality by 2045, as well as to incorporate sustainability and climate action into the campus' research and academic operations through a variety of actions and strategies related to Buildings, Energy & Fuels (BEF); Transportation (TRA), Solid Waste & Purchasing (SWP); Carbon Sequestration & Offset (CSO); Academics & Research (A&R); and Resilience (RES). The goals and strategies of the CAP 2.0 that are relevant to energy consumption and conservation are as follows:

- BEF GOAL 1: All buildings owned/operated by Cal Poly Humboldt will generate zero direct emissions by 2045
  - Strategy 1.1: By 2025, 50% of new major renovations of state buildings will be zero net energy (ZNE). By 2030, 50% of buildings will be retrofitted to ZNE and all new construction will be ZNE.
  - Strategy 1.2: Adopt whole-building performance targets for campus buildings to further energy and water efficiency.
  - Strategy 1.3: Reduce natural gas consumption below 2018-19 levels by 50% by 2030, by 75% by 2040, and by 100% by 2045.
  - Strategy 1.4: Increase installation of solar photovoltaic energy systems on campus infrastructure to a minimum of 2.5 megawatt (MW) by 2025
- BEF GOAL 2: Build resilience into campus buildings and infrastructure to adapt to, and continue to provide functionality during, climate change impacts
  - Strategy 2.1: Ensure critical loads maintain power during power shut-off events utilizing low-carbon technologies.
- BEF GOAL 3: Zero emissions fleet by 2045
  - Strategy 3.1 Adopt and implement a long-range plan for transitioning fleet and grounds equipment to zero emissions

LOCAL

Cal Poly Humboldt is part of the CSU, which is a statutorily and legislatively created, constitutionally authorized State entity. As explained in the "California State University Autonomy" section of Chapter 3 of this EIR, the CSU is not subject to local government planning and land use plans, policies, or regulations. Nevertheless, in the exercise of its discretion, Cal Poly Humboldt does reference, describe, and address local plans, policies, and regulations where appropriate and for informational purposes. This evaluation is also intended to be used by local agencies for determining, as part of their permit processes, the project's consistency with local plans, policies, and regulations.

City of Arcata General Plan

The following policies of the City of Arcata General Plan are relevant to the consideration of energy and energy use at the project site:

- **Policy RC-8a: Encouragement of Appropriate Energy Alternatives.** Attempt to purchase at least 10% of electrical energy from renewable sources within Humboldt County by the year 2020. City to consider how energy suppliers meet this goal before purchasing electricity.
- **Policy RC-8b: Encouragement of Energy Efficiency and Conservation.** Educate residents, property owners, and business operators about the need for and benefits of conserving energy.
- **Policy RC-8c: Promotion of Energy Efficiency in Transportation.** Attempt to reduce the need for motor vehicle trips when making traffic management and transportation decisions.
- **Policy RC-8d: Restoration for Greenhouse Gases Absorption.** Restore and foster forests and other terrestrial ecosystems that offer significant carbon mitigation potential.

City of Arcata Climate Action Plan

The City of Arcata developed a Community Greenhouse Gas Reduction Plan in 2006 to address and reduce the ways in which the City's energy use contributes to climate change through the emission of greenhouse gases. This plan consists of six "action areas" which provide recommendations for meeting the city's projected energy needs while reducing greenhouse gas emissions. The six actions areas are as follows:

- **Energy Efficiency:** Conserve energy or reduce electricity and gas use to reduce greenhouse gas emissions.
- **Renewable Energy:** Encourage private residencies to install renewable energy systems such as rooftop solar panels, as well as transition municipal buildings towards the use of renewable energy.
- **Sustainable Transportation:** Reduce automobile travel, encourage more efficient vehicles and cleaner transportation fuels, support cleaner and alternative transportation to lower emissions and energy costs to create energy independence.
- **Waste and Consumption Reduction:** Consider industrial ecology and examine local, regional, and global uses and flows of materials and energy in products and processes. Reduce environmental burdens throughout product life cycle. Implement measures that reduce waste in consumption, and encourage recycling and reuse in purchasing.
- **Carbon Sequestration and Other Methods:** Increase carbon sequestration capacity by sustainably managing forests. Additionally, utilize biogas and encourage policies which support both goals.
- **Cross-Cutting Approaches:** Develop city-wide green building promotional campaign, support green economic growth, and develop regional partnerships and incentive programs to promote energy efficiency and renewable energy.

3.5.2 Environmental Setting

Pacific Gas and Electric Company (PG&E) provides both natural gas and electricity to customers in the City of Arcata and to Cal Poly Humboldt. PG&E's 2021 grid mix includes 50% renewable, 39% nuclear, 4% large hydroelectric, and 7% natural gas (PG&E 2022). PG&E owns and operates overhead electric transmission and electric distribution facilities as well as gas transmission facilities throughout the City of Arcata. Overhead electric distribution lines extend along the northern edge St. Louis Road as it borders the project site, as well as along the eastern boundary of the project site. There are also current connections to natural gas pipelines within St. Louis Road that extend to the residential uses at the project site.

ENERGY TYPES AND SOURCES

California relies on a regional power system comprised of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. One-third of energy commodities consumed in California is natural gas. In 2014, approximately 35 percent of natural gas consumed in the State was used to generate electricity. Residential land uses represented approximately 17 percent of California's natural gas consumption with the balance consumed by the industrial, resource extraction, and commercial sectors (EIA 2017). Power plants in California generate approximately 70 percent of the in-State electricity demand, with large hydroelectric in the Pacific Northwest and power plants in the Southwestern US generating the remaining electricity (CEC 2017). The contribution of in- and out-of-State power plants depends on the precipitation that occurred in the previous year, the corresponding amount of hydroelectric power that is available, and other factors.

Alternative Fuels

A variety of alternative fuels are used to reduce demand for petroleum-based fuels. The use of these fuels is encouraged and required through various Statewide regulations and plans (e.g., Low Carbon Fuel Standard, Climate Change 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.

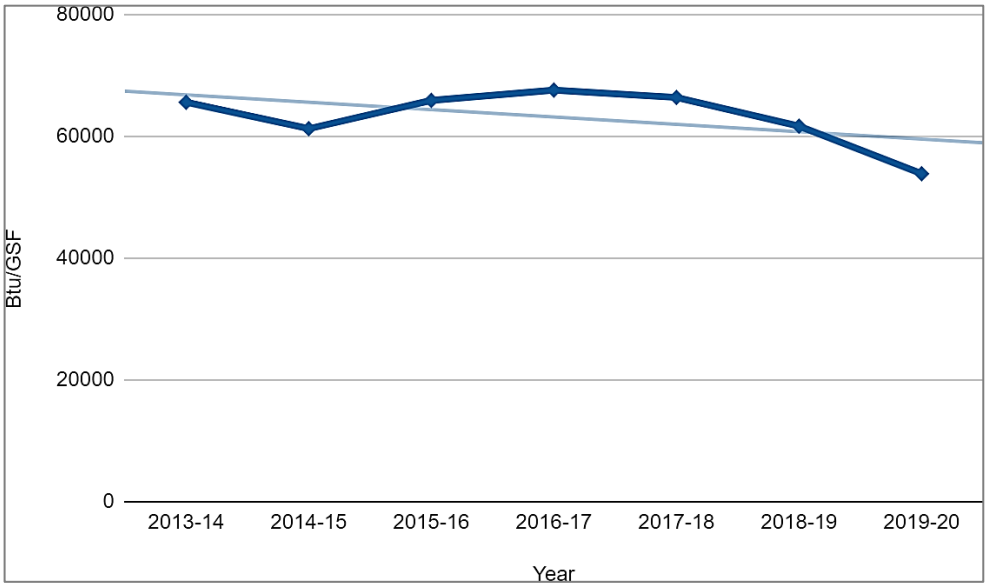
California has a growing number of alternative fuel vehicles through the joint efforts of CEC, CARB, local air districts, federal government, transit agencies, utilities, and other public and private entities. As of September 2022, California contained 15,200 alternative fueling stations (US Department of Energy 2022).

Transportation Fuels

On-road vehicles use about 90 percent of the petroleum consumed in California. The California Department of Transportation projected 92 million gallons of gasoline and diesel were consumed in Humboldt County in 2020, an increase of approximately 8 million gallons of fuel from 2015 levels (Caltrans 2009).

CAMPUS ENERGY FACILITIES AND SERVICES

As part of its implementation of CAP 2.0, Cal Poly Humboldt has reduced the overall energy demand of the campus. Figure 3.5-1 shows this reduction in energy demand relative to the gross square footage of the campus, where building gross square footage increased by 5%, while overall energy use (natural gas and electricity) declined by 18% in the same period, with current demand being approximately 5,600 British Thermal Units (Btu) per gross square foot (GSF), according to the last recorded data point (2019-2020) (Cal Poly Humboldt 2021).



Source: Cal Poly Humboldt 2021.

Figure 3.5-1 Historical Campus Energy Demand

3.5.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

Construction- and operation-related energy consumption by the project, measured in megawatt-hours of electricity, gallons of gasoline, and gallons of diesel fuel were calculated using the proposed phasing of the project, the California Emissions Estimator Model (CalEEMod) version 2020.4.0 (CAPCOA 2020) computer program, and fuel consumption rates obtained from CARB's Emission Factors (EMFAC) model for Humboldt County. Construction- and operation-related energy are based on a combination of project details provided by the project applicant and model defaults. Consistent with information provided in Chapter 2, "Project Description," no natural gas consumption was assumed to occur on-site.

THRESHOLDS OF SIGNIFICANCE

The following significance criteria are based on Appendices F (Energy Conservation) and G of the CEQA Guidelines, under which the project would have a significant adverse 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 with or obstruct a state or local plan for renewable energy or energy efficiency.

ISSUES NOT DISCUSSED FURTHER

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

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: Result in the Wasteful, Inefficient, or Unnecessary Consumption of Energy or Wasteful Use of Energy Resources

Construction and operation of buildings and facilities associated with the project would result in consumption of fuel (gasoline and diesel) and electricity. Energy consumption associated with construction would be temporary and would not require additional capacity or increased peak or base period demands for electricity or other forms of energy. Through adherence to and exceedance of current building code requirements, energy consumption associated with operation of the buildings and facilities would not result in wasteful, inefficient, or unnecessary consumption of energy. This impact 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[b][3]). Neither the law nor the State CEQA Guidelines establish criteria that define wasteful, inefficient, or unnecessary use. Compliance with the California Energy Code would result in energy-efficient buildings. However, compliance with the California Energy Code does not address all potential energy impacts during construction and operation of the project. Energy use is discussed by project component below.

Construction-Related Energy

Energy would be required to construct, operate, and maintain construction equipment and to produce and transport construction materials associated with construction of the proposed project. The proposed project would be constructed in over an approximately 18-to 24-month period starting in 2023 and finishing in 2024/2025. The one-time energy expenditure required to construct the physical buildings and infrastructure associated with the project would be nonrecoverable. Most energy consumption would result from operation of construction equipment and vehicle trips associated with commutes by construction workers and haul trucks supplying materials. See Table 3.5-1 for an estimate of fuel needed for construction activities.

Table 3.5-1 Construction Energy Consumption

Phase	Diesel (Gallons)	Gasoline (Gallons)
Construction Equipment	49,250	0
Worker Commute	213	31,671
Deliveries and Haul Trucks	19,554	1,755
Total	**69,017**	**33,425**

Notes: Gasoline gallons include on-road gallons from worker trips. Diesel gallons include off-road equipment and on-road gallons from worker and vendor trips.

Source: Calculations by Ascent Environmental in 2022.

Building Energy

The operation of new buildings and facilities would result in the consumption of electricity for lighting, space heating, water heating, and other electrical uses. No natural gas would be consumed, and all power needs would be met by through electrical connections. Indirect energy use would include wastewater treatment; water pumping, treatment, and distribution; and solid waste removal. Electrical service is provided by PG&E.

Cal Poly Humboldt aims to exceed the requirements of both the California Green Building Code (CBC) and California Energy Code. Project sustainability features include high-efficiency irrigation for the landscaping, water-efficient plumbing, energy-efficient and CBC-compliant lighting and appliances, and durable exterior building materials.

Energy Star office equipment, energy efficient computer monitors, and LED (light-emitting diode) lighting and lighting controls would be used throughout the buildings to achieve the energy goals. In addition, the project would encourage onsite solar energy production through the provision of space for photovoltaic solar panels on rooftops, consistent with the CSU Sustainability Policy, and facilities that provide shade for parking, pedestrian paths, and/or gathering areas. However, due to broader considerations within the Cal Poly Humboldt campus regarding the on-campus microgrid and potential feasibility issues surrounding the ability for the project to connect to the campus microgrid (Sierra Sun Times 2022), on-site solar is not considered feasible as part of the project. However, it may be considered as part of a broader effort to expand the university's microgrid, in line with CSU Sustainability Policy goals and Cal Poly Humboldt CAP 2.0. As a result, the estimated energy use assumed here is conservative because it does not reflect additional energy efficiency measures that may be implemented in exceedance of CBC and California Energy Code requirements or solar energy production. The estimated energy demand from building energy is shown in Table 3.5-2.

Table 3.5-2 Operational Energy Consumption for Buildout Year

Energy Type	Energy Consumption	Units
Electricity Demand	1,930	MWh/year

Notes: MWh/year = megawatt-hours per year.

Source: Calculations by Ascent Environmental in 2022.

Transportation Energy

Transportation-related fuel consumption was estimated using the estimated daily VMT and estimated miles per gallon per fuel type for Humboldt County from the CARB mobile source emissions inventory EMFAC database. The estimated transportation energy demand from building energy is shown in Table 3.5-3. These fuel calculations are based on fuel economy and consumption rates during the expected first year of operation. State and federal regulations regarding fuel efficiency standards for vehicles in California are designed to reduce wasteful, inefficient and unnecessary use of energy for transportation. Over time, these regulations and efficiency standards will reduce fuel consumption from fossil fuels.

Table 3.5-3 Operational Transportation Fuel Consumption

Phase	Diesel (Gallons Per Year)	Gasoline (Gallons Per Year)
Vehicle Trips	51,628	262,022

Notes: Gasoline and diesel gallons based on EMFAC assumption for Humboldt County in 2024.

Source: Calculations by Ascent Environmental in 2022.

Summary

The project would increase energy consumption for temporary construction activities related to vehicle use and material transport. However, construction activities would be temporary and would not increase long-term energy or fuel demand. Construction activities would consume the necessary amount of fuel/energy to complete work in an efficient and timely manner. Once operational, the project would increase transportation and building energy, the project would not consume natural gas, and the project would include various features that reduce vehicle trips and promote energy conservation. On-site circulation provides a series of interconnected pedestrian and bicycle paths throughout the development to promote multimodal transportation choices. The project would provide covered bicycle parking areas near building entrances for visitors and inside buildings for residents and employees, design and incorporate traffic-calming features within the development, encourage flexible work scheduling and on-site employment for proposed support services to minimize vehicle trips, and 10 percent of the onsite parking spaces would be electrical-vehicle ready (EV-ready). Additionally, parking areas may include a combination of integrated energy generation systems (such as photovoltaic carports), large canopy shaded trees, and permeable and high-albedo (i.e., reflectivity) paving materials, all of which promote energy conservation by reducing energy demand.

According to Appendix F of the State CEQA Guidelines, the means to achieve the goal of conserving energy include decreasing overall per capita energy consumption, decreasing reliance on oil, and increasing reliance on renewable

energy sources. Project energy consumption for building operation and transportation would support these goals due to the effects of existing State laws and requirements and project design that promotes energy conservation. For example, the proposed project would comply with the minimum energy performance standards of the California Building Code, which decrease per capita energy consumption. The proposed project would also support per capita energy consumption decreases through its uses of grid electricity, which is required by State legislation (e.g., SB 100) to source at least 60 percent of its supplies from renewable energy sources by 2030 and 100 percent carbon-free sources by 2045. Further on-site renewable energy consideration is not considered feasible at this time (as noted above) due to broader campus considerations regarding the campus microgrid and the feasibility of the project's connection to it. Transportation-related uses of energy would also be increasingly efficient during implementation of the proposed project, for example due to the State's Advanced Clean Car Standards requiring vehicles sold in the State to be increasingly fuel efficient and use fuel sources other than gasoline and diesel (e.g., electricity). The project would not develop uses or involve activities that would conflict with goals of decreasing per capita energy consumption, reliance on oil (petroleum), or increasing uses of renewable energy sources, or that would result in wasteful, inefficient, or unnecessary consumption of energy. This impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.5-2: Conflict with or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency

Onsite renewable energy generation from the implementation of project, would result in an increase in renewable energy use, which would directly support the goals and strategies in the State's Energy Efficiency Action Plan, the CSU Sustainability Policy, and the Cal Poly Humboldt Climate Action Plan. Construction and operating project buildings in compliance with the 2022 (or as updated) California Energy Code would improve energy efficiency compared to buildings built to earlier iterations of the code. Therefore, construction and operation of the project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. This impact would be **less than significant**.

Relevant plans that pertain to the efficient use of energy include the Energy Efficiency Action Plan, which focuses on energy efficiency and building decarbonization (CEC 2019); the CSU Sustainability Policy, which seeks to increase on-site renewable energy generation, exceed RPS requirements, increase energy efficiency, and provide alternative transportation and use alternative fuels to meet GHG reduction goals (CSU 2014); as well as the Cal Poly Humboldt CAP 2.0, which incorporates numerous sustainability measures to reduce GHG emissions, including promoting zero net energy buildings by 2045, installing 2.5 MW of solar photovoltaic energy systems by 2025, transitioning to a zero emissions fleet, and promoting VMT reductions.

As discussed in Impact 3.5-1, although implementation of the project has the potential to result in the overall increase in consumption of energy resources during construction and operation of new buildings and facilities, implementation of the project would ensure various energy conservation and generation features would be incorporated into new development, including bicycle parking, parking areas that include a combination of integrated energy generation systems (such as photovoltaic carports), large canopy shaded trees, and permeable and high-albedo (i.e., reflectivity) paving materials, traffic-calming features, and installation of energy efficient appliances and features.

These features would align with the Energy Efficiency Action Plan, CSU Sustainability Policy, and the Cal Poly Humboldt CAP. Therefore, the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. This impact would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

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