3.13 UTILITIES AND ENERGY

This section analyzes the adequacy of existing and planned utilities to accommodate the demands and generation associated with implementation of the Master Plan Update. Specifically, this section addresses existing and future water supply, wastewater treatment, solid waste disposal, and energy facilities. In addition, this section evaluates the potential energy consumption resulting from implementation of the Master Plan Update as well as regulatory requirements pertaining to utility systems and energy resources. The analysis describes potential direct and indirect impacts from implementation of the Master Plan Update. This section is based, in part, on the Utility Infrastructure Master Plan Update and the Water Supply Information Report prepared for the Master Plan Update, included as Appendix I.

Comments from the Los Angeles County Sanitation Districts (LACSD) were received during the public scoping period in response to the NOP. These comments address the project's potential impacts on LACSD's wastewater service and the local sewer system. For a complete list of public comments received during the public scoping period, refer to Appendix A.

3.13.1 Regulatory Setting

Federal

Clean Water Act

The Clean Water Act (CWA) employs a variety of regulatory and nonregulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The U.S. Environmental Protection Agency (EPA) established primary drinking water standards in Section 304 of the CWA. States are required to ensure that the public's potable water meets these standards.

Section 402 of the CWA created the National Pollutant Discharge Elimination System (NPDES) regulatory program, which regulates point sources that discharge pollutants into waters of the United States. Point source dischargers must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). The NPDES permits cover various industrial and municipal discharges, including discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than one acre, and mining operations. "Indirect" dischargers send wastewater into a public sewer system, which carries it to the municipal sewage treatment plant before entering a surface water, and are not required to obtain NPDES permits.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act passed in 1974, the EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA standards called maximum contaminant levels (MCLs). Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. The EPA has delegated responsibility for California's drinking water program to the State Water Resources Control Board (SWRCB) Division of Drinking Water. The SWRCB Division of Drinking Water is accountable to the EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by the EPA.

Energy Independence and Security Act

On December 19, 2007, the Energy Independence and Security Act (EISA) of 2007 (Public Law

110-140) was signed into law. In addition to setting more stringent Corporate Average Fuel Economy standards for motor vehicles, the EISA includes the following other provisions related to energy efficiency:

- Renewable Fuel Standard (RFS) Program
- Appliance and Lighting Efficiency Standards
- Building Energy Efficiency

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

The RFS program was created under the Energy Policy Act of 2005 (42 United States Code § 13201 et seq.) and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded to lay the foundation for achieving significant reductions in greenhouse gas (GHG) emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the renewable fuels sector in the United States. The updated program is referred to as “RFS2” and includes the following:

- Expands the RFS program to include diesel, in addition to gasoline
- Increases the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022
- Establishes new categories of renewable fuel, and sets separate volume requirements for each one
- Requires the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces

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

State

California Fire Code

The 2022 California Fire Code, which is codified as Part 9 of Title 24 of the California Code of Regulations, incorporates by adoption the 2021 International Fire Code and contains regulations related to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The California Fire Code contains specialized technical regulations related to fire and life safety. The California Building Standards Code, including the California Fire Code, is revised and published every three years by the California Building Standards Commission.

Senate Bill 610

Under Senate Bill (SB) 610, a water supply assessment is required to determine water supply sufficiency for a 20-year projection in addition to the demand of existing and other planned future uses. SB 610 applies only to cities and counties and is required for any project that is subject to CEQA and proposes commercial development of more than 250,000 square feet of floor space, a retail center with more than 500,000 square feet of floor space, or more than 500 dwelling units. The CSU and its campuses do not meet the definition of a city or county under SB 610, although campus projects are subject to CEQA. Nonetheless, recent and continuing precipitation trends and water supply uncertainty have heightened concerns about the future availability of a reliable water supply, and the provisions of SB 610 provide useful guidance in preparing a water supply assessment.

California's Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 is the result of two pieces of legislation: Assembly Bill (AB) 939 and SB 1322. The California Integrated Waste Management Act was intended to minimize the amount of solid waste that must be disposed of through transformation and land disposal by requiring all cities and counties to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. The 50 percent diversion requirement is measured in terms of per capita disposal expressed as pounds per day per resident and per employee. The per capita disposal and goal measurement system uses an actual disposal measurement based on population and disposal rates reported by disposal facilities, and it evaluates program implementation efforts. The California Integrated Waste Management Act also created the California Integrated Waste Management Board, now known as the California Department of Resources Recycling and Recovery (CalRecycle). CalRecycle is the designated agency that oversees, manages, and tracks California's 92 million tons of waste generated each year. CalRecycle promotes the use of new technologies to divert resources away from landfills and is responsible for ensuring that waste management programs are carried out primarily through local enforcement agencies.

Assembly Bill 341

AB 341 sets forth the requirements of the statewide mandatory commercial recycling program which focuses on increased commercial waste diversion as a method to reduce GHG emissions. AB 341 requires CalRecycle to issue a report to the legislature that includes strategies and recommendations that would enable the state to recycle 75 percent of the solid waste generated in the state by January 1, 2020, requires businesses that meet specified thresholds in the bill to arrange for recycling services by July 1, 2012, and also streamlines various regulatory processes.

Senate Bill 1383

SB 1383 establishes targets to achieve a 50 percent reduction in the volume of statewide disposal of organic waste from 2014 levels by 2020 and a 75 percent reduction by 2025. The law grants CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and establishes an additional target that not less than 20 percent of currently disposed edible food is recovered for human consumption by 2025. To meet these goals, universities would be required to divert organic waste, including edible food, from disposal at landfills.

Warren–Alquist Act

The California State legislature passed the Warren–Alquist Act in 1974. The Warren–Alquist Act (Public Resources Code § 25000 et seq.) created the California Energy Commission (CEC) in response to the energy crisis of the early 1970s and the state's growing demand for energy

resources. The legislation also incorporated the following three key provisions to address energy demand:

- Directed the CEC to formulate and adopt the nation's first energy conservation standards for buildings constructed and appliances sold in California.
- Removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high demand projections, and transferred it to a more impartial CEC.
- Directed the CEC to embark on an ambitious research and development program, with a particular focus on fostering nonconventional energy sources.

Renewables Portfolio Standard

SB 1078 (2002) established the California Renewables Portfolio Standard (RPS) Program and required that a retail seller of electricity purchase a specified minimum percentage of electricity generated by eligible renewable energy resources as defined in any given year, culminating in a 20 percent standard by December 31, 2017. Renewable energy is generally defined as energy that comes from resources which are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat. These retail sellers include electrical corporations, community choice aggregators, and electric service providers. The bill also required the CEC to certify eligible renewable energy resources, design and implement an accounting system to verify compliance with the RPS by retail sellers, and allocate and award supplemental energy payments to cover above-market costs of renewable energy.

SB 107 (2006) accelerated the RPS Program by requiring that 20 percent of electricity retail sales be served by renewable energy resources by 2010 (not 2017). Additionally, SB X1-2 (2011) required all California utilities to generate 33 percent of their electricity from eligible renewable energy resources by 2020. SB 350 (2015) further expanded the RPS Program by requiring retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030, with interim goals of 40 percent by 2024 and 45 percent by 2027.

Senate Bill 100

The 100 Percent Clean Energy Act of 2018 (SB 100) accelerated and expanded the standards set forth in SB 350 and requires retail sellers and local publicly owned electric utilities to procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt-hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; 60 percent by December 31, 2030; and 100 percent by December 31, 2045. The bill requires the California Public Utilities Commission (CPUC), CEC, and California Air Resources Board (CARB) to incorporate the policy into all relevant planning. In addition, SB 100 requires the CPUC, CEC, and CARB to utilize programs authorized under existing statutes to achieve 100 percent clean electricity and, as part of a public process, issue a joint report to the legislature by January 1, 2021, and every four years thereafter, that includes specified information relating to the implementation of SB 100.

Assembly Bill 1007

AB 1007 (2005) required the CEC to prepare a statewide plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the plan in partnership with CARB and in consultation with the other federal, state, and local agencies. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California's

goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Assembly Bill 32

California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, §§ 38500-38599), which establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020.

Senate Bill 32

SB 32 (2016) codifies the 2030 GHG emissions reduction target in Executive Order B-30-15 (which extended the horizon year to reduce GHG emissions to 40 percent below 1990 levels from 2020 to 2030). The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG reductions.

In accordance with AB 32 and SB 32, CARB prepares scoping plans to guide the development of statewide policies and regulations for the reduction of GHG emissions. Many of the policy and regulatory concepts identified in the scoping plans focus on increasing energy efficiencies, using renewable resources, and reducing the consumption of petroleum-based fuels (such as gasoline and diesel). As such, the state's GHG emissions reduction planning framework creates co-benefits for energy-related resources. CARB prepared the 2022 Scoping Plan for Achieving Carbon Neutrality, which provides a plan of action to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045.

California Building Standards (Title 24)

In 1978, the CEC established the Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6), commonly referred to as Title 24, California's energy efficiency standards for residential and nonresidential buildings, 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 nonresidential buildings. Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2022 Title 24 standards encourage efficient electric heat pumps, establish electric-ready requirements for new homes, expand solar photovoltaic and battery storage standards, and strengthen ventilation standards. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Title 24 standards.

Additionally, the California Green Building Standards Code (CALGreen) (California Code of Regulations, Title 24, Part 11) is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. CALGreen requires new buildings to reduce water consumption by 20 percent,

divert 50 percent of construction waste from landfills, and install low pollutant-emitting materials.

State Vehicle Standards

In a response to the transportation sector accounting for more than half of California's carbon dioxide (CO_2) emissions, AB 1493 was enacted in 2002 (California Health and Safety Code § 43018.5 and § 42823 amendments). AB 1493 required CARB to set GHG emissions standards for passenger vehicles, light-duty trucks, and other vehicles determined by the CARB to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. The 2009–2012 standards resulted in a reduction of approximately 22 percent of GHG emissions compared to emissions from the 2002 fleet, and the 2013–2016 standards resulted in a reduction of approximately 30 percent.

In 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars. By 2025, when the rules would be fully implemented, new automobiles would emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Although the focus of the state's vehicle standards is on the reduction of air pollutants and GHG emissions, one co-benefit of implementation of these standards is a reduced demand for petroleum-based fuels.

Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or SB 375, coordinates land use planning, regional transportation plans, and funding priorities to help California meet its GHG emissions reduction mandates. As codified in California Government Code § 65080, SB 375 requires metropolitan planning organizations to include a sustainable communities strategy in their regional transportation plans. The main focus of the sustainable communities strategy is to plan for growth in a way that will ultimately reduce GHG emissions, but the strategy is also a part of a bigger effort to address other development issues within the general vicinity, including transit and vehicle miles traveled, which influence the consumption of petroleum-based fuels.

California Public Utilities Commission Energy Efficiency Strategic Plan

The CPUC prepared an Energy Efficiency Strategic Plan in September 2008 with the goal of promoting energy efficiency and a reduction in GHG emissions. The Strategic Plan is California's single roadmap to achieving maximum energy savings in the state between 2009 and 2020, and beyond 2020. The Strategic Plan is the result of a year-long collaboration by energy experts, utilities, businesses, consumer groups, and governmental organizations in California, throughout the west, nationally, and internationally, and contains the practical strategies and actions to attain significant statewide energy savings. The plan includes the following strategies:

- All new residential construction in California will be zero net energy by 2020;
- All new commercial construction in California will be zero net energy by 2030;
- Heating, ventilation and air condition (HVAC) will be transformed to ensure that its energy performance is optimal for California's climate; and
- All eligible low-income customers will be given the opportunity to participate in the low-income energy efficiency program by 2020.

California Energy Commission Integrated Energy Policy Report

In 2002, the California State legislature adopted SB 1389, which requires the CEC to develop an *Integrated Energy Policy Report* (IEPR) every two years. SB 1389 requires the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices, and 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.

The CEC adopted the *2021 Integrated Energy Policy Report* (2021 IEPR) Volume I on April 2, 2022, Volume II and IV on April 17, 2022, and Volume III on March 9, 2022. The 2022 IEPR Update was adopted on February 28, 2023. Volume I focuses on building decarbonization; Volume II looks at ensuring reliability in a changing climate; and Volume III reports on decarbonizing the state's gas systems; and Volume 4 focuses on California's energy demand forecast. The 2021 IEPR Update provides the results of the CEC's assessments of a variety of energy issues facing California, many of which will require action if the state is to meet its climate, energy, air quality, and other environmental goals while maintaining reliability and controlling costs. Overall, the recent IEPRs identifies actions the state and others can take that would strengthen energy resiliency, reduce GHG emissions that contribute to climate change, improve air quality, and contribute to a more equitable future.

California State University

California State University, Long Beach Utility Master Plan Update

The Utility Master Plan Update evaluates the existing utilities currently serving the CSULB campus and provides recommendations to alter, upgrade, or modify the existing utility infrastructure to support the facilities proposed as part of the Master Plan Update. The plan also identifies critical needs for each of the utilities that need to be addressed to minimize interruptions and promote reliability and redundancy. The plan evaluates domestic and fire water, sewer, storm drain, irrigation water, chilled and hot water distribution, natural gas, and electrical and telecommunication systems within the campus. Each utility is evaluated for capacity, functionality, reliability, ease of maintenance, age, and ability to serve the existing and future needs of the campus.

California State University, Long Beach Water Action Plan

In 2014, CSULB developed a CSULB Water Action Plan in response to a State of Emergency due to severe drought conditions. The CSULB Water Action Plan was updated in 2017 and includes the CSU's mandate to reduce water consumption by 10 percent by 2016 and 20 percent by 2020 from its 2013 baseline.[1] Based on the plan, CSULB's goals are to reduce its reliance on potable water and overall campus water use. The plan seeks to meet these goals through adopting and implementing new Best Management Practices for all campus operations, such as installing irrigation water meters, developing a communication plan to encourage campuswide water conservation, and planning future campus development for water resiliency.

California State University, Long Beach Water Conservations Measures

In response to severe and ongoing drought conditions in California, the Long Beach Board of Water Commissioners declared a Stage 2 Water Supply Shortage in May 2022. The Long Beach

[1] The California State University has since updated its policy for water conservation such that consumption shall be reduced by 10 percent by 2030 compared to a 2019 baseline.

Water Department (LBWD) issued the following water use restrictions to which CSULB has taken the necessary steps to comply:

- Water landscape on Tuesdays and Saturdays only;
- Water landscape no more than 10 minutes per day if using standard nozzle;
- Water landscape no more than 20 minutes per day if using water-efficiency rotating nozzles;
- Water only before 9AM or after 4PM;
- Do not water during or 48 hours after rainfall;
- Wash hardscape with pressurized cleaning equipment only;
- No operating a foundation or water feature that does not recirculate water; and
- Cover pools and spas when not in use.

Other water conservation efforts by the campus include implementation of the:

1. Irrigation Water Savings Program, which was incorporated in the 2022 Climate Action & Adaptation Plan (CAAP), targeted at converting all landscape irrigation spray nozzles to more efficient matched precipitation rotators and completing the expansion of the purple pipe network of reclaimed water across the entire campus.
2. Landscape Master Plan, which includes turf reduction, plant palette transition, and stormwater treatment, and is intended to reduce potable water consumption.
3. Strategic Energy Plan, which includes the reduction of chilled water and hot water usage.
4. Systemwide policies such as CSU Executive Order 0987 (Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management for the California State University), 2022 CSU Sustainability Policy related to water conservation, and CSULB drought response to the Long Beach Board of Water Commissioners declaration on water supply shortage.

California State University Sustainability Policy

The CSU has identified sustainability as a system-wide priority, as detailed in the CSU Sustainability Policy, which was first adopted in 2014 and updated in March 2022. The CSU Sustainability Policy encompasses the tenets of human and ecological health, social justice, and economic vitality, and promotes the environmental sustainability of the CSU's operations for the built environment.[2] The policy is organized into the following areas:

- University Sustainability – The CSU will integrate sustainability and climate literacy into the academic curriculum and all areas of the university; promote new and existing environmental and social justice programs; develop the green job workforce; promote the development of sustainable products and services; and foster sustainable economic development.
- Climate Action Plan – The CSU will strive to reduce systemwide facility carbon emissions to 40 percent below 1990 levels consistent with SB 32. These emissions will include both state and auxiliary organization purchases of electricity and natural gas; fleet and marine

[2] The California State University, PolicyStat, California State University Sustainability Policy, available at: https://calstate.policystat.com/policy/11699668/latest/#autoid-9wenv, accessed April 13, 2023.

vessel usage; and other emissions the university or self-support entity has direct control over. Additionally, the CSU will strive to reduce facility carbon emissions to 80 percent below 1990 levels by 2040 in order to achieve carbon neutrality by 2045 in accordance with statewide mandates.

- Energy Resilience and Procurement – The CSU will endeavor to reduce energy capacity requirements from fossil fuels, enhance electrical demand flexibility, and use available and economically feasible technology for on-site renewable generation, microgrids, and other fossil fuel-free energy storage solutions. The CSU aims to increase its self generated-renewable energy and battery capacity from 32 to 80 megawatts (MW) by 2030.

  Additionally, the CSU will consider cost-effective opportunities to exceed the California RPS sooner than the established goal of procuring 60 percent of its electricity needs from renewable sources by 2030 consistent with SB 100. To minimize the use of natural gas, universities will transition from fossil fuel-sourced equipment to electric equipment as replacements or renovations are needed.

- Energy Conservation, Carbon Reduction and Utility Management – All CSU buildings and facilities will be operated in the most energy-efficient manner and transition to a low carbon strategy without endangering public health and safety and without diminishing the quality of education and the academic program. The universities shall continue to identify energy-efficient and carbon reduction improvement measures to the greatest extent possible and coordinate with federal, state, and local governments and organizations in achieving energy conservation carbon reduction and utilities management objectives. The CSU will monitor monthly energy and utility usage on all campuses and the Chancellor's Office and will prepare a system-wide annual report on energy utilization and GHG emissions. Each CSU university will develop and maintain a campus-wide utility master plan to guide the overall climate action program, which will include an integrated strategic energy resource plan, with tactical recommendations in the areas of new construction, decarbonization, deferred maintenance, climate resilience, facility renewal, energy projects, water conservation, solid waste management, and an energy management plan.

- Water Conservation – All CSU universities shall pursue cost-effective water resource conservation to reduce consumption by 10 percent by 2030, as compared to a 2019 baseline, consistent with AB 1668 including steps to develop sustainable, drought-tolerant or native landscaping, reduce turf, install controls to optimize irrigation water use, reduce water usage, and promote the use of reclaimed/recycled water. In the event of a declaration of drought, the CSU will cooperate with the state, city, and county governments to the greatest extent possible to reduce water use.

- Sustainable Procurement – Universities will support the use of suppliers that integrate sustainable, environmentally friendly, and socially responsible practices, including encouraging those that recycle to move toward zero waste.

- Waste Management – Universities will aim to reduce landfill-bound waste to 50 percent of total campus waste by 2030, divert at least 80 percent from landfill by 2040, and move toward zero waste.

- Sustainable Food Service – Universities will improve their sustainable food purchases and operations.

- Sustainable Building & Lands Practices – All future CSU new construction, remodeling, renovation, and repair projects will be designed with consideration of optimum energy

utilization, decarbonization, and low life-cycle operating costs and shall exceed all applicable energy codes and regulations (Building Energy Efficiency Standards, Title 24 California Code of Regulations Section 6) by 10 percent. Regarding specialized construction that is not regulated through the current energy standards (e.g., historical buildings, museums, auditoriums), the CSU will ensure that these facilities are designed to maximize energy efficiency. The CSU will design and build all new buildings and major renovations to meet or exceed the minimum requirements equivalent to Leadership in Energy and Environmental Design (LEED) Silver. For informal or un-landscaped areas, and where appropriate, universities will work to support a naturally functioning habitat, promote biodiversity, and preserve native landscapes.

Capital planning for state and non-state facilities and infrastructure will consider features of a sustainable and durable design to achieve a low life-cycle cost. Universities will also design, construct, operate, and maintain green building-certified high-performing buildings that improve occupant productivity and wellness, optimize life-cycle costs, and minimize carbon impact. Principles and best practices will be implemented to the greatest extent possible.

Existing building energy performance will be optimized through improved operation, maintenance and repair, and capital improvement, enabling universities to meet carbon reduction goals. To balance long-term institutional needs with environmental concerns, sustainable design for capital projects will include:

- Siting and design considerations that take advantage of local geographic features to improve sustainability of the project, such as proximity to public transportation and maximizing use of vistas, microclimate, and prevailing winds;
- Durable systems and finishes with long life cycles that minimize maintenance and replacement;
- Optimization of layouts and designing spaces that can be reconfigured with the expectation that the facility will be renovated and reused (versus demolished);
- Systems designed for optimization of energy, water, and other natural resources;
- Optimization of indoor environmental quality for occupants;
- Utilization of environmentally preferable products and processes, such as long life-cycle materials and components, recycled-content and recyclable materials;
- Procedures that monitor, trend, and report operational performance as compared to the optimal design and operating parameters; and
- Cost-effective design features which align with the CSU Basic Needs Initiative and support university diversity, equity and inclusion efforts.

- Physical Plant Management – Each university will operate and maintain a comprehensive energy management system to achieve optimum efficiency in the use of natural gas, electricity, or any other purchased energy resources to meet the heating, cooling, and lighting needs of the buildings and/or facilities.
- Transportation – The CSU will encourage and promote the use of alternative transportation and/or alternative fuels to reduce GHG emissions related to campus associated transportation, including commuter and business travel. All CSU universities will develop and maintain a transportation demand management plan to reduce vehicle miles traveled (VMT) and carbon emissions; strive to increase electric vehicle, electric bicycle, and other electric mobility and transportation device charging infrastructure and

incentive programs to further support campus carbon reduction strategies; and develop and maintain a long-range plan for transitioning fleet and grounds equipment to zero emissions, excluding public safety patrol vehicles if necessary. By 2035, 50 percent of all light duty vehicle purchases will be zero emission vehicles, with no addition of gas-powered light-duty vehicles to the fleet after 2035. All small off-road engine equipment used for campus grounds will be all-electric by 2035. All buses and heavy duty-vehicles will be zero emission vehicles by 2045 in alignment with state regulations.

Additional CSU Policies

The Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management for the California State University (formerly, Executive Order 987) provides a policy statement on energy conservation, sustainable building practices, and physical plant management for the CSU. CSULB operates under this Executive Order, which sets minimum efficiency standards for new construction and renovations, and establishes operating practices intended to ensure that CSU buildings are used in the most energy efficient and sustainable manner possible while still meeting the programmatic needs of the university.[3]

Policy 9170, Revised Policy on Energy Conservation and Utilities Management and Energy Consumption Reduction Goal for 2004/2005 Compared to 1999/2000 per the CSU standards set forth in PolicyStat, provides that all CSU buildings and facilities will be operated in the most energy-efficient manner without endangering public health and safety. The policy also indicates that all future CSU new construction, remodeling, renovation and repair projects will be designed for optimum energy utilization, lowest life-cycle operating costs, and in compliance with all applicable energy codes (Enhanced Title 24 Energy Codes) and regulations. Incorporation of energy-efficient design features in the project plans and specifications will be prioritized.[4]

California State University, Long Beach 2022 Climate Action and Adaptation Plan

CSULB is committed to promoting sustainability through campus operations, academic programs, and engagement efforts. The President's Commission on Sustainability was established in 2018 with the mission of integrating sustainability into all aspects of the university by focusing on the following priority areas: implementing the CAAP, integrating sustainability throughout the curriculum, and engaging and communicating with the community. CSULB's CAAP is required to meet the CSULB President's Climate Commitment, a charter of the Climate Leadership Network which integrates carbon neutrality with climate resilience and is designed to serve as a roadmap for managers and decision-makers across the university to achieve 2030 and 2040 carbon neutrality goals.[5] It builds on the significant efforts CSULB has already undertaken to maximize energy efficiency, increase renewable energy production, support clean air vehicle adoption, embrace green building standards, and integrate sustainability and environmental justice across the curriculum. The CAAP is focused specifically on addressing Scope 1, 2, and 3 emissions, which are overwhelmingly created by transportation to and from campus (60 percent), the need

[3] The California State University, PolicyStat, Executive Order 0987: Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management for the California State University, available at: https://calstate.policystat.com/policy/6589455/latest, accessed July 24, 2023.

[4] The California State University, PolicyStat, Section IX: Energy Conservation and Utilities Management, Section 9170, Revised Policy on Energy Conservation and Utilities Management and Energy Consumption Reduction Goal for 2004/2005 Compared to 1999/2000, available at: https://calstate.policystat.com/policy/7056253/latest, accessed July 24, 2023.

[5] California State University, Long Beach, Plans & Commitments, available at: https://www.csulb.edu/sustainability/plans-commitments#:~:text=As%20a%20Carbon%20Commitment%20signatory,on%20Climate%20Action%20Plan%20implementation, accessed April 6, 2023.

to heat, cool, and power campus facilities via purchased electricity (17 percent), and combustion of natural gas (11 percent), respectively.

California State University, Long Beach Clean Energy Master Plan

In 2017, CSULB developed a Clean Energy Master Plan, which provides a strategic roadmap for GHG emission mitigation measures to reduce CSULB's Scope 1 and 2 emissions, drive operational savings, and improve campus facilities and infrastructure. The Clean Energy Master Plan helps guide CSULB's energy strategy as the university works toward becoming carbon neutral by 2030. The plan includes a robust assessment of campus energy sources, demands, and utilization to identify clean energy alternatives and strategies to improve the efficiency of campus operations.

California State University, Long Beach Strategic Energy Plan

A comprehensive Strategic Energy Plan was prepared in 2011 that identifies energy efficiency projects, evaluates the provision of alternative energy sources at the campus, and analyzes their contribution to help the university reduce energy consumption and associated GHG emissions.

3.13.2 Environmental Setting

Utilities

The CSULB main campus and Beachside Village property are served by the following utilities: water (including reclaimed water), wastewater (i.e., sewer), stormwater, natural gas, electrical, telecommunications systems, and solid waste, which are further described below.

Water

The campus's combined domestic and fire water system is solely served by the LBWD. LBWD receives its drinking (potable) water supply from two main sources, groundwater and imported water. Roughly 60 percent of LBWD's water supply is sourced from local groundwater, while the rest of the water supply is sourced from imported water from the Colorado River and Northern California's Bay Delta region. The Metropolitan Water District of Southern California (MWD), LBWD's water wholesaler, is responsible for bringing these imported water sources into Southern California.[6]

LBWD provides domestic and fire water to the main campus through LBWD mains located in the streets that border the campus. There are water meters of various sizes located throughout the campus that connect the LBWD mains to the water lines to form four networks. The majority of the campus is connected to the main campus loop (Network #1), which is comprised of several 6-inch and 8-inch sub-loops that connect to various LBWD mains in Atherton Drive, Bellflower Boulevard, State University Drive, 7th Street, and Palo Verde Avenue. The area around Parkside Village is served by an 8-inch loop (Network #2) that connects to the 12-inch LBWD main in Atherton Street. Two individual buildings, Child Development Center (CDC) and Housing & Residential Life (HRL), also have their own meters and services and are separate from Networks 1 and 2. Approximately 10 miles of distribution pipelines (2-inch to 16-inch) deliver water to the campus's various buildings, irrigation, and facilities. The Beachside Village property is served by the LBWD's water system through four (4) separate water meters. According to the Utility Infrastructure Master Plan Update, most of the campus's water mains were constructed in the

[6] Long Beach Water Department, Water Sources, available at: https://lbwater.org/water-sources/, accessed April 12, 2023.

1940s and 1950s and some of the lines are nearing the end of their lifespan.

As for the fire water system, the campus does not have on-site water storage for firefighting. The campus's fire water system is combined with the domestic system, and thus, does not depend on on-site storage for fire requirements. Based on modelling conducted as part of the Utility Infrastructure Master Plan Update to test the campus's existing system's ability to satisfy the fire flow criteria set forth by the Long Beach Fire Department (LBFD) in conjunction with maximum day demands disbursed throughout the campus based on building square footage, the existing water distribution network is inadequate to serve the existing buildings, primarily due to the limited size of the distribution piping in many locations.

Reclaimed Water

Reclaimed water for the campus is supplied from LBWD's reclaimed water system. LBWD's reclaimed water public lines are used to feed a network covering portions of the northern section of the main campus and the cooling tower at the Central Plant located in the southern section of the main campus. The reclaimed water network is fed from the 21-inch reclaimed water main in Atherton Avenue and consists of purple PVC mains. There are three points of connection for the reclaimed water lines to the LBWD public lines in Atherton Avenue, which serve five separate reclaimed water systems, two of which are pumped, and three of which are supplied at the service pressure point from LBWD. One of the service connections is located in the northern section of the main campus, near the Walter Pyramid and the Dance Center, the other connection is located in the northeastern section of main campus, to the north of Parking Lot 12; the last connection was recently added in the northwestern portion of the campus at Determination Drive.

Wastewater

The main campus's sewer system flows into sewer mains owned by LBWD and LACSD. LACSD operates and maintains the regional wastewater collection system, which includes approximately 1,400 miles of sewers, 49 pumping plants, and 11 wastewater treatment plants that transport and treat about half the wastewater in Los Angeles County. Collectively, LACSD treats about 400 million gallons of water per day (mgd).[7]

The sewer services for individual buildings on campus tie into several sewer mains, which then tie into either the LBWD's or LACSD's sanitary sewer mains. The LBWD and LACSD sanitary sewer mains run throughout the main campus and into the surrounding streets. Due to the main campus's topography and the sewer system's layout, flows from different portions of the campus are collected by six different networks.

There are four permitted clarifiers on campus that remove suspended solids from the sewer flows prior to tying into the campus mains. Based on the Utility Infrastructure Master Plan Update, the existing average day flow generated on-campus for the sewer system is 1.04 cubic feet per second (cfs), with a peak flow rate of 2.88 cfs.

Stormwater

Stormwater on the main campus is collected by pipes, catch basins, and area drains throughout the campus, and empties into Bouton Creek Channel, a Los Angeles County Flood Control District (LACFCD) channel that runs southeasterly through the campus. There is also an area in the southeast section of the main campus that has a network of pipes that directs stormwater to an

[7] Los Angeles County Sanitation Districts, Our Agency, available at: https://www.lacsd.org/about-us/who-we-are/our-agency, accessed April 12, 2023.

18-inch pipe that connects to a 21-inch City of Long Beach storm drain line near 7th Street and East Campus Drive. In addition to stormwater flows generated on-site, the main campus receives flows from the adjacent Veterans Affairs Medical Center complex located to the south and west. Refer to Section 3.7 Hydrology and Water Quality, of this Draft EIR, for a detailed discussion on the drainage conditions for the campus.

The existing storm drainage system consists of several networks that were installed in the 1940s. During heavy rains, the main campus experiences flooding due to inadequately sized storm drain infrastructure. Stormwater from the Bouton Creek Channel floods the southeast portion of south campus during high tides and heavy rain events. Nonetheless, the performance of the existing storm drainage system is generally adequate.

Electricity

The university purchases its electricity directly from Southern California Edison (SCE). SCE provides electrical power to 15 million people in 50,000 square-miles across central, coastal and Southern California, excluding the City of Los Angeles and some other cities. SCE's electrical system is a vast network of transmission lines, distribution lines, electric poles, and transformers.[8]

The campus is served by a 66 kilovolt (kV) transmission service originating from an outdoor switchyard located in the Corporation Yard on the northeast section of the campus. The campus is equipped with three primary substations, identified as the North, South, and Central Plant substations. The campus also has several photovoltaic systems installed at the campus, located at Lot 7, Lot 14, the Corporation Yard, and Brotman Hall. These systems help the campus offset their overall energy use and GHGs, and reduce its overall peak demand and associated charges. Additionally, the campus has two battery storage systems of 1,250 kilowatts (kw)/6,000 kilowatt-hours (kWh) and 1,560 kW/9,450kWh, respectively.

The current installed capacity of the campus is 52,000 kilovolt amperes and the maximum demand of the campus is approximately 10,000 kilovolt amperes, which occurs during the months of September and October. The total average energy consumption of the campus per year is approximately 45,000,000 kWh.

Natural Gas

The Southern California Gas Company (SoCalGas) provides natural gas services to the campus. SoCalGas supplies power to a population of 21.8 million through 5.9 million meters in more than 500 communities. SCE's service territory encompasses approximately 24,000 square miles in diverse terrain throughout Central and Southern California from Visalia to the Mexican border.[9]

There are seven utility-owned natural gas meters on campus, and several high-pressure gas City mains run throughout the campus. The main campus meter is located in the middle of the campus, near the 8-inch high-pressure gas line northeast of the Central Plant. The main campus gas line has three 6-inch branches that serve the entire campus, including the east campus branch, the south campus branch, and the west campus branch.

The main campus natural gas distribution system was installed in the 1950s. CSULB is currently in the process of phasing out natural gas use consistent with the goals of the CSULB CAAP, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030;

[8] Southern California Edison, Who We Are, https://www.sce.com/about-us/who-we-are, accessed April 12, 2023.
[9] Southern California Gas Company, Company Profile, https://www.socalgas.com/about-us/company-profile, accessed April 12, 2023.

thus, CSULB would not consume natural gas by 2035 and this analysis assumes no natural gas use for operation (2035).

Telecommunications

CSULB completed the construction of a campus-wide telecommunications infrastructure upgrade in compliance with the CSU Telecommunications Infrastructure Planning Standards in 2005. This upgrade provided for three new Main Distribution Frame buildings and the construction of new underground conduit, copper, and fiber cable systems from each campus building to one of the new Main Distribution Frame buildings. The upgrade also included the relocation of the existing voice switching system from eight remote sites to the new Main Distribution Frame buildings. During the completion of the infrastructure upgrade, CSULB also replaced the data electronics with a Cisco based data network. The upgrade provided additional improvements for infrastructure, new rooms, replaced outlets, and pathway systems.

Voice telephone service is provided over a campus-owned and operated Ericsson private branch exchange switching system. Verizon is the Local Exchange Carrier that provides off-site service. CSULB has an emergency telephone system that is connected to the University Police building for continuous monitoring. The campus's data network utilizes an existing fiber cable system to interconnect the campus buildings and to interconnect with Verizon for off-site connections. The campus utilizes other forms and systems of telecommunications, such as a video system; centralized switching facilities; inter-building pathways, copper cables, and fiber cables.

Solid Waste

Solid waste is collected on campus for recycling, reuse, waste-to-energy, and/or disposal. CSULB contracts with a private company for the transport of solid waste. Recyclable and specified solid waste is transported to the Southeast Resource Recovery Facility in Long Beach for recycling or solid waste-to-energy conversion. Solid waste that cannot be diverted is transported to the Puente Hills landfill for disposal. The Southeast Resource Recovery Facility has a daily capacity of 1,380 tons per day of solid waste and processes an average of 1,290 tons of municipal solid waste per day.[10] The Puente Hills landfill no longer operates as a landfill, and waste is instead transferred to the Puente Hills Intermodal Facility, which is designed to handle up to approximately 8,000 tons of refuse per day.[11] Per CSULB's 2021 Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment & Rating System Report, CSULB generated a total of approximately 5,591 tons of waste in 2019, of which 49 percent was diverted from landfills.[12]

Energy Usage

Energy usage is typically quantified using the British thermal unit (BTU). Total energy usage in California was 6,922.8 trillion BTU in 2020 (the most recent year for which this specific data is

[10] Los Angeles County Sanitation Districts, Southeast Resource Recovery Facility Brochure, available at: https://www.lacsd.org/services/solid-waste/facilities/southeast-resource-recovery-facility-serrf/southeast-resource-recovery-facility-serrf-brochure, accessed March 16, 2023.

[11] Tetra Tech, Puente Hills Intermodal Facility, available at: https://www.tetratech.com/en/projects/puente-hills-intermodal-facility#:~:text=The%20Puente%20Hills%20Intermodal%20Facility,tons%20of%20refuse%20per%20day, accessed March 16, 2023.

[12] Association for the Advancement of Sustainability in Higher Education, 2021, The Sustainability Tracking, Assessment & Rating System, California State University, Long Beach: OP-1 Emissions Inventory and Disclosure, 2021, available at: https://reports.aashe.org/institutions/california-state-university-long-beach-ca/report/2021-01-29/OP/air-climate/OP-1/, accessed April 14, 2023.

available), which equates to an average of 125 million BTU per capita.[13,14] Of California's total energy usage, the breakdown by sector is 43 percent transportation, 26 percent industrial, 13.5 percent commercial, and 17.5 percent residential.[15] Electricity and natural gas in California are generally consumed by stationary users such as residences and commercial and industrial facilities, while petroleum consumption is generally accounted for by transportation-related energy use. In 2021, taxable gasoline sales (including aviation gasoline) in California accounted for 13,822,186,081 gallons of gasoline.[16]

Electricity Services

Over the past 15 years, electricity generation in California has undergone a transition. Historically, California has relied heavily on oil- and gas-fired plants to generate electricity. Spurred by regulatory measures and tax incentives, California's electrical system has become more reliant on renewable energy sources, including cogeneration, wind energy, solar energy, geothermal energy, biomass conversion, transformation plants, and small hydroelectric plants. The electricity generated by renewable energy sources increased from 27 percent in 2009 to 41 percent in 2021.[17] The CEC forecasts that the statewide annual average growth rates of energy demand between 2021 and 2030 will increase from 1.3 percent to 2.3 percent increase for electricity.[18]

The generating capacity of a unit of electricity is expressed in MW. One MW provides enough energy to power 1,000 average California homes per day. Net generation refers to the gross amount of energy produced by a unit, minus the amount of energy the unit consumes. Generation is typically measured in megawatt-hours (MWh), kWh, or gigawatt-hours (GWh). SCE provides electrical services to the campus through state-regulated public utility contracts. SCE delivered more than 87 million kWh of electricity in 2015 and generated electricity for a total of 15 million people from 180 incorporated cities and 15 counties.[19] Approximately 43 percent of SCE's total power was generated from carbon-free sources in 2021.[20]

The electricity consumption for Los Angeles County from 2012 to 2021 is shown below in Table 3.13-1. The electricity consumption has steadily decreased since 2014 due to stricter energy standards and overall higher energy efficiency.

13 U.S. Census Bureau, California Population and Employment as of April 1, 2020, available at: https://www.census.gov/quickfacts/fact/table/CA/POP010220#POP010220, accessed November 29, 2022;

14 U.S. Energy Information Administration, Table F33: Total Energy Consumption, Price, and Expenditure Estimates, 2021, available at: https://www.eia.gov/state/seds/sep_fuel/html/fuel_te.html, accessed November 29, 2022.

15 U.S. Energy Information Administration, California Energy Consumption by End-Use Section, 2020, available at: https://www.eia.gov/beta/states/states/ca/overview, accessed November 29, 2022.

16 California Department of Tax and Fee Administration, Net Taxable Gasoline Gallons, available at: https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm, accessed November 29, 2022.

17 California Energy Commission, *2021 Total System Electric Generation*.

18 California Energy Commission, February 2022, *Final 2021 Integrated Energy Policy Report Volume IV California Energy Demand Forecast*. Annual average growth rates of electricity demand per capita demand are shown in Figure 10 of the report.

19 Southern California Edison, Who We Are, available at: https://www.sce.com/about-us/who-we-are, accessed April 3, 2023.

20 Southern California Edison, *2021 Edison International Sustainability Report*.

Table 3.13-1: Electricity Consumption in Los Angeles County, 2012-2021

Year	Electricity Consumption (in millions of kilowatt hours)
2012	69,248
2013	68,342
2014	69,924
2015	69,503
2016	69,390
2017	68,632
2018	67,887
2019	66,805
2020	65,650
2021	65,375

Note: The year 2021 is the most recent year for which the county's electricity consumption data is available.
Source: California Energy Commission, Electricity Consumption by County, available at: http://www.ecdms.energy.ca.gov/elecbycounty.aspx, accessed November 29, 2022.

Natural Gas Services

Natural gas is a hydrocarbon fuel found in reservoirs beneath the earth's surface and is composed primarily of methane. It is used for space and water heating, process heating and electricity generation, and as transportation fuel. California's natural gas-fired electric generation increased by 6 percent in 2021 to 97,431 GWh from 2020, accounting for 50 percent of in-state generation.[21] In California and throughout the western United States, many new electrical generation plants that are fired by natural gas are being brought online. The CEC forecasts that the statewide annual average growth rates of energy demand between 2021 and 2030 will be less than 0.1 percent to 0.8 percent increase for natural gas.[22] Thus, there is great interest in importing liquefied natural gas from other parts of the world. Nearly 45 percent of the electricity consumed in California was generated using natural gas. While the supply of natural gas in the United States and production has increased greatly, California produces little, and imports 90 percent of its natural gas.[23]

As discussed, SoCalGas provides natural gas service to the campus as well as 21.8 million consumers throughout Central and Southern California. The natural gas consumption in Los Angeles County from 2012 to 2021 is shown below in Table 3.13-2.[24] Los Angeles County's natural gas consumption was relatively steady with some fluctuations, ranging from 2,761 to 3,065 in millions of therms between 2012 to 2021.

21 California Energy Commission, 2021 Total System Electric Generation, available at: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation, accessed April 14, 2023.

22 California Energy Commission, February 2022, *Final 2021 Integrated Energy Policy Report Volume IV California Energy Demand Forecast*. Annual average growth rates of electricity demand and natural gas per capita demand are shown in Figure 10 and Figure 14, respectively.

23 California Energy Commission, *Supply and Demand of Natural Gas in California*, available at: https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california, accessed November 29, 2022.

24 Natural gas consumption data is not available for the City of Long Beach. The year 2021 is the most recent year for which the county's natural gas consumption data is available.

Table 3.13-2: Natural Gas Consumption in Los Angeles County 2012-2021

Year	Natural Gas Consumption (in millions of therms)
2012	2,985
2013	3,065
2014	2,794
2015	2,761
2016	2,878
2017	2,956
2018	2,922
2019	3,048
2020	2,937
2021	2,881

Source: California Energy Commission, Gas Consumption by County, available at: http://www.ecdms.energy.ca.gov/gasbycounty.aspx, accessed November 29, 2022.

Petroleum

Petroleum products are fuels made from crude oil and hydrocarbons contained in natural gas. Petroleum products can also be made from coal, natural gas, and biomass. Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline being consumed by light-duty cars, pickup trucks, and sport utility vehicles.[25] Gasoline sold in California at retail is made up of 90 percent petroleum-based gasoline (as specified by CARB) and 10 percent ethanol.

Automotive fuel consumption in Los Angeles County from 2012 to 2022 is shown in Table 3.13-3. The on-road automotive fuel consumption dipped in 2020 and increased slowly after. The off-road fuel consumption has slowly increased since 2012. With the growth of economy, there were more on-road vehicles and more construction activities over the years, and therefore both on-road and off-road fuel consumption has increased. For the year 2020, the on-road automotive fuel consumption dipped due to the COVID-19 pandemic, which resulted in mass lockdowns due to the stay-at-home orders.

[25] California Energy Commission, California Gasoline Data, Facts, and Statistics, available at: https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics, accessed April 3, 2023.

Table 3.13-3: Automotive Fuel Consumption in Los Angeles County 2012-2022

Year	On-Road Automotive Fuel Consumption (Gallons)	Off-Road Fuel Consumption (Gallons)
2012	4,186,161,501	30,386,041
2013	4,223,808,635	31,412,517
2014	4,265,906,215	32,380,286
2015	4,386,789,754	33,324,823
2016	4,545,597,465	34,221,807
2017	4,542,959,166	35,091,687
2018	4,489,529,661	35,918,628
2019	4,420,198,780	36,717,728
2020	3,960,563,083	37,480,695
2021	4,418,592,633	38,606,422
2022	4,390,118,773	39,729,703

Source: California Air Resources Board, EMFAC2021, available at: https://arb.ca.gov/emfac/, accessed February 16, 2023.

3.13.3 Methodology

Utilities

The evaluation of impacts related to utilities and service systems was based on the Utility Infrastructure Master Plan Update, the Water Supply Information Report, and comments received from LACSD during the NOP scoping period. Additionally, the analysis considered the impacts of the types of development under the Master Plan Update as well as the total campus population growth and resulting demand for increased utilities. The analysis of impacts to utilities is based on a comparison of existing and projected supply and capacity for services and the resulting need, if any, for new, expanded, or modified facilities to provide for the increased demand. Under CEQA, impacts are typically considered to be significant if there would be inadequate supplies or capacity to meet the project's demands, or a project would require new or expanded utility or service facilities, the construction of which would result in significant environmental impacts.

Energy

The energy impact analysis in this section includes a program-level analysis of the proposed Master Plan Update. The program-level analysis generally includes a qualitative discussion for construction and quantitative discussion for operation associated with the types of project activities that would be implemented under the Master Plan Update that would result in energy consumption. The project-level analysis includes a quantitative analysis of near- and mid-term projects that would be implemented under the proposed Master Plan Update. Of the near- and mid-term projects described in Chapter 2, Project Description, the most impactful projects, in terms of energy use, were identified and modeled based on their likely construction scenarios, construction duration, construction equipment, existing and/or new building square footage, and demolition requirements. These major projects were determined to represent the more intense construction scenarios that would require notable amounts of energy consumption and usage.

The analysis focuses on two sources of energy that are relevant to the Master Plan Update: electricity used during operations and fuel consumption from construction vehicles/equipment and operational mobile sources. The estimation of electricity usage and fuel consumption are based on the California Emissions Estimator Model Version 2020.4.0 (CalEEMod) modeling results for

the implementation of the Master Plan Update.[26] Additionally, CSULB is currently in the process of phasing out natural gas usage, consistent with the goals of the CSULB CAAP, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030; thus, CSULB would not consume natural gas by 2035 and this analysis assumes no natural gas use for operation (2035). Although Title 24 requires new buildings to install solar panels and energy storage facilities, for a conservative analysis, all additional electricity consumed as part of implementation of the Master Plan Update is assumed to be purchased from SCE, as opposed to being generated on-site (i.e., solar). The Title 24, Non-Title 24, and Lighting energy consumption breakdown for the existing conditions and the Master Plan Update were adjusted in proportion to the CalEEMod defaults because the energy consumption breakdown was not provided in the Utility Infrastructure Master Plan Update.

Construction Energy Consumption Methodology

Energy consumption from the construction phases of the most impactful projects was calculated using CalEEMod Version 2020.4.0. Construction modeling parameters, including phasing, equipment mix, and vehicle trips, were based on CalEEMod default values and specific construction phasing and vehicle trip information for development projects, as provided by program planners in the Design & Construction Services Department at CSULB. To estimate construction emissions, the projects were modeled separately. Each project includes construction activities associated with demolition, grading, building construction, paving, and architectural coating applications.

All phases include three types of trips: worker trips, vendor trips, and haul trips. Worker trips for all construction phases, except building construction and architectural coating, are based on 1.25 workers per equipment in the phase, resulting in one roundtrip per worker. For building construction workers, the trip number is estimated using the trip generation rate from a survey conducted by the South Coast Air Quality Management District (SCAQMD). Worker trips associated with architectural coating are estimated at 20 percent of building construction worker trips. Vendor trips are only associated with building construction and are based on the land uses and associated trip rates from the SCAQMD survey. Haul trips are based on the amount of material that is demolished, imported, or exported, and are estimated and provided by program planners in the Design & Construction Services Department at CSULB. The on-road fuel consumption during construction is calculated based on the phase length, associated trips, trip length, and fuel consumption factors. To calculate the annual on-road fuel consumption, fuel consumption of the most impactful projects is added together and divided by seven, as the construction of the projects is estimated to occur over approximately seven years. The annual on-road fuel consumption was compared to the 2024 Los Angeles County on-road fuel consumption estimated by the countywide 2021 CARB EMission FACtor (EMFAC2021) model.

The off-road fuel consumption is calculated based on the CalEEMod defaults, which include the length of the phase, the type of equipment, the number of equipment, the usage hour of the equipment, the horsepower of the equipment, and the load factor of the equipment. To be conservative, this analysis assumes the equipment would operate eight hours per day, and the

[26] CalEEMod version 2022.1 was officially released on December 21, 2022. Based on correspondence with SCAQMD staff, a grace period would be granted for CEQA projects occurring during this transition phase to utilize either the older (2020) or the latest (2022) version of CalEEMod. In general, the SCAQMD recommends the use of CalEEMod 2022 for projects that have NOPs issued after December 2022. The NOP for the Master Plan Update EIR was published on April 21, 2022; hence, CalEEMod version 2020 4.0 was used. Source: Sam Wang, South Coast Air Quality Management District Senior Air Quality Engineer, email correspondence with Zhe Chen, Michael Baker International, January 13, 2023.

length of each phase would be the average of the most impactful projects.[27] To calculate the annual off-road fuel consumption, the fuel consumption for the most impactful projects is added together and divided by seven as the construction of the major projects would last for approximately seven years. The annual off-road fuel consumption was then compared to 2024 Los Angeles County off-road construction fuel consumption estimated by EMFAC2021.

Operational Energy Consumption Methodology

The main components of the operational energy consumption analysis are electricity and fuel consumption from mobile sources. CSULB's electricity is provided by SCE and on-site solar generation. For modeling purposes, only electricity purchased from SCE was considered, as electricity generated from on-site solar does not impact the regional energy supply. The baseline (2019) and horizon year (2035) electricity consumption was obtained from the CSULB Utility Infrastructure Master Plan Update. Based on the Utility Infrastructure Master Plan Update, the university's natural gas and SCE electricity consumption was 1,377,285 therms (137,695,445 kBtu) and 37,884,271 kWh, respectively, in 2019. Implementation of the Master Plan Update would increase the electricity consumption by 25,291,100 kBtu (7,412,397 kWh) and would not consume natural gas by 2035. To be conservative, this analysis assumes that all additional electricity consumed as part of implementation of the Master Plan Update would be purchased from SCE. This assumption is conservative as the new buildings under the Master Plan Update would be required to install photovoltaic panels per 2022 Title 24 standards, which would generate on-site energy.

Additionally, CSULB is currently in the process of phasing out natural gas use consistent with the goals of the CSULB CAAP, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030; and thus, CSULB would mostly phase out natural gas by 2035. However, to be conservative, this analysis assumes natural gas use for operation in 2035 would remain the same as under existing conditions (1,377,285 therms or 137,695,445 kBtu) to account for the continued use of natural gas at a few buildings on-campus that require natural gas, such as laboratories with Bunsen burners and commercial kitchens. This assumption is conservative as the new buildings under the Master Plan Update would be electrified and would not consume natural gas, and some existing buildings would consume less natural gas as they would be retrofitted under the Master Plan Update to be fully electrified.

Fuel consumption associated with mobile sources would primarily consist of motor vehicles (automobiles and light-duty trucks) traveling to and from the campus. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. The default vehicle mix provided in CalEEMod 2020.4.0, which was based on CARB's Mobile Source Emissions Inventory model, EMFAC, version 2017, was applied. Trip generation rates and VMT for implementation of the Master Plan Update were based on the transportation analysis in Section 3.11, Transportation, prepared for the project. According to the transportation analysis, CSULB would generate approximately 33,237 trips per day in the 2019 baseline year without the project, and 44,113 trips per day in the 2035 horizon year with the project (i.e., Master Plan Update); this would result in a total site-generated VMT of 390,197 miles per day in the 2019 baseline year without the project and 446,213 miles per day in the 2035 horizon year with the project. Default vehicle trip generation rates included in CalEEMod were adjusted to match the existing and project's trip generation estimates from the transportation analysis. In addition, Saturday and Sunday trip rates for the 2019 baseline year without the project and 2035 horizon year with the project were adjusted in

[27] The average durations for each construction phase used to calculate consumption are 34 days for the demolition phase, 34 days for the grading phase, 284 days for the building construction phase, 30 days for the paving phase, and 31 days for the architectural phase.

proportion to the CalEEMod weekday trip rates because weekend trip-generation rates are not provided in the transportation analysis. CalEEMod default trip distances were adjusted to match the weekday daily VMT for the 2019 baseline year without the project and 2035 horizon year with the project.

The results of the energy consumption modeling are included in the Appendix C, Air Quality, Greenhouse Gas Emissions, and Energy Calculations. To calculate the net operational energy consumption of the Master Plan Update, the existing energy consumption was subtracted from the buildout energy consumption, as the operational phase estimated all proposed development and all existing campus development that would remain with implementation of the Master Plan Update.

As indicated in the program-analysis for Threshold UE-6, energy usage from implementation of the Master Plan Update would not cause a significant impact on energy supply. Therefore, a separate operational consumption analysis was not conducted for each project, as it can be inferred that all of the most impactful projects would also not cause a significant impact on energy supply, since they are already included in the program-level analysis.

Thresholds of Significance

The significance thresholds used to evaluate the impacts of the Master Plan Update related to utilities and energy are based on Appendix G of the CEQA Guidelines. Based on Appendix G, a project would have a significant impact related to utilities and energy if it would:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?
- Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?
- Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

3.13.4 Impact Analysis

The impact analysis below is organized into a program-level analysis and a project-level analysis. For the program-level analysis, the Master Plan Update is evaluated as an overall program of projects developed over a multi-year planning horizon for the CSULB campus. For the project level analysis, near- and mid-term development projects that would be implemented under the

Master Plan Update are analyzed.

UE-1 Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Program-Level Analysis for Master Plan Update

Water

All new buildings implemented under the Master Plan Update would require new connections to existing water infrastructure on campus. Additionally, replacement and renovation projects may require the replacement or expansion of water pipelines. The construction impacts associated with installing new, replacement, and expanded pipelines within the existing water network may involve excavation and paving for water connections.

According to the Utility Infrastructure Master Plan Update and the Uniform Fire Code's criteria, the campus's existing water distribution network is inadequate to serve the existing buildings without significant improvements, primarily due to the limited size of the distribution piping in many locations. In order to prevent maintenance and failure problems in the future, replacement of water mains, upsizing of pipes, a new water meter and service, and installation of backflow preventers are recommended to serve planned development under the Master Plan Update and would be included in the site plans for the individual projects. Such improvements would be installed during implementation of individual development projects depending on need. Water infrastructure improvements would be located within the disturbance area of individual development projects, the boundaries of the campus, and/or previously disturbed roadways internal to the campus. As such, the construction of these infrastructure improvements would not cause significant environmental effects. Therefore, impacts related to the construction and expansion of water facilities would be less than significant.

Wastewater Treatment

According to the Utility Infrastructure Master Plan Update, some of the projects under the Master Plan Update are located on top of existing sewer lines and would need to be relocated, or need additional sewer lines to connect to the existing campus sewer network. Although development under the Master Plan Update may conflict with the existing sewer layout, each individual development project would be designed to re-route sewer lines, as needed. In addition, approval to construct improvements within, over, or near LACSD's sewer or sewer easements on campus is required from LACSD before any construction begins.[28] Sewer line extensions necessary to serve proposed future development would be installed within the disturbance area of individual development projects, the boundaries of the campus, and/or previously disturbed roadways internal to the campus. As such, the construction of these infrastructure improvements would not cause significant environmental effects. Furthermore, as analyzed in Threshold UE-3 below, LACSD would have adequate wastewater capacity to serve the projected needs resulting from implementation of the Master Plan Update, and thus, would not require new or expanded wastewater facilities. Therefore, impacts related to the construction and expansion of wastewater facilities would be less than significant.

[28] Will Serve Letter from Los Angeles County Sanitation Districts, Curry, Donna, Customer Service Specialist, dated May 10, 2023.

Stormwater Drainage

During construction of the projects under the Master Plan Update, stormwater would generally flow to existing catch basins, area drains, and into pipes, similar to existing conditions. Implementation of the Master Plan Update would result in a different configuration of the buildings and impervious surfaces on campus. Storm drain laterals would be replaced with laterals for new building footprints, as needed. Existing storm drain mains are not expected to be rerouted as a result of implementation of the Master Plan Update. One of the goals of the Master Plan Update is to ensure that new developments produce less runoff than pre-development conditions or match pre-development conditions at minimum. Thus, new and replacement buildings would be constructed with sustainable design features, which would include Low Impact Development such as bioswales, bioretention basins, and inlet basin filters to manage stormwater and minimize stormwater runoff. Therefore, impacts related to the construction and expansion of stormwater facilities would not result in significant environmental effects and impacts would be less than significant.

Electric Power

Electricity consumption during construction activities would be limited to providing power to project-specific construction sites and portable construction equipment. Temporary electric power would be provided via the existing electrical infrastructure on campus. Electricity for these activities would be short-term and would not substantially increase the demand for electricity within the campus. Heavy equipment used for construction is primarily powered by fossil fuels, as discussed further below in Threshold UE-6. Therefore, construction of the development projects associated with the Master Plan Update would be adequately served by the existing electrical infrastructure.

As discussed below in Threshold UE-6, buildout of the Master Plan Update would increase the annual consumption of electricity at the campus by 7,714 MWh. One of the goals of the university is to apply Net Zero Energy strategies to all new campus buildings such that buildings would be designed to minimize energy consumption. By implementing Net Zero Energy strategies, building electricity consumption for new buildings on campus would be further minimized. Additionally, the development projects associated with the Master Plan Update would be required to comply with the most current version of the Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the latest Title 24 standards would reduce operational building electricity consumption. The Title 24 Building Energy Efficiency Standards are updated every three years and become more stringent between each update; therefore, complying with the latest Title 24 standards would make the new buildings constructed under the Master Plan Update more energy efficient than existing buildings built under the earlier versions of the Title 24 standards. In addition, CSULB currently generates solar energy on campus, and would increase solar generation throughout the Master Plan Update horizon year. The increase in availability of such energy resources further ensures that new development projects would minimize electricity demand. Lastly, developments associated with the proposed Master Plan Update would incorporate the CSU Sustainability Policy's Sustainable Building & Lands Practices, such as providing shade from the sun, taking advantage of coastal breezes, and promoting energy efficiency in the project design. Therefore, impacts related to the construction and expansion of electrical facilities would be less than significant.

Natural Gas

CSULB is currently in the process of phasing out natural gas use, consistent with the goals of the CSULB CAAP, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030. The existing buildings and facilities on campus that currently use natural gas would continue to use natural gas; however, all new buildings and facilities would be electrified. As implementation of the Master Plan Update would not result in additional natural gas consumption, there would be no impacts related to new or expanded natural gas facilities.

Telecommunications

Development under the Master Plan Update would require connections to the existing campus voice and data network through the campus copper and fiber optic cable systems. The existing copper and fiber optic cable system would be expanded to accommodate new, renovated, and replacement buildings. However, no major telecommunications improvements are proposed as new services would connect to the existing system. Therefore, implementation of the Master Plan Update would result in no impacts related to new or expanded telecommunications facilities.

Project-Level Analysis for Near- and Mid-Term Development Projects

Impacts related to new or expanded water, wastewater, stormwater, electric, natural gas, and telecommunications facilities resulting from the near- and mid-term development projects would be similar to the impacts at the program level for the Master Plan Update. Impacts resulting from specific near- and mid-term development projects are discussed below.

Water

All new buildings implemented under the Master Plan Update would require new connections to existing water infrastructure on campus. These projects include Faculty and Staff Housing and the New 7th St. Community Outreach Facility. Additionally, some building additions may also require new connections to the existing water infrastructure on campus, if new restrooms or kitchen facilities are included in the building addition, such as for the USU Renovation/Addition and Cafeteria Replacement, College of the Arts Replacement Building, Student Health Services Addition, Corporation Yard Renovations, University Music Center Renovation/Addition projects. Replacement and renovation projects may require the replacement or expansion of water pipelines to serve the replacement and renovated buildings.

Based on the Utility Infrastructure Master Plan Update, the New Parkside Housing Village, USU Renovation/Addition and Cafeteria Replacement, College of the Arts Replacement Building, Faculty and Staff Housing, and Engineering Replacement Building projects would conflict with existing water lines. However, the existing water lines would be rerouted and reconnected on a project-by-project basis. Infrastructure improvements would be anticipated to be located within the disturbance area of the near- and mid-term project sites, the boundaries of the campus, and/or previously disturbed roadways internal to the campus. As such, the construction of these infrastructure improvements would not cause significant environmental effects. Therefore, impacts related to the construction and expansion of water facilities for the near- and mid-term development projects would be less than significant.

Wastewater Treatment

Based on the Utility Infrastructure Master Plan Update, the New Parkside Housing Village, Student Health Services Addition, USU Renovation/Addition and Cafeteria Replacement, College of the Arts Replacement Building, and Faculty and Staff Housing projects would require modifications with the existing wastewater network. However, the existing sewer lines would be

rerouted and reconnected on a project-by-project basis. Infrastructure improvements would be anticipated to be located within the disturbance area of the near- and mid-term project sites, the boundaries of the campus, and/or previously disturbed roadways internal to the campus. As such, the construction of these infrastructure improvements would not cause significant environmental effects. In addition, during the design process for individual development projects, CSULB would obtain approval from LACSD to construct improvements within, over, or near LACSD's sewer or sewer easements before any construction begins. In addition, as discussed under Threshold UE-3, LACSD would have adequate capacity to serve the projected needs resulting from implementation of the Master Plan Update, and thus, would not require new or expanded wastewater facilities. Therefore, the near- and mid-term development projects would not cause significant environmental effects and impacts related to wastewater facilities would be less than significant.

Stormwater Drainage

Based on the Utility Infrastructure Master Plan Update, the New Parkside Housing Village, USU Renovation/Addition and Cafeteria Replacement, and Faculty and Staff Housing projects would require modifications with the existing stormwater drainage network. However, recommendations such as rerouted storm drain lines would be incorporated on a project-by-project basis. Infrastructure improvements would be anticipated to be located within the disturbance area of the near- and mid-term project sites, the boundaries of the campus, or previously disturbed roadways internal to the campus. As such, the construction of these infrastructure improvements would not cause significant environmental effects. Consistent with the Master Plan Update's goal of minimizing runoff from new development, the near- and mid-term development projects would incorporate Best Management Practices (BMPs) to minimize impacts to the stormwater system. BMPs may include bioswales, bioretention basins, inlet filter basins, catch basins, or storm drain inserts. Therefore, impacts related to the construction and expansion of stormwater facilities for the near- and mid-term development projects would be less than significant.

Electric Power

Individual development projects implemented under the Master Plan Update that would generate new electricity demand include building additions (USU Renovation/Addition and Cafeteria Replacement, Hillside College Renovations/Addition, College of the Arts Replacement Building, Student Health Services Addition, Corporation Yard Renovations, University Music Center Renovation/Addition) and new buildings (Faculty and Staff Housing, New 7th St. Community Outreach Facility). Replacement projects (Engineering Replacement Building and New Parkside Housing Village) could result in increased or additional electricity demand. However, the increase of electricity demand would not be substantial, as they would involve demolition and replacement of an existing facility in the same physical location. Additionally, replacement projects would be required to comply with the most current version of the Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the latest Title 24 standards would reduce operational building electricity consumption. Projects that include interior and exterior renovations (Beachside Housing, Aquatics Center and Pool Renovation, Jack Rose Track/Commencement Facilities, Walter Pyramid Renovation, and Liberal Arts 5 Renovation) would also generally not result in increased or additional electricity demand as renovations would be constructed to exceed the current Title 24 standards by 10 percent and comply with the CALGreen Code. Additionally, mobility, circulation, and open space projects (Pedestrian/Bike Lane Improvements, Friendship Walk Stairs Revitalization, Improved Campus Entrance and Gateway, Redefining the Campus Quad) are not anticipated to result in new or increased electricity demand as these types of

projects would require nominal amounts of electricity for lighting. Therefore, impacts related to the construction and expansion of electrical facilities for the near- and mid-term development projects would be less than significant.

Natural Gas

As discussed, CSULB is currently in the process of phasing out natural gas use consistent with the goals of the CSULB CAAP, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030. The existing buildings and facilities on campus that currently use natural gas would continue to use natural gas; however, all new buildings and facilities would be electrified.

Thus, CSULB would not consume natural gas by 2035. However, in the interim, the USU Renovation/Addition and Cafeteria Replacement would require an extension of gas service, which would connect to the existing system within the main campus. The other near- and mid-term development projects included in the Utility Infrastructure Master Plan Update would utilize electricity instead of natural gas. Thus, the existing natural gas distribution system would have adequate capacity to support the proposed natural gas loads for the near- and mid-term development projects. Therefore, impacts related to the construction and expansion of natural gas facilities for the near- and mid-term development projects would be less than significant.

Telecommunications

The Utility Infrastructure Master Plan Update identified the following projects that would require new connections to the campus voice and data network through the campus copper and fiber optic cable systems: University Music Center Renovation/Addition, New Parkside Housing Village, New 7th St. Community Outreach Facility, USU Renovation/Addition and Cafeteria Replacement, College of the Arts Replacement Building, and Engineering Replacement Building. However, as under the program-level analysis, no major telecommunications improvements are proposed, as new services would connect to the existing system. Therefore, impacts related to the construction and expansion of telecommunications facilities for the near- and mid-term development projects would be less than significant.

UE-2 Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Program-Level Analysis for Master Plan Update

Construction

Construction activities would result in a temporary increase in water demand associated with earthwork and soil compaction, dust control, mixing and placement of concrete, equipment and site cleanup, irrigation for plant and landscaping establishment, water line testing and flushing, and other related short-term activities. The amount of water used during construction would vary depending on weather, soil conditions, the size of the area under construction, and the specific activities being performed. However, these activities would occur intermittently throughout the construction period and would be temporary in nature. Therefore, construction impacts related to water supply would be less than significant.

Operation

Development under the Master Plan Update would include renovation, replacement, and new buildings, which would increase demands on water supply by supporting an increased campus

population through the Master Plan Update horizon year of 2035. The water demand for the buildout of the Master Plan Update (2035) are from Appendix I, Water Supply Information Report, and was projected based on the projected campus growth. Key numbers summarizing the water supply analysis for the baseline year and through year 2040 are presented in Table 3.13-4.[29]

Table 3.13-4: Projected Gross Water Demand through 2040

Description	Academic Year 2019-2020	Academic Year 2039-2040
Total Campus Population	32,699	40,181[1]
CSULB Domestic Water Demand (MG)	138.2	169.9
CSULB Domestic Water Demand (AF)	424	521
LBWD Commercial Water Demand (AF)	11,084*	9,283
LBWD Domestic Water Demand (AF)	53,964*	51,691
LBWD Total Water Supply (AF)	84,752*	88,752
LBWD Total Water Surplus (AF)	30,788*	37,061

Notes: MG = million gallons; AF = acre feet.

a. The 2039-2040 campus population projection is only applicable for the purposes of the water supply analysis.

Source: Refer to Appendix I, Water Supply Information Report.

As shown in Table 3.13-4, CSULB's gross water demand (without the implementation of conservation measures) is expected to increase from 138.2 million gallons (MG) in 2020 to 169.9 MG by 2040, while LBWD's projected total commercial water demand will decrease from 11,084-acre feet (AF) (3,104 MG) in 2020 to 9,283 AF (2,599 MG) by 2040. As a result, CSULB's water demand percentage of the LBWD's total commercial water demand will change from 3.9 percent in 2020 to 6.5 percent in 2040. However, LBWD's water supplies were projected to have an average annual increase of 1.8 percent through 2040, which is higher than CSULB's water demand increase rate of 1.04 percent. By 2040, LBWD will have 12,076 MG (37,061 AF) of water surplus per year, which is adequate to cover CSULB's water demand increase of 31.7 MG. Therefore, implementation of the Master Plan Update would not result in inadequate water supply by 2040.

In addition, to minimize impacts to water supply and support ongoing water reduction policies, CSULB would continue efforts to reduce water consumption, which are outlined in the CSULB Water Action Plan, 2020 CAAP, 2012 Landscape Master Plan, 2011 Strategic Energy Plan, as well as university-wide policies including Executive Order 0987 and the 2020 CSU Sustainability Policy. These plans and policies include but are not limited to the following water reduction recommendations: identify opportunities to use reclaimed in place of potable water; implement applicable best management water use practices for all campus operations; encourage university-wide water conservation; implement the Irrigation Water Savings Program, improve irrigation water efficiency; reduce turf area and replace it with native plants; and improve stormwater capture and reuse. The Master Plan Update also includes goals to expand on the use of reclaimed water through retrofitting and extension of reclaimed water lines, and use of

[29] The water demand is projected through 2040 to be consistent with the 20-year projection demand provisions from Senate Bill 610. While the CSU and its universities do not meet the definition of a city or county under SB 610, recent and continuing precipitation trends and water supply uncertainty have heightened concerns about the future availability of a reliable water supply, and the provisions of SB 610 provide useful guidance for water supply analysis.

reclaimed water for toilet flushing in new/replacement buildings.

Therefore, because LBWD would have adequate water supply through 2040 and CSULB would continue to implement efforts to reduce water use, implementation of the Master Plan Update would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. Impacts would be less than significant.

Project-Level Analysis for Near- and Mid-Term Development Projects

Individual development projects implemented under the Master Plan Update that would generate new water demand include building additions (USU Renovation/Addition and Cafeteria Replacement, Hillside College Renovations/Addition, College of the Arts Replacement Building, Student Health Services Addition, Corporation Yard Renovations, University Music Center Renovation/Addition) and new buildings (Faculty and Staff Housing, New 7th St. Community Outreach Facility). Replacement projects (Engineering Replacement Building and New Parkside Housing Village) would generally not result in increased or additional water demand as they would involve demolition and replacement of an existing facility in the same physical location, resulting in similar water demand. Additionally, as required by CALGreen, replacement projects would implement water conservation measures to reduce water consumption by 20 percent through measures such as low water use fixtures (faucets, toilets, and urinals) when retrofitting restrooms and drought tolerant landscaping to further minimize water demand. New and replacement projects may also include the use of reclaimed water for toilet flushing. Projects that include interior and exterior renovations (Beachside Housing, Aquatics Center and Pool Renovation, Jack Rose Track/Commencement Facilities, Walter Pyramid Renovation, and Liberal Arts 5 Renovation) would also generally not result in increased or additional water demand. Additionally, mobility, circulation, and open space projects (Pedestrian/Bike Lane Improvements, Friendship Walk Stairs Revitalization, Improved Campus Entrance and Gateway, Redefining the Campus Quad) are not anticipated to result in new or increased water demand as these types of projects would include drought tolerant landscaping, where necessary, that would require nominal water use.

As described under the program-level analysis, the near- and mid-term development projects would not result in a water supply issue through 2040 based on LBWD's total water supply and the campus's projected total water demand through 2040. The near- and mid-term development projects would also adhere to the applicable plans and policies that include water conservation measures. Therefore, because LBWD would have adequate water supply through 2040 and CSULB would continue to implement efforts to reduce water use, the near- and mid-term development projects would have sufficient water supplies available to serve the project together with reasonably foreseeable future development during normal, dry, and multiple dry years. Impacts would be less than significant.

UE-3 Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Program-Level Analysis for Master Plan Update

Implementation of the Master Plan Update would result in the renovation of existing buildings, replacement of buildings, and construction of new buildings, as well as an increase in the on-campus population, all of which would place additional demands on the existing sanitary sewer system by increasing the potential for additional sewage flow. According to the Utility Infrastructure Master Plan Update, the total increase in sewage flow for the build-out condition of

the Master Plan Update would be approximately 148,600 gpd from the new buildings and replacement buildings and number of students per square foot of building.

According to LACSD, wastewater flow originating from implementation of the Master Plan Update would discharge to local sewer lines, which are not maintained by LACSD, for conveyance to the one or more of LACSD's trunk sewers.[30] Wastewater generated by implementation of the Master Plan Update would be treated at the Joint Water Pollution Control Plant located in the City of Carson, which has a capacity of 400 mgd and currently processes an average flow of 249.8 mgd, or the Long Beach Water Reclamation Plant, which has a capacity of 25 mgd and currently processes an average flow of 15.2 mgd. Based on LACSD's wastewater generation factors of 20 gpd per student,[31] implementation of the Master Plan Update would increase the wastewater generation on campus by 109,320 gpd (from 653,980 gpd in the 2019 baseline year to 736,300 gpd in the 2035 horizon year). Using the more conservative assumption from the Utility Infrastructure Master Plan Update that implementation of the Master Plan Update would increase sewage flow by 148,600 gpd, the average flow at the Joint Water Pollution Control Plant would be increased by 0.06 percent and the average flow at the Long Beach Water Reclamation Plant would be increased by 1 percent. Both the Joint Water Pollution Control Plant and Long Beach Water Reclamation Plant have capacity to accommodate these increases. Furthermore, LACSD charges fees to connect facilities (directly or indirectly) to their Sewerage System or to increase the strength or quantity of wastewater discharged from connected facilities. Development under the Master Plan Update would require the payment of fees in order to permit an increased discharge to the LACSD's Sewerage System if new connections are needed. As there is adequate capacity at the Joint Water Pollution Control Plant and Long Beach Water Reclamation Plant and CSULB would pay fees to connect new facilities to the existing sewerage system, impacts would be less than significant.

Project-Level Analysis for Near- and Mid-Term Development Projects

The proposed near- and mid-term development projects would result in similar impacts to those described above at the program level for implementation of the Master Plan Update. Wastewater generation for the near- and mid-term development projects represents a portion of and is accounted for in the total increase in sewage flow, which would be approximately 148,600 gpd with implementation of the Master Plan Update. As discussed under the program-level, the average flow at the Joint Water Pollution Control Plant would be increased by 0.06 percent and the average flow at the Long Beach Water Reclamation Plant would be increased by 1 percent with implementation of the Master Plan Update. Both the Joint Water Pollution Control Plant and Long Beach Water Reclamation Plant have capacity to accommodate these increases. Given that each project is captured within the program-level analysis, sewage flow for each individual development project would be less than the estimates presented in the program-level analysis. In addition, CSULB may also pay applicable fees to LACSD for the near- and mid-term development projects for new sewer connections. Therefore, the near- and mid-term development projects would result in less than significant impacts to the service capacity of the wastewater treatment provider.

[30] Will Serve Letter from Los Angeles County Sanitation Districts, Curry, Donna, Customer Service Specialist, dated May 10, 2023.

[31] Los Angeles County Sanitation Districts, *Table 1, Loadings for Each Class of Land Use*.

UE-4 Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Program-Level Analysis for Master Plan Update

Construction

Construction waste includes any disposable material associated with campus development. Implementation of the Master Plan Update would generate waste through construction of renovation, replacement, and new projects, with replacement projects generating the most amount of waste as these types of projects would require the demolition of existing buildings. While the amount of waste generated from implementation of the Master Plan Update is unknown, the CSU requires a diversion rate of 50 percent by 2030 and 80 percent by 2040, and CSULB has a zero waste goal of 90 percent diversion. Thus, construction activities for development under the Master Plan Update would be required to reduce waste and recycle, reuse, and/or recover materials. In addition, the CSU standards set forth in PolicyStat require that Contractors submit a Waste and Recycling Plan, which at a minimum should identify and estimate types and amounts of waste, job site source separation plans, landfill options and alternatives to disposal (i.e., facilities accepting salvaged or recycled materials), and tonnage calculations demonstrating Contractor will meet or exceed 50 percent diversion rate requirement. This Waste and Recycling Plan must be approved by the Construction Administrator before work can commence. Upon conclusion of projects, the Contractor must also submit a Reuse, Recycling, and Disposal Report, including disposal receipts indicating weights of materials, landfilled or otherwise diverted. With adherence to CSU's diversion requirements and CSULB's continuing efforts towards zero waste, construction activities under the Master Plan Update related to generating solid waste in excess of applicable standards or capacity of local infrastructure would be less than significant.

Operation

The total on-campus population in the Master Plan Update horizon year 2035 is 38,165, which includes FTES, FTE employees, auxiliary employees, and faculty/staff household members. According to CSULB's self-reported statistics in the Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment & Rating System, the university had a total of approximately 5,591 tons of waste generated in 2019, with 2,875 tons being disposed in the landfill or incinerator.[32,33] The total weighted campus users reported was 25,634, and thus, the total waste generated per campus user was 0.22 tons for 2019.[34] Using this same generation factor, the projected population for the Master Plan Update horizon year 2035 is anticipated to generate approximately 8,396 tons of waste in 2035, or 23 tons of waste per day. However, in 2019, CSULB diverted 49 percent of waste from landfills and this diversion rate is expected to increase through the Master Plan Update horizon. As discussed, the Southeast Resource Recovery Facility has a daily capacity of 1,380 tons per day of solid waste; the operational buildout of the Master Plan Update would comprise of 1.7 percent of that total. In addition, the Puente Hills Intermodal Facility is designed to handle up to approximately 8,000 tons of refuse per day; the operational buildout of the Master Plan Update would comprise of 0.29

[32] The rest of the total tons of waste generated was recycled, composted, donated, or disposed through post-recycling.

[33] Association for the Advancement of Sustainability in Higher Education, 2021, The Sustainability Tracking, Assessment & Rating System, California State University, Long Beach: OP-1 Emissions Inventory and Disclosure, 2021, available at: https://reports.aashe.org/institutions/california-state-university-long-beach-ca/report/2021-01-29/OP/air-climate/OP-1/, accessed March 16, 2023.

[34] Weighted campus users includes student residents on-site, employee residents on-site, number of other individual residents on-site, total full-time-equivalent-student enrollment, full-time-equivalent of employees, and full-time-equivalent of students enrolled exclusively in distance education.

percent of that total. Therefore, these facilities would have adequate capacity to handle the projected waste generation under the Master Plan Update's horizon year 2035.

In addition, the university has a comprehensive "Waste Not" recycling program that aims to eliminate campus waste by 2030 by focusing on reducing wasteful practices and improving recycling infrastructure across the university. The Master Plan Update has a goal of achieving zero waste to landfill by 2030, meaning 90 percent of waste would be diverted. The Master Plan Update outlines specific strategies for waste minimization and an increase in waste diversion that include shifting towards paper-less administrative processes and academic courses; establishing a cardboard recycling/foam repurposing center during university move-in days; continuing grass cycling (a landscape strategy to leave clippings on the ground); ensuring the university's waste hauler partnership supports CSULB's sustainability goals; providing a program that creates opportunities to share and swap furniture and supplies between departments; continuing to provide collection bins for donations during move-out days; and continuing the university's electronic waste program. With implementation of the Master Plan Update's strategies geared towards reducing waste, adherence to CSULB's "Waste Not Program" and zero waste goal, and expected improvements in waste diversion rates, operation of development under the Master Plan Update would not generate solid waste in excess of applicable standards or capacity of local infrastructure, and impacts would be less than significant.

Project-Level Analysis for Near- and Mid-Term Development Projects

Construction

The proposed near- and mid-term development projects would result in similar impacts to those described above at the program level for implementation of the Master Plan Update. It is anticipated that the following near- and mid-term development projects would result in the most construction waste as they would require demolition of existing buildings: Engineering Replacement Building, New Parkside Housing Village, Faculty and Staff Housing, USU Renovation/Addition and Cafeteria Replacement, Aquatics Center and Pool Renovation, College of the Arts Replacement Building, New 7th St. Community Outreach Facility, and Walter Pyramid Renovation (no demolition as part of the individual development project, but the project would include replacement of the existing roof). As under the program-level analysis, the amount of waste generated from near- and mid-term development projects is unknown. However, the individual development projects would be required to divert 50 percent of construction waste in compliance with the CSU Sustainability Policy. Additionally, the CSU standards set forth in PolicyStat require that contractors submit a Waste and Recycling Plan, which at a minimum is to identify and estimate types and amounts of waste, job site source separation plans, landfill options and alternatives to disposal (i.e., facilities accepting salvaged or recycled materials), and tonnage calculations demonstrating the contractor will meet or exceed 50 percent diversion rate requirement. This Waste and Recycling Plan must be approved by the university's construction administrator before work can commence. Upon conclusion of projects, the contractor must also submit a Reuse, Recycling, and Disposal Report, including disposal receipts indicating weights of materials, landfilled or otherwise diverted. Additionally, construction of individual development projects at CSULB would continue efforts towards zero waste (90 percent diversion). Therefore, with adherence to the waste and recycling requirements construction of the near- and mid-term development projects would not be anticipated to generate solid waste in excess of applicable standards or capacity of local infrastructure, and impacts would be less than significant.

Operation

Operation of the near- and mid-term development projects would produce waste similar to existing

conditions in the form of organic materials such as green waste from landscaping and food waste from dining facilities; recyclables such as plastic bottles; hazardous waste such as lab chemicals; electronic waste such as laptops; and durable goods such as student move-out furniture. Similar to the activities described above at the program level for the Master Plan Update, operation of the near- and mid-term development projects would implement CSULB's "Waste Not" program strategies, as well as the specific strategies of the Master Plan Update. For instance, housing projects such as the New Parkside Housing Village and Faculty and Staff Housing may implement the strategy of using donation bins during on-campus housing move-out days, and student and campus support facility projects such as the USU Renovation/Addition and Cafeteria Replacement may implement the strategies such as continuing pre-portioned food and trayless dining. With implementation of the Master Plan Update's strategies geared towards reducing waste and adherence to CSULB's "Waste Not Program" and zero waste goal, operation of the near- and mid-term development projects would not generate solid waste in excess of applicable standards or capacity of local infrastructure, and impacts would be less than significant.

UE-5 Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Program-Level Analysis for Master Plan Update

Implementation of the Master Plan Update would be subject to several state requirements concerning solid waste. Specifically, development under the Master Plan Update would be required to demonstrate compliance with the AB 939, which requires all California cities to "reduce, recycle, and re-use solid waste generated in the state to the maximum extent feasible." AB 939 requires that at least 50 percent of waste produced is recycled, reduced, or composted. The CSU also requires a diversion rate of 50 percent by 2030 and 80 percent by 2040, while CSULB has a zero waste goal of 90 percent diversion. Thus, construction activities for development under the Master Plan Update would be required to reduce waste and recycle, reuse, and/or recover materials in compliance with state reduction regulations. To demonstrate compliance with the 50 percent diversion rate requirement, the CSU standards set forth in PolicyStat require that Contractors submit a Waste and Recycling Plan, which at a minimum should identify and estimate types and amounts of waste, job site source separation plans, landfill options and alternatives to disposal (i.e., facilities accepting salvaged or recycled materials), and tonnage calculations. This Waste and Recycling Plan must be approved by the Construction Administrator before work can commence. Upon conclusion of projects, the Contractor must also submit a Reuse, Recycling, and Disposal Report, including disposal receipts indicating weights of materials, landfilled or otherwise diverted. Therefore, the Master Plan Update would comply with applicable regulations related to solid waste, and impacts would be less than significant.

Project-Level Analysis for Near- and Mid-Term Development Projects

Similar to the analysis described at the program-level, the near- and mid-term development projects would be required to adhere to AB 939, as well as the California State University Sustainability Policy, which requires a 50 percent diversion rate. Therefore, the near- and mid-term development projects would comply with applicable regulations related to solid waste, and impacts would be less than significant.

UE-6 Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Program-Level Analysis for Master Plan Update

Construction

Construction activities would consume energy from fossil fuels used for construction vehicles and other equipment during demolition, grading, paving, building construction, and architectural coatings. Fuel energy consumed during construction activities would be temporary and would not represent a significant demand on energy resources. In addition, some incidental energy conservation would occur during construction through compliance with state requirements (e.g., that heavy-duty diesel equipment not in use for more than five minutes be turned off). Construction equipment used in the development of projects under the Master Plan Update would also be required to comply with the latest EPA and CARB engine emissions standards, which require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption.

Energy is also required to produce construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials, such as lumber and glass. Substantial reductions in energy inputs for construction materials can be achieved by selecting green building materials composed of recycled materials that require less energy to produce than non-recycled materials. The integration of green building materials can help reduce environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these building industry source materials.[35] For example, the Buy Clean California Act, which the CSU abides by, establishes and publishes the maximum acceptable Global Warming Potential for eligible materials, including the production of structural steel, concrete reinforcing steel, flat glass, and mineral wool board insulation.[36] Additionally, one of the goals of the university is to apply Net Zero Energy strategies to all new campus buildings, which includes the selection of sustainable building materials that require less energy, water, and physical resources. By implementing Net Zero Energy strategies, energy use from construction would be further minimized. Additionally, construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual characteristics that would necessitate the use of construction equipment, building materials, or methods that would be less energy efficient than at comparable construction sites in the region or the state. Fuel energy and construction materials consumed during construction would not represent a significant demand on energy resources. Therefore, construction of projects under the Master Plan Update would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature, and, as such, impacts would be less than significant.

Operation

Operational activities would consume energy in the form of electricity consumption and mobile source fuel consumption. Table 3.13-5 shows the operational energy consumption from implementation of the Master Plan Update and its impact on the energy consumption of Los Angeles County. As shown, energy usage from implementation of the Master Plan Update would constitute an approximate 0.011 percent increase over the County's typical annual electricity

[35] California Department of Resources Recycling and Recovery, *Green Building Materials*, https://calrecycle.ca.gov/greenbuilding/materials/, accessed February 13, 2023.

[36] California Department of General Services, Procurement Division, Buy Clean California Act, available at: https://www.dgs.ca.gov/PD/Resources/Page-Content/Procurement-Division-Resources-List-Folder/Buy-Clean-California-Act, accessed July 25, 2023.

consumption. Additionally, operational automotive fuel consumption would increase the County's consumption by 0.028 percent. CSULB is currently in the process of phasing out natural gas use by 2035 consistent with the goals of the CSULB CAAP, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030. However, to be conservative, this analysis assumes that natural gas use for operation in 2035 would remain the same as existing conditions. Therefore, implementation of the Master Plan Update would not cause an increase of natural gas consumption over existing conditions.

Table 3.13-5: Master Plan Update and Countywide Energy Consumption

Energy Type	Annual Energy Consumption from Implementation of Master Plan Update[a]	Los Angeles County Annual Energy Consumption[b]	Percentage Increase Countywide
Electricity Consumption[c]	7,417 MWh	65,374,721 MWh	0.011%
Operational Automotive Fuel Consumption[d]	986,469 Gallons	3,539,657,569 Gallons	0.028%

a. As modeled in CalEEMod version 2020.4.0.

b. Electricity consumption related to the Master Plan Update is compared to the total consumption in Los Angeles County in 2021, which is the most recent year for which county data is available. Automotive fuel consumption related to the Master Plan Update is compared with the projected countywide fuel consumption in 2035.

c. Electricity consumption does not account for electric vehicle (EV) charging on campus, as it is speculative to estimate EV ownership of students and staff and the number EVs to be charged on campus. Nevertheless, electricity consumption from EV charging would have nominal impact on Countywide electricity consumption, as CSULB would be required to install solar panels for new buildings on campus which could accommodate the demand from EV charging.

d. Fuel consumption from implementation of the Master Plan Update is calculated based on CalEEMod results for the project. Trip generation and VMT modeled are based on Section 3.11, Transportation, of this EIR. Projected countywide fuel consumption is from CARB's EMFAC2021 model.

Sources: Refer to Appendix C, Air Quality, Greenhouse Gas Emissions, and Energy Calculations, for detailed model input/output data; Los Angeles County electricity consumption data source: California Energy Commission, *Electricity Consumption by County*, available at: http://www.ecdms.energy.ca.gov/elecbycounty.aspx, accessed November 29, 2022.

Building Energy Demand

The CEC developed 2020 to 2035 forecasts for energy consumption and peak demand in support of the 2021 IEPR for each of the major electricity and natural gas planning areas and the state based on the economic and demographic growth projections. The CEC forecasts that the statewide annual average growth rates of energy demand between 2021 and 2030 will be 1.3 percent to 2.3 percent for electricity, and less than 0.1 percent to 0.8 percent increase for natural gas.[37] As shown in Table 3.13-5, the net increase of operational energy consumption from implementation of the Master Plan Update over existing conditions would be approximately 0.011 percent, compared to the current countywide usage, which is below the CEC's forecasts. Therefore, implementation of the Master Plan Update would be consistent with the CEC's energy consumption forecasts and would not require additional energy capacity or supplies. Additionally, as previously discussed, the university intends to apply Net Zero Energy strategies to all new campus buildings such that buildings would be designed to minimize energy consumption. By implementing Net Zero Energy strategies, energy use for new buildings on campus would be

[37] California Energy Commission, February 2022, *Final 2021 Integrated Energy Policy Report Volume IV California Energy Demand Forecast*. Annual average growth rates of electricity demand and natural gas per capita demand are shown in Figure 10 and Figure 14 of the report, respectively.

further minimized. Further, as CSULB generally adheres to the same time periods (i.e., class schedules, business hours) as other similar institutions, implementation of the Master Plan Update would not result in unique or more intensive peak or base period electricity demand when compared to other buildings or developments.

The development projects associated with the Master Plan Update would be required to comply with the most current version of the Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the latest Title 24 standards would reduce operational building energy consumption. The Title 24 Building Energy Efficiency Standards are updated every three years and become more stringent between each update; therefore, complying with the latest Title 24 standards would make the new buildings constructed under the Master Plan Update more energy efficient than existing buildings built under the earlier versions of the Title 24 standards.

Furthermore, the electricity provider, SCE, is subject to California's RPS. The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 60 percent of total procurement by 2030, and 100 percent of total procurement by 2045. In addition, CSULB currently generates solar energy on campus, and would increase solar generation throughout the Master Plan Update horizon year. The increase in availability of such energy resources further ensures that new development projects would not waste finite energy resources.

Lastly, developments associated with the proposed Master Plan Update would incorporate the CSU Sustainability Policy's Sustainable Building & Lands Practices, such as providing shade from the sun, taking advantage of coastal breezes, and promoting energy efficiency in the project design. Therefore, implementation of the Master Plan Update would not cause wasteful, inefficient, and unnecessary consumption of building energy during project operation; impacts would be less than significant.

Transportation Energy Demand

Table 3.13-5 estimates the annual fuel consumed by vehicles traveling to and from the CSULB campus, which was calculated from the project's VMT generation. According to the transportation analysis in Section 3.11, Transportation, CSULB would generate approximately 33,237 trips per day in the 2019 baseline year without the project, and 44,113 trips per day in the 2035 horizon year with the project. This would result in a total site-generated VMT of 390,197 miles per day in the 2019 baseline year without the project and 446,213 miles per day in the 2035 horizon year with the project. As indicated in Table 3.13-5, project operation is estimated to consume approximately 986,469 gallons of fuel per year, which would increase the countywide automotive fuel consumption by 0.028 percent.

While countywide automotive fuel consumption would nominally increase during operation, development projects associated with the Master Plan Update encourage alternative modes of transportation. For example, the Master Plan Update projects would comply with the CALGreen Code, which requires new buildings to provide bicycle parking spaces. Additionally, the Master Plan Update proposes to improve pedestrian and bike facilities throughout the campus, which would encourage and support alternative modes of transportation by students, faculty members, and visitors. Additionally, CSULB would encourage and promote the use of alternative transportation and/or alternative fuels related to university-associated transportation, including commuter and business travel per the CSU Sustainability Policy. Lastly, as discussed in Section

3.11, Transportation, total network VMT would be reduced, indicating that implementation of the Master Plan Update would result in more efficient travel patterns across the region. Therefore, fuel consumption associated with vehicle trips generated by implementation of the Master Plan Update would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region, and impacts would be less than significant.

Project-Level Analysis for Near- and Mid-Term Development Projects

Construction

CalEEMod was used to estimate energy usage for the construction activities associated with the following projects: Engineering Replacement Building, New Parkside Housing Village, Faculty and Staff Housing, USU Renovation/Addition and Cafeteria Replacement, Hillside College Renovations/Addition, Beachside Housing, Aquatics Center and Pool Renovation, College of the Arts Replacement Building, New 7th St. Community Outreach Facility, Jack Rose Track/Commencement Facilities, and Walter Pyramid Renovation. Construction of these projects would occur between 2024 and 2031, and would consume energy from fuel used by construction vehicles and equipment. Table 3.13-6 presents the annual energy consumption of the most impactful projects compared to countywide energy consumption.

Table 3.13-6: Project Construction Related and Countywide Energy Consumption

Energy Type	Project Annual Energy Consumption[a]	Los Angeles County Annual Energy Consumption (2024)[b]	Percentage Increase Countywide
Construction Off-Road Fuel Consumption[c]	133,841 Gallons	41,923,518 Gallons	0.319%
Construction On-Road Fuel Consumption[c]	2,630,267 Gallons	4,263,453,040 Gallons	0.062%

a. As modeled in CalEEMod version 2020.4.0.
b. Off-road and on-road fuel consumption from implementation of the Master Plan Update is compared to the projected countywide off-road and on-road emissions, respectively, for 2024, which is the first year of construction.
c. Fuel consumption from the Master Plan Update is calculated based on CalEEMod results for the project. Projected countywide fuel consumption is from CARB's EMFAC2021 model.

Source: Refer to Appendix C, Air Quality, Greenhouse Gas Emissions, and Energy Calculations, for detailed model input/output data.

In addition to the projects modeled, other various renovation projects included in the Master Plan Update include academic facilities, pedestrian/bike lane improvements, mobility and open space enhancements, and athletic facilities improvements through the 2035 horizon year. These types of projects are not included in the modeling for energy use as they are considered minor construction projects with short-term schedules, and are not anticipated to result in substantial energy usage.

Similar to the program-level analysis, fossil fuels used for construction vehicles and other energy-consuming equipment would be used during grading, paving, building construction, and architectural coatings. Fuel energy consumed during construction would be temporary and would not represent a significant demand on energy resources. In addition, some incidental energy conservation would occur during construction through compliance with state requirements that equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest EPA and CARB engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel

efficiency and reduce unnecessary fuel consumption.

Similar to the program-level analysis, energy is required to produce construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass, to construct new facilities or replace/renovate existing facilities. Reductions in energy inputs for construction materials can be achieved by selecting green building materials composed of recycled materials that require less energy to produce than non-recycled materials. The integration of green building materials can help reduce environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these building industry source materials.[38] The President's Commission on Sustainability encourages selecting sustainable construction materials and products wherever possible, including for renovation projects. The project-related incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials would not substantially increase demand for energy compared to overall local and regional demand for construction materials.

As indicated in Table 3.13-6, both off-road and on-road fuel consumption from construction of the most impactful projects would be approximately 133,841 gallons and 2,630,267 gallons, respectively, which would increase off-road construction equipment diesel fuel use and on-road vehicle fuel consumption in the county by approximately 0.319 percent and 0.062 percent, respectively. When taking all development projects into consideration, the off-road and on-road fuel consumption is not expected to increase significantly as the other projects are shorter in duration and intensity than the most impactful projects. As such, construction under the Master Plan Update would have a nominal effect on the local and regional energy supplies. Additionally, construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or state. Therefore, construction fuel consumption would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature, and project-level impacts of the near- and mid-term development projects would be less than significant.

Operation

The operation energy associated with the most impactful projects would include electricity, natural gas, and operational mobile source fuel consumption. As shown in Table 3.13-5, operational energy consumption at the program level would constitute an approximate 0.011 percent increase over the county's typical annual electricity consumption and an approximate 0.028 percent operational vehicle fuel consumption over the county's on-road emissions. Given that each of the most impactful project's is captured within the program-level analysis, operational energy consumption for each project would be less than the estimates presented in Table 3.13-6. Therefore, operational energy consumption from implementation of the individual development projects would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region, and impacts would be less than significant.

UE-7 Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Program-Level Analysis for Master Plan Update

The CSU has several regulations that are intended to increase energy efficiency system-wide and

[38] California Department of Resources Recycling and Recovery, *Green Building Materials*, available at: https://calrecycle.ca.gov/greenbuilding/materials/#Material, accessed November 29, 2022.

at individual universities, including the CSU Sustainability Policy, Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management for the California State University, and Policy 9170. The CSU Sustainability Policy includes several energy goals to increase on-site renewable energy, minimize the use of natural gas, increase renewable electricity sources, and operate CSU buildings and facilities in the most energy-efficient manner possible. Implementation of the Master Plan Update would be consistent with the CSU Sustainability Policy by increasing solar generation throughout the Master Plan Update horizon year, phasing out natural gas by 2035, purchasing renewable electricity, and implementing strategies, such as Net Zero Energy, to operate energy-efficient buildings and facilities on campus. Implementation of the Master Plan Update would also comply with Executive Order 0987 for minimum efficiency standards for new construction and renovations. The implementation of the Master Plan Update would comply with the CSU energy policies, which require that all CSU buildings and facilities be operated in the most energy-efficient manner without endangering public health and safety. Additionally, the requirement to exceed the most current Title 24 standards and comply with the CALGreen Code would ensure that projects developed under the Master Plan Update incorporate energy-efficient windows, insulation, lighting, and ventilation systems, as well as water-efficient fixtures and electric vehicle charging infrastructure. Besides complying with the most current building standards, renovation projects associated with the Master Plan Update would upgrade the infrastructure system, lighting, and HVAC, thus creating more energy-efficient buildings. Additionally, per the RPS, implementation of the Master Plan Update would utilize electricity provided by SCE that would achieve 60 percent of total procurement by 2030, and 100 percent renewable energy by 2045. Therefore, implementation of the Master Plan Update would result in less than significant impacts associated with renewable energy or energy efficiency plans.

Project-Level Analysis for Near- and Mid-Term Development Projects

Similar to the program-level analysis, the individual development projects associated with the Master Plan Update would comply with the CSU Sustainability Policy, Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management for the California State University, and Policy 9170. New and replacement projects would be constructed to exceed the current Title 24 standards by 10 percent and comply with the CALGreen Code, which would ensure that the buildings incorporate energy-efficient windows, insulation, lighting, and ventilation systems, as well as water-efficient fixtures and electric vehicle charging infrastructure. Additionally, the new and replacement projects, as well as renovation projects, would be constructed to meet or exceed the minimum requirements equivalent to LEED Silver certification. Renovation projects would be constructed such that they would meet the state building code requirements, including use of energy-efficient HVAC systems and installing LED lighting. For renovation projects that include mobility, circulation, and open space uses and athletic facilities uses, projects would be designed to include drought-tolerant landscaping/turf, which would reduce both the need for irrigation and energy use associated with water consumption. In addition, the near- and mid-term development projects would support progress toward meeting the CAAP's carbon neutrality goal through implementation of various measures, which would minimize electricity and fuel consumption. As such, project-level impacts from development of the near- and mid-term projects associated with renewable energy or related energy plans would be less than significant.

3.13.5 Mitigation Measures

No mitigation measures are required.

3.13.6 Level of Significance After Mitigation

Development under the Master Plan Update would result in less than significant impacts related to utilities and energy.

3.13.7 Cumulative Impacts

Utilities

Utility services for CSULB are provided by LBWD, LACSD, LACFCD, SoCalGas, SCE, and Verizon. Cumulative development in the service areas for these providers would increase utilities usage, which would increase demand for such utilities. The projected campus population growth under the Master Plan Update would also increase the demand for utilities services. Development under the Master Plan Update would result in new or expanded utility facilities within the campus. However, utilities would connect to the existing infrastructure and would not require utilities providers to expand their facilities or capacities, or result in adverse environmental effects. Thus, implementation of the Master Plan Update would not result in the relocation or construction of new or expanded facilities for the utilities providers.

Additionally, implementation of the Master Plan Update would provide improvements to existing utilities infrastructure for water, storm water drainage, electric power, natural gas, and solid waste due to compliance with the CSU Sustainability Policy and CSULB strategies for Net Zero energy, which would improve utility efficiency, reduce flooding, and reduce excess waste. Implementation of the Master Plan Update would also have sufficient water supplies and sewerage capacity. For water supplies, LBWD would have adequate water supply through 2040 and CSULB would continue to implement efforts to reduce water use including expanding the use of reclaimed water on campus. For wastewater, the capacities of the LACSD's wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). All expansions of LACSD's facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the LACSD's treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As discussed in Section 3.9, Population and Housing, the campus population (including students, faculty, and staff) is accounted for in the SCAG regional demographics and growth forecasts in the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy. Therefore, because population growth resulting from the Master Plan Update is already accounted for in SCAG's regional forecast, LACSD's facilities can be anticipated to have sufficient capacity to serve development under the Master Plan Update.

Further, other non-campus related development projects would also be required analyze their demand on utilities and may be required to pay fees to utilities providers or correspond with providers to verify existing capacities to serve other projects. Therefore, the impact of the Master Plan Update on utilities would not be considered cumulatively considerable. Cumulative impacts to utilities would be less than significant.

Energy

The geographic context for cumulative impacts associated with energy consumption for electricity and natural gas is countywide and relative to SCE's and SoCalGas' service areas, respectively. While the geographic context for transportation-related energy use is more difficult to define, it is meaningful to consider the Master Plan Update in the context of countywide consumption. Future growth in Los Angeles County is anticipated to increase the demand for electricity, natural gas, and transportation energy, as well as the need for energy infrastructure. CSULB is phasing out

natural gas usage in its energy mix and would not use natural gas by 2035. As shown above in Tables 3.13-4 and 3.13-5, implementation of the Master Plan Update would only nominally increase the county's electricity, off-road and on-road construction fuel consumption, and operational fuel consumption. Additionally, per the RPS, implementation of the Master Plan Update and related projects would use electricity provided by SCE that would be made of 60 percent renewable energy by 2030 and 100 percent renewable energy by 2045. Furthermore, implementation of the Master Plan Update would be subject to Title 24 and CALGreen standards, as well as goals and policies of the CSU Sustainability Policy, CSULB Strategic Energy Plan, and CSULB CAAP. Related projects would also be subject to Title 24 and CALGreen standards. Thus, the Master Plan Update and related projects would comply with energy conservation plans and efficiency standards required in the region and state to ensure that energy is used efficiently. As such, implementation of the Master Plan Update in conjunction with related projects would not result in wasteful, inefficient, or unnecessary consumption of energy resources, and the Master Plan Update's cumulatively considerable impacts would be less than significant.