3.15 ENERGY

This section describes existing setting related to energy, identifies associated regulatory requirements, and evaluates energy impacts related to implementation of the proposed Globemaster Corridor Specific Plan (GCSP; Proposed Project). This analysis is based on emission calculations and California Emissions Estimator Model (CalEEMod) outputs provided as Appendix B-1, Emission Calculations, and additional energy calculation are provided in Appendix E, Energy Calculations.

The Initial Study (IS) and Notice of Preparation (NOP) are contained in Appendix A-1, Initial Study; and Appendix A-2, Notice of Preparation, respectively. No specific comments regarding energy were received during the scoping process. The IS did not evaluate the Proposed Project's potential impacts related to energy (Appendix A-1). As such, all potential energy impacts are addressed in this Draft Program Environmental Impact Report (PEIR)/Draft Program Environmental Impact Statement (PEIS).

3.15.1 Existing Conditions

Electricity

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

Southern California Edison (SCE) provides electricity to Long Beach residents and businesses, including those located on the Plan Area. SCE, a subsidiary of Edison International, serves approximately 180 cities in 11 counties across central and Southern California. SCE administers various energy efficiency and conservation programs that may be available to residents, businesses, and other organizations in Long Beach. According to the California Public Utilities Commission (CPUC), approximately 84 billion kilowatt-hours (kWh) of electricity were used in SCE's service area in 2017. Demand forecasts anticipate that approximately 75 billion kWh of electricity will be used in SCE's service area in 2020 (CPUC 2018).

The California Renewables Portfolio Standard (RPS) Program establishes a goal for California to increase the amount of electricity generated from renewable energy resources to 20% by 2010 and to 33% by 2020. Recent legislation revised the current RPS target for California to obtain 50% of total retail electricity sales from renewable sources by 2030, with interim targets of 40%

by 2024, and 45% by 2027 (CPUC 2016). SCE receives electric power from a variety of sources. According to SCE's power content label for 2018, 36% of SCE's power came from eligible renewable energy sources in 2017, including biomass/waste, geothermal, small hydroelectric, solar, and wind sources (SCE 2019).

Within Los Angeles County, annual non-residential electricity use is approximately 47 billion kWh per year, while residential electricity use is approximately 21 billion kWh per year, as reported by the state's Energy Consumption Data Management System for 2018 (CEC 2020a).

Natural Gas

According to the EIA, California used approximately 2,136,907 million cubic feet of natural gas in 2018 (EIA 2020c). The majority of California's natural gas customers are residential and small commercial customers (core customers). These customers account for approximately 35% of the natural gas delivered by California utilities (CPUC 2020). Large consumers, such as electric generators and industrial customers (noncore customers), account for approximately 65% of the natural gas delivered by California utilities (CPUC 2020). CPUC regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. Biogas (e.g., from wastewater treatment facilities or dairy farms) is just beginning to be delivered into the gas utility pipeline systems, and the State has been encouraging its development (CPUC 2020).

Within Los Angeles County, annual non-residential natural gas use is approximately 1,814 million therms per year, while residential natural gas use is approximately 1,108 million therms per year, as reported by the state's Energy Consumption Data Management System for 2018 (CEC 2020b).

The City of Long Beach Energy Resources (LBER) Department purchases natural gas from Southern California Gas Company (SoCalGas) and provides natural gas services to residents and businesses of Long Beach and Signal Hill and portions of surrounding communities, including the cities of Bellflower, Compton, Lakewood, Los Alamitos, Paramount, and Seal Beach. Currently, the LBER Department is the fifth largest municipal gas utility in the nation, serving approximately 500,000 residents and businesses through over 1,900 miles of LBER pipelines. The LBER Department's customer profile is 53% residential and 47% commercial/industrial. The LBER Department's service area was system total throughout was recorded as 8.94 billion cubic feet (bcf) per year in 2018 (California Gas and Electric Utilities 2019) with a future annual demand projected to reach 9.02 bcf per year in 2035 (the furthest horizon year for which data are available) (California Gas and Electric Utilities 2018).

The LBER Department receives a small portion (approximately 5%) of its natural gas supply directly into its pipeline system from local production fields in the planning areas, as well as

offshore facilities. The remainder of LBER's natural gas supplies is purchased from the southwestern United States. The LBER Department also receives intrastate transmission service for purchased gas from SoCalGas.

Petroleum

According to the EIA, California used approximately 681 million barrels of petroleum in 2018, with the majority (584 million barrels) used for the transportation sector (EIA 2020d). This total annual consumption equates to a daily use of approximately 1.9 million barrels of petroleum. There are 42 U.S. gallons in a barrel, so California consumes approximately 78.4 million gallons of petroleum per day, adding up to an annual consumption of 28.7 billion gallons of petroleum. In California, petroleum fuels refined from crude oil are the dominant source of energy for transportation sources. Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. California has implemented policies to improve vehicle efficiency and to support use of alternative transportation, which are described in Section 3.15.2, below. As such, the California Energy Commission (CEC) anticipates an overall decrease of gasoline demand in the state over the next decade.

3.15.2 Regulatory Setting

3.15.2.1 Federal

Federal Energy Policy and Conservation Act

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

Intermodal Surface Transportation Efficiency Act of 1991

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 promoted the development of intermodal transportation systems to maximize mobility and address national and local interests in air quality and energy. ISTEA contained factors for metropolitan planning organizations to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, metropolitan planning organizations adopted policies defining the social, economic, energy, and environmental values guiding transportation decisions.

Transportation Equity Act for the 21st Century

The Transportation Equity Act for the 21st Century was signed into law in 1998 and builds on the initiatives established in the ISTEA legislation (previously discussed). The act authorizes highway, highway safety, transit, and other efficient surface transportation programs. The act continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of transportation decisions. The act also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of intelligent transportation systems to help improve operations and management of transportation systems and vehicle safety.

Energy Independence and Security Act of 2007

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

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

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

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

- EISA expanded the RFS program to include diesel, in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.

- EISA established new categories of renewable fuel and set separate volume requirements for each one.
- EISA required the U.S. Environmental Protection Agency 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.

3.15.2.2 State

Warren-Alquist Act

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

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

State of California Energy Action Plan

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

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

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

Senate Bill (SB) 1078 established the California 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% standard by December 31, 2017. These retail sellers include electrical corporations, community choice aggregators, and electric service providers. The bill relatedly required the CEC to certify eligible renewable energy resources, design and implement an accounting system to verify compliance with the RPS by retail sellers, and allocate and award supplemental energy payments to cover above-market costs of renewable energy.

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

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

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

Consequently, utility energy generation from non-renewable resources is expected to be reduced based on implementation of the 60% RPS in 2030. Therefore, any project's reliance on non-renewable energy sources would also be reduced.

Assembly Bill 1007 (2005)

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 the California Air Resources Board (CARB) and in consultation with other state agencies, plus federal 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 (2006) and Senate Bill 32 (2016)

In 2006, the state legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020. In 2016, the Legislature enacted SB 32, which extended the horizon year of the state's codified GHG reduction planning targets from 2020 to 2030, requiring California to reduce its GHG emissions to 40% below 1990 levels by 2030. In accordance with AB 32 and SB 32, CARB prepares scoping plans to guide the development of statewide policies and regulations for the reduction of GHG emissions. Many of the policy and regulatory concepts identified in the scoping plans focused on increasing energy efficiencies, using renewable resources, and reducing the consumption of petroleum-based fuels (such as gasoline and diesel). As such, the state's GHG emissions reduction planning framework creates co-benefits for energy-related resources. Additional information on AB 32 and SB 32 is provided in Section 3.4, Greenhouse Gas Emissions, of this Draft PEIR/PEIS.

California Building Standards

Part 6 of Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Part 6 establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 6 is updated periodically to incorporate and consider new energy efficiency technologies and methodologies.

The current Title 24, Part 6 standards, referred to as the 2019 Title 24 Building Energy Efficiency Standards, became effective on January 1, 2020. In general, single-family residences built to the 2019 standards are anticipated to use approximately 7% less energy (due to energy efficiency measures) than those built to the 2016 standards; if rooftop solar electricity generation is factored in, single-family residences built under the 2019 standards will use approximately 53% less energy than those under the 2016 standards (CEC 2018a). Nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018a).

Title 24 also includes Part 11, California's Green Building Standards (CALGreen). CALGreen establishes minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The 2019 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle

parking, designated parking for clean air vehicles, electric vehicle (EV) charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR Part 11).

Integrated Energy Policy Report

The CEC is responsible for preparing integrated energy policy reports that identify emerging trends related to energy supply, demand, and conservation; public health and safety; and maintenance of a healthy economy. The CEC's 2018 Integrated Energy Policy Report discusses the state's policy goals of decarbonizing buildings, doubling energy efficiency savings, and increasing flexibility in the electricity grid system to integrate more renewable energy (CEC 2018b). Specifically for the decarbonizing of building energy, the goal would be achieved by designing future commercial and residential buildings to have their energy sourced almost entirely from electricity in place of natural gas. Regarding the increase in renewable energy flexibility, the goal would be achieved through increases in energy storage capacity within the state, increases in energy efficiency, and adjusting energy use to the time of day when the most amount of renewable energy is being generated. Over time these policies and trends would serve to beneficially reduce the Proposed Project's GHG emissions profile and energy consumption as they are implemented.

State Vehicle Standards

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

In 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global-warming gases with requirements for greater numbers of zero-emissions vehicles into a single package of standards called Advanced Clean Cars. By 2025, when the rules would be fully implemented, new automobiles would emit 40% fewer global-warming gases and 75% fewer smog-forming emissions (CARB 2020a). However, the U.S. Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) published the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, which revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. Since California and 22 other states, as well as the District of

Columbia and four cities, filed suit against the EPA and a petition for reconsideration of the rule, the effect of the SAFE Rule on the Advanced Clean Cars program is still to be determined pending the ruling of ongoing litigation.

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 established in AB 32. As codified in California Government Code Section 65080, SB 375 requires Metropolitan Planning Organizations to include a sustainable communities strategy in their regional transportation plan. The main focus of the sustainable communities strategy is to plan for growth in a fashion that will ultimately reduce GHG emissions, but the strategy is also part of a bigger effort to address other development issues, including transit and vehicle miles traveled (VMT), which influence the consumption of petroleum-based fuels.

3.15.2.3 Local

As explained in Section 3.4, Greenhouse Gas Emissions, of this Draft PEIR/PEIS, the City's General Plan, Sustainable City Action Plan, and in-progress Climate Action and Adaptation Plan includes policies to conserve energy and reduce emissions associated with energy consumption. See Section 3.4 for additional discussion of the City's plans.

Sustainable City Action Plan

The City adopted the Sustainable City Action Plan (SCAP) on February 2, 2010, with the purpose of moving the City towards becoming a more sustainable City. Sustainability is defined in this plan as maximizing individual benefits and minimizing negative environmental impacts to ensure the long-term health of the environment for the enjoyment and use of current and future generations. The SCAP includes initiatives, goals, and actions that are meant to guide City decision-makers in striving towards achieving a sustainable City. The following goals, initiatives, and actions are applicable to the Proposed Project (City of Long Beach 2010):

> **Sustainability Goal 5:** Reduce community electricity use by 15% by 2020.
>
> **Sustainability Goal 6:** Reduce community natural gas use by 10% by 2020.
>
> **Sustainability Goal 7:** Facilitate the development of at least 8 megawatts of solar energy within the community (private rooftops) by 2020.

Climate Action and Adaption Plan

On May 31, 2019, the City released a working draft of the Climate Action and Adaptation Plan (CAAP). The goal of the CAAP is to reduce future GHG emissions and to prepare the City for the impacts of climate change, specifically rising sea levels, extreme heat, and poor air quality. The CAAP would provide a framework for creating and updating policies, programs, and practices to reduce the City's GHG footprint, and would incentivize the residents and businesses for their compliance. Through the City Inventory Reporting and Information System (CIRIS), the City will have a framework for calculating and reporting GHG emissions, and forecasting projected emissions based on anticipated growth. The CAAP would also include an analysis of existing sustainability and climate mitigation efforts, and develop strategies to reduce future emissions and impacts. Eventually, the CAAP would produce a plan to monitor the performance of the mitigation strategies.

Municipal Code

The City Council adopted Municipal Code Section 21.45.400 (Green building standards for public and private development.) in 2009, which includes categories of projects that require specified green building features, which includes provisions for compliance with the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. In addition to the categories of projects requiring LEED compliance, green development standards, such as canopy trees in parking lots, bicycle parking, solar ready roofs, and recycling collection apply to all projects requiring Site Plan Review (SPR) entitlements.

3.15.3 Thresholds of Significance

3.15.3.1 Significance Criteria

The significance criteria used to evaluate the Proposed Project impacts to energy consumption is based on the recommendations provided in Appendix G of the State CEQA Guidelines (14 CCR 15000 et seq.). For the purposes of this energy consumption analysis, a significant impact would occur if the Proposed Project would:

1. Result in wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.15.3.2 Approach and Methodology

Construction Emissions

The California Emission Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate potential Proposed Project-generated GHG emissions during construction, which were then used to estimate energy consumption. Construction of the Proposed Project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. All details for construction criteria air pollutants discussed in Section 3.2, Air Quality, of this Draft PEIR/PEIS, and Appendix B-1, Emission Calculations, of this Draft PEIR/PEIS are also applicable for the estimation of construction-related GHG emissions. The estimated GHGs were back-calculated based on carbon content (i.e., kilograms of CO_2 per gallon) in order to estimate fuel usage during Proposed Project construction. The conversion factor for gasoline is 8.78 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO_2 per gallon (The Climate Registry 2019). Energy use calculations for construction are provided in Appendix E.

Operational Emissions

During Proposed Project operations, activities that would consume energy would include electricity and natural gas use for building operations, electricity for water and wastewater conveyance, natural gas for emergency generator testing, and petroleum consumption from employees, customers, and delivery vehicle trips. Additional assumptions for these sources are described in Impact 3.4-1 and energy use calculations for operations are provided in Appendix E.

3.15.4 Impacts Analysis

a) Would the project result in wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?

Implementation of the Proposed Project would increase the demand for electricity and natural gas at the Plan Area and petroleum consumption in the region during construction and operation.

Electricity

Construction Use

Temporary electric power for as-necessary lighting and electronic equipment (such as computers inside temporary construction trailers and heating, ventilation, and air conditioning) during construction would be provided by SCE. The amount of electricity used during construction would be minimal; typical demand would stem from the use of electrically

powered hand tools and several construction trailers by managerial staff during the hours of construction activities. The majority of the energy used during construction would be from petroleum. The electricity used for construction activities would be temporary and minimal[1]; therefore, impacts would be less than significant.

Operational Use

The operational phase would require electricity for multiple purposes including building heating and cooling, lighting, appliances, electronics, and water and wastewater conveyance. CalEEMod provides default values for electricity consumption for the Proposed Project and Existing land uses that were applied in this analysis (CAPCOA 2017). Table 3.15-1, Operational Electricity Demand, presents the electricity demand for the Proposed Project.

Table 3.15-1
Operational Electricity Demand

Land Use	kWh/Year
Proposed Project	
Building and Lighting Electricity Demand	
Fast Food Restaurant w/o Drive Thru	1,450,580
Fast Food Restaurant with Drive Thru	483,629
General Office Building	22,131,700
High Turnover (Sit Down Restaurant)	1,601,640
Hotel	1,191,110
Manufacturing	11,369,900
Medical Office Building	1,599,900
Other Asphalt Surfaces	0
Quality Restaurant	330,410
Refrigerated Warehouse-No Rail	7,826,830
Regional Shopping Center	5,986,260
Research & Development	2,548,300
Unrefrigerated Warehouse-No Rail	10,159,600
Building Total	*66,679,859*
Water/Wastewater Electricity Demand	
All Land Uses	21,700,342
Water/Wastewater Total	*21,700,342*
Electric Forklift Energy Demand	
All Electric Forklifts	14,534,439
Electric Forklift Total	*14,534,439*
Total	**102,914,640**

[1] The construction energy analysis is based on CalEEMod default values, which assume that all off-road construction equipment is diesel, and no electricity demand is assumed during construction.

Table 3.15-1
Operational Electricity Demand

Land Use	kWh/Year
Proposed Project	
Existing	
Building and Lighting Electricity Demand	
Automobile Care Center	1,981,360
Bank (with Drive-Through)	50,028
Convenience Market (24 Hour)	73,373
General Light Industry	1,012,700
General Office Building	1,775,240
Hardware/Paint Store	311,162
High Turnover (Sit Down Restaurant)	855,080
Hospital	74,850
Manufacturing	8,415,090
Medical Office Building	192,551
Racquet Club	162,981
Regional Shopping Center	1,755,550
Unrefrigerated Warehouse-No Rail	2,129,550
Building Total	*18,789,514*
Water/Wastewater Electricity Demand	
All Land Uses	5,892,255
Water/Wastewater Total	*5,892,255*
Electric Forklift Energy Demand	
All Electric Forklifts	5,464,949
Electric Forklift Total	*5,464,949*
Total	**30,146,718**
Net Electricity Use	
Proposed Project	102,914,640
Existing	30,146,718
Net Electricity Use (Proposed – Existing)	**72,767,922**

Source: Appendix B-1, Emission Calculations and Appendix E, Energy Calculations.
Notes: kWh = kilowatt-hour.

As shown in Table 3.15-1, the Proposed Project is estimated to have a total electrical demand of 102,914,640 kWh per year (or 102.91 million kWh per year) for facility usage and water/wastewater conveyance. Existing land uses are estimated to have a total electrical demand of 30,146,718 kWh per year (or 30.15 million kWh per year) for facility usage and water/wastewater conveyance. The net change in estimated electricity consumption between the Proposed Project and Existing is estimated to be 72,767,922 kWh per year (or 72.77 million kWh per year).

For disclosure, in comparison, for Los Angeles County, electricity demand in 2018 was 68,486 million kWh (CEC 2020a). The Proposed Project would also be built in accordance with the current Title 24 standards at the time of construction and CALGreen.

Therefore, the Proposed Project would not result in a wasteful use of energy. In addition, California's energy code is designed to reduce wasteful and unnecessary energy consumption in newly constructed and existing buildings, so compliance with current code will ensure that the Proposed Project would not result in wasteful energy use. The CEC updates the Building Energy Efficiency Standards (Title 24, Parts 6 and 11) every three years by working with stakeholders in a public and transparent process, which continues to improve building energy efficiency overtime.[2] Impacts related to operational electricity use would be less than significant.

Natural Gas

Construction Use

Natural gas is not anticipated to be required during construction of the Proposed Project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed under the subsection Petroleum, below. Any minor amounts of natural gas that may be consumed as a result of Proposed Project construction would be temporary and negligible,[3] and would not have an adverse effect; therefore, impacts would be less than significant.

Operational Use

Natural gas consumption during operation would be required for various purposes, including building heating and cooling. For building consumption, default natural gas generation rates in CalEEMod for the Proposed Project and Existing land uses and climate zone were used. Table

[2] As an historical example, from the 2008 to the 2013 Title 24 standards, it was estimated that buildings constructed in accordance with the 2013 standards would use 25% less energy for lighting, heating, cooling, ventilation, and water heating than the 2008 standards (CEC 2012). From the 2013 to the 2016 Title 24 Standards, in general, single-family homes built to the 2016 standards are anticipated to use about 28% less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards, and nonresidential buildings built to the 2016 standards will use an estimated 5% less energy than those built to the 2013 standards (CEC 2015). From the 2016 to the 2019 Title 24 Standards, in general, single-family residences built to the 2019 standards are anticipated to use approximately 7% less energy due to energy efficiency measures than those built to the 2016 standards; once rooftop solar electricity generation is factored in, single-family residences built under the 2019 standards will use approximately 53% less energy than those under the 2016 standards (CEC 2018). Nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018). Accordingly, it has been demonstrated that over time, the Title 24 standard updates have continuously improved energy efficiency in new construction.

[3] The construction energy analysis is based on CalEEMod default values, which assume that all off-road construction equipment is diesel, and no natural gas demand is assumed during construction.

3.15-2, Operational Natural Gas Demand, presents the natural gas demand for the Proposed Project, Existing, and the net change.

Table 3.15-2
Operational Natural Gas Demand

Land Use	kBTu/Year
Proposed Project	
Fast Food Restaurant w/o Drive Thru	7,721,580
Fast Food Restaurant with Drive Thru	2,574,400
General Office Building	18,254,300
High Turnover (Sit Down Restaurant)	8,525,660
Hotel	3,874,780
Manufacturing	18,803,300
Medical Office Building	1,319,600
Other Asphalt Surfaces	0
Quality Restaurant	1,758,800
Refrigerated Warehouse-No Rail	477,474
Regional Shopping Center	746,564
Research & Development	4,214,310
Unrefrigerated Warehouse-No Rail	2,281,270
Total	**70,552,038**
Existing	
Automobile Care Center	3,230,870
Bank (with Drive-Through)	81,577
Convenience Market (24 Hour)	8,913
General Light Industry	225,910
General Office Building	1,422,650
Hardware/Paint Store	37,800
High Turnover (Sit Down Restaurant)	4,470,280
Hospital	212,413
Manufacturing	13,721,900
Medical Office Building	154,307
Racquet Club	265,762
Regional Shopping Center	213,267
Unrefrigerated Warehouse-No Rail	475,054
Total	**24,520,704**
Net Natural Gas Use (Proposed – Existing)	
Proposed Project	70,552,038
Existing	24,520,704
Net Natural Gas Use (Proposed – Existing)	**46,031,335**

Source: Appendix B-1, Emission Calculations, and Appendix E, Energy Calculations.
Notes: kBtu = thousand British thermal units.

As shown in Table 3.5-2, the Proposed Project would consume approximately 70,552,038 thousand British thermal units (kBtu) per year. The Existing land uses are estimated to consume approximately 24,520,704 kBtu per year. The net change in estimated natural gas consumption between the Proposed Project and Existing is estimated to be 46,031,335 kBtu per year.

For disclosure, in comparison, in 2018, the City's LBER Department throughout was 8.94 bcf (9,264,430 million Btu) to its service area. In addition, for disclosure, 2018, SoCalGas delivered approximately 2,921 million therms (292.1 billion kBtu) to Los Angeles County (CEC 2020b). The Proposed Project is subject to statewide mandatory energy requirements as outlined in Title 24, Part 6, of the California Code of Regulations. Title 24, Part 11, contains additional energy measures that are applicable to Proposed Project under CALGreen. Prior to Proposed Project approval, the applicant would ensure that the Proposed Project would meet Title 24 requirements applicable at that time, as required by state regulations through the SPR entitlement process and building permit plan review process. Therefore, due to the inherent increase in efficiency of building code regulations, the Proposed Project would not result in a wasteful use of energy. Impacts related to operational natural gas use would be less than significant.

Petroleum

Construction Use

Petroleum would be consumed throughout construction of the Proposed Project. Fuel consumed by construction equipment would be the primary energy resource expended over the course of construction, and VMT associated with the transportation of construction materials and construction worker commutes would also result in petroleum consumption. Heavy-duty construction equipment associated with construction activities, vendor trucks, and haul trucks would rely on diesel fuel. Construction workers would travel to and from the Plan Area throughout the duration of construction. It was assumed that construction workers would travel in gasoline-powered vehicles.

Heavy-duty construction equipment of various types would be used during construction. CalEEMod was used to estimate construction equipment usage. Based on that analysis, diesel-fueled construction equipment would operate for an estimated 656,880 hours over the 20-year period, as summarized in Table 3.15-3, Hours of Operation for Construction Equipment.

Table 3.15-3
Hours of Operation for Construction Equipment

Phase	Hours of Equipment Use
Demolition	21,120
Site Preparation	11,200
Grading	48,640
Building Construction	552,160
Paving	21,120
Architectural Coating	2,640
Total over 20 years	**656,880**

Source: Appendices B-1, Emission Calculations, and Appendix E, Energy Calculations.

Fuel consumption from construction equipment and on-road vehicles was estimated by converting the total CO_2 emissions from each construction phase to gallons using conversion factors for CO_2 to gallons of gasoline or diesel. Off-road equipment is assumed to be diesel fueled. Worker vehicles are assumed to be gasoline fueled, whereas vendor and haul trucks are assumed to be diesel fueled. The conversion factor for gasoline is 8.78 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO_2 per gallon (The Climate Registry 2019). The estimated fuel use associated with construction of the Proposed Project is shown in Table 3.15-4, Construction Petroleum Demand - 20 Year Duration.

Table 3.15-4
Construction Petroleum Demand - 20 Year Duration

Project	Off-road Equipment (diesel)	Haul Trucks (diesel)	Vendor Trucks (diesel)	Worker Vehicles (gasoline)
	gallons			
Demolition	73,258.37	58,981.59	0.00	3,712.30
Site Preparation	32,743.00	0.00	0.00	2,024.83
Grading	202,781.59	92,389.81	0.00	8,549.20
Building Construction	920,994.52	0.00	449,892.07	1,018,465.83
Paving	43,155.73	0.00	0.00	3,712.30
Architectural Coatings	5,501.67	0.00	0.00	11,136.67
Totals	*1,278,434.87*	*151,371.40*	*449,892.07*	*1,047,601.14*
Total Combined Petroleum Demand	**2,927,299.47**			

Source: Appendices B-1, Emission Calculations, and Appendix E, Energy Calculations.

As shown in Table 3.15-4, the Proposed Project is estimated to consume approximately 2,927,300 gallons of petroleum during the construction phase. Averaged over 20 years, it is anticipated that the Proposed Project would consume on average 146,365 gallons of

petroleum per year. For disclosure, by comparison, approximately 28.7 billion gallons of petroleum are consumed in California annually (EIA 2020d).

Overall, because the Proposed Project would not be unusual as compared to overall local and regional demand for energy resources and would not involve characteristics that require equipment that would be less energy-efficient than at comparable construction sites in the region or state, the Proposed Project would not be any more energy inefficient or wasteful than other similar development projects. Petroleum use during construction would be less than significant.

Operational Use

The fuel consumption resulting from the Proposed Project's operational phase would be attributable to employees, customers, delivery vehicles, and heavy-heavy duty trucks traveling to and from the Plan Area. Petroleum fuel consumption associated with motor vehicles traveling to and from the Plan Area during operation is a function of VMT. As shown in Appendix B-1, Emission Calculations, the annual VMT attributable to the Proposed Project is expected to be 176,943,112 VMT per year and the annual VMT attributable to the Existing land uses is expected to be 58,338,698 VMT per year. Similar to construction worker and vendor trips, fuel consumption for operation was estimated by converting the total mobile source CO_2 emissions from the Proposed Project and Existing land use to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. The estimated fuel use from Proposed Project and Existing land uses operational mobile sources is shown in Table 3.15-5, Proposed Project Operations - Petroleum Consumption.

Table 3.15-5
Proposed Project Operations - Petroleum Consumption

Fuel	Gallons
Proposed Project	
Gasoline	3,777,916.56
Diesel	3,414,143.64
Total	*7,192,060.21*
Existing	
Gasoline	1,849,670.52
Diesel	2,322,033.75
Total	*4,171,704.27*
Net Petroleum Consumption (Proposed – Existing)	
Proposed Project	7,192,060.21
Existing	4,171,704.27
Net Petroleum Consumption (Proposed – Existing)	**3,020,355.94**

Source: Appendices B-1, Emission Calculations, and Appendix E, Energy Calculations.
Notes: MT = metric ton; CO_2 = carbon dioxide; kg = kilogram.

As depicted in Table 3.15-5, mobile sources from the Proposed Project would result in approximately 7,192,060 gallons of petroleum fuel usage per year. Existing land use mobile sources would result in approximately 4,171,704 gallons of petroleum fuel usage per year. As such, the net change in petroleum fuel usage between the Proposed Project and Existing land uses is 3,020,356 gallons per year. For disclosure, by comparison, California as a whole consumes approximately 28.7 billion gallons of petroleum per year (EIA 2020d).

Over the lifetime of the Proposed Project, the fuel efficiency of the vehicles being used by the employees, customers, and delivery vehicles is expected to increase. As such, the amount of petroleum consumed as a result of vehicular trips to and from the Plan Area during operation would decrease over time. As detailed in Section 3.15.2, there are numerous regulations in place that require and encourage increased fuel efficiency. For example, CARB has adopted an approach to passenger vehicles that combines the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrids and zero-emissions vehicles in California (CARB 2011). As such, operation of the Proposed Project is expected to use decreasing amounts of petroleum over time due to advances in fuel economy.

In summary, the Proposed Project would increase petroleum use during operation as a result of employees, customers, and delivery vehicles traveling to and from the Plan Area, but, due to efficiency increases, would diminish over time. Petroleum consumption associated with the Proposed Project would not be considered inefficient or wasteful and would result in a less-than-significant impact.

CEQA Impact Determination

Based on the analysis above, the consumption of energy resources (including electricity, natural gas, and petroleum) during Proposed Project construction and operation would not be considered inefficient or wasteful and would result in a **less-than-significant** impact under CEQA. No mitigation is required.

NEPA Impact Determination

Based on the analysis above, the consumption of energy resources (including electricity, natural gas, and petroleum) during Proposed Project construction and operation would not be considered inefficient or wasteful and, and there would be **no adverse effect** under NEPA.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Title 24 of the California Code of Regulations contains energy efficiency standards for residential and non-residential buildings based on a state mandate to reduce California's energy demand. Specifically, Title 24 addresses a number of energy efficiency measures that impact energy used for lighting, water heating, heating, and air conditioning, including the energy impact of the building envelope such as windows, doors, wall/floor/ceiling assemblies, and roofs.

Part 6 of Title 24 specifically establishes energy efficiency standards for residential and non-residential buildings constructed in the State of California in order to reduce energy demand and consumption. Part 11 of Title 24 also includes the CALGreen standards, which established mandatory minimum environmental performance standards for new construction projects. The Proposed Project would comply with Title 24, Part 6 and Part 11, per state regulations.

Furthermore, larger scale projects that require SPR entitlements and/or use permits require compliance with Section 21.45.900 of the Municipal Code, which requires LEED certification for certain projects. The inclusion of green building standards, such as solar ready roofs, in both private and public development proposals would further citywide goals and policies for renewable energy and energy efficiency.

As discussed previously, the City adopted their SCAP in 2010, which includes initiatives, goals, and actions that are meant to guide City decision-makers in striving towards achieving a sustainable City, including energy strategies. Table 3.15-6, Proposed Project Consistency with Applicable SCAP Energy Strategies, presents the Proposed Project's consistency with the applicable SCAP energy strategies.

Table 3.15-6
Proposed Project Consistency with Applicable SCAP Energy Strategies

Sustainability Goals	Proposed Project Consistency
Reduce community electricity use by 15% by 2020	*No Conflict.* The Proposed Project's intent is to improve the sustainability of the Plan Area through low-impact development, drought tolerant landscaping, solar-shaded parking lots, building orientation and tree canopies. Each of these components individually and collectively work to reduce community electricity consistent with this action.

Table 3.15-6
Proposed Project Consistency with Applicable SCAP Energy Strategies

Sustainability Goals	Proposed Project Consistency
Reduce community natural gas use by 10 % by 2020	*No Conflict.* The Proposed Project would improve sustainability of development within the GCSP, which may reduce natural gas usage. While the GCSP does not include specific natural gas reduction requirements, the Proposed Project would not prevent the City from implementing this measure.
Facilitate the development of at least 8 Megawatts of solar energy within the community (private rooftops) by 2020	*No Conflict.* Chapter 6 of the GCSP (Design Guidelines) contains a guideline in the General Industrial district, which occupies the majority of parcels west of Cherry Avenue and south of the I-405, to incorporate sustainable surface parking lot design through use of solar shade structures for vehicles, which could contribute to the City's goal of developing at least 8 Megawatts of solar energy in the community.

Source: City of Long Beach 2010.

As shown in Table 3.15-6, the Proposed Project would not conflict with the applicable SCAP energy strategies.

The City is also in the progress of developing a CAAP, which include priority mitigation action related to energy. The Proposed Project's consistency with the draft CAAP energy mitigation actions is presented in Table 3.15-7, Proposed Project Consistency with Draft CAAP Buildings and Energy Strategies.

Table 3.15-7
Proposed Project Consistency with Draft CAAP Buildings and Energy Strategies

Priority Mitigation Actions	Proposed Project Consistency
BE-1 Provide access to renewably generated electricity	*No conflict.* The Proposed Project may include solar rooftops and shade structures over parking areas as individual projects are developed, which would provide access to renewably generated electricity.
BE-2 Develop a home energy assessment program	*Not applicable*. This action is directed at the City. The Proposed Project does not permit residential uses; therefore, the Proposed Project would not apply to the development of a home energy assessment program.
BE-3 Provide access to energy efficiency financing, rebates, and incentives for building owners	*Not applicable*. This action is directed at the City. The Proposed Project is a Specific Plan that does not include access to energy efficiency financing, rebates or incentives to individual business owners.
BE-4 Promote community solar and microgrids	*Not applicable.* This action is directed at the City. The Plan Area is not under single ownership that would enable the development of a microgrid system, and large scale community solar generation is not permitted in the Plan Area as it would not support the primary goal of the GCSP, which is to generate jobs.

Table 3.15-7
Proposed Project Consistency with Draft CAAP Buildings and Energy Strategies

Priority Mitigation Actions	Proposed Project Consistency
BE-5 Perform municipal energy audits	*Not applicable.* This action is directed at the City. The Plan Area is not a municipality that would perform energy audits.

Source: City of Long Beach 2019,

As shown in Table 3.15-7, the Proposed Project would not conflict with the applicable energy mitigation actions of the City's draft CAAP.

CEQA Impact Determination

Based on the foregoing, the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency including the City's plans to reduce energy consumption; therefore, impacts during construction and operation of the Proposed Project would be **less than significant**. No mitigation is required.

NEPA Impact Determination

Based on the analysis above, the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and there would be **no adverse effect** under NEPA.

3.15.5 Cumulative Impacts

Cumulative projects that could exacerbate the Proposed Project's impacts include any projects that could result in wasteful, inefficient, or unnecessary use of energy. However, the Proposed Project would not result in wasteful, inefficient, or unnecessary use of energy, since the Proposed Project would not be unusual as compared to overall local and regional demand for energy resources and would not involve characteristics that require equipment that would be less energy-efficient than at comparable construction sites in the region or state. Additionally, the operational activity of the Proposed Project would be minimized through energy reduction strategies pursuant to Title 24, as described in Section 3.5.4.3, Impacts and Mitigation Measures. For all other projects in the City are required to comply with Title 24, the long-term energy consumption of those projects would also be reduced. Therefore, cumulative impacts to energy use would be **less than significant**.

3.15.6 Mitigation Measures

Impacts relating to energy would be less than significant and no mitigation would be necessary.

However, as presented in Section 3.2, Air Quality, of this Draft PEIR/PEIS, implementation of mitigation measure **MM-AQ-1** (Construction Equipment Emissions Reductions) would reduce construction-related energy consumption. Implementation of the following air quality mitigation measures would reduce operational-related energy consumption: **MM-AQ-4** (Vehicle Miles Traveled Reduction Strategies), **MM-AQ-5** (Encourage Electric Vehicles), **MM-AQ-6** (Idling Restriction), **MM-AQ-7** (Energy Conservation), **MM-AQ-9** (Electric Forklifts), and **MM-AQ-10** (TRU Plug-Ins). In addition, as presented in Section 3.4, Greenhouse Gas Emissions, of this Draft PEIR/PEIS, implementation of mitigation measure **MM-GHG-1** (Water Conservation) would further reduce energy consumption during operation of the Proposed Project.

3.15.7 Significance After Mitigation

Impacts related to energy would be less than significant and no further mitigation is required.

3.15.8 References

California Gas and Electric Utilities. 2018. 2018 California Gas Report. https://www.socalgas.com/regulatory/documents/cgr/2018_California_Gas_Report.pdf

California Gas and Electric Utilities. 2019. 2019 California Gas Report Supplement. https://www.socalgas.com/regulatory/documents/cgr/2019_CGR_Supplement_7-1-19.pdf

CAPCOA (California Air Pollution Control Officers Association). 2017. *California Emissions Estimator Model (CalEEMod) User's Guide Version 2016.3.2.* Prepared by Trinity Consultants and the California Air Districts. November 2017. http://www.caleemod.com.

CARB (California Air Resources Board). 2020a. "Facts About the Advanced Clean Cars Program." Accessed May 2020. https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/about.

CEC (California Energy Commission). 2012. "Building Energy Efficiency Standards – Frequently Asked Questions." May 2012.

CEC (California Energy Commission). 2015. "2016 Building Efficiency Standards Frequently Asked Questions." Accessed December 2016.

CEC (California Energy Commission). 2018a. 2019 Building Energy Efficiency Standards – Frequently Asked Questions. March 2018.

CEC. 2018b. *2018 IEPR – Integrated Energy Policy Report Update Volume 1*. Adopted August 2018. Accessed March 2020. https://ww2.energy.ca.gov/2018publications/CEC-100-2018-001/CEC-100-2018-001-V1_pages.pdf.

CEC. 2020a. "Electricity Consumption by County." Accessed June 2020. http://ecdms.energy.ca.gov/elecbycounty.aspx.

CEC. 2020b. "Gas Consumption by County." Accessed June 2020. http://ecdms.energy.ca.gov/gasbycounty.aspx

City of Long Beach. 2010. *Sustainable City Action Plan.* Adopted February 2, 2010. http://www.longbeach.gov/globalassets/sustainability/media-library/documents/nature-initiatives/action-plan/scap-final

City of Long Beach. 2019. Climate Action and Adaptation Plan (CAAP) Mitigation Actions. Draft Released for Public Review. May 2019. http://www.longbeach.gov/globalassets/lbds/media-library/documents/planning/caap/caap-draft-mitigation-actions_5-31-19-logos

CPUC (California Public Utilities Commission). 2016. *Biennial RPS Program Update*. Report prepared in compliance with Public Utilities Code Section 913.6. January 1, 2016. http://www.cpuc.ca.gov/uploadedfiles/cpuc_website/content/utilities_and_industries/energy/reports_and_white_papers/final12302015section913_6report.pdf.

CPUC. 2018. *2018 California Renewables Portfolio Standard Annual Report*. November 2018. Accessed March 2020. http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/Renewables%20Portfolio%20Standard%20Annual%20Report%202018.pdf.

CPUC. 2020. "Natural Gas and California." Accessed May 2020. http://www.cpuc.ca.gov/natural_gas/.

EIA (U.S. Energy Information Administration). 2020a. "State Electricity Profiles – California Electricity Profile 2018." December 31, 2019; corrected March 23, 2020. Accessed May 2020. https://www.eia.gov/electricity/state/california/index.php.

EIA. 2020b. "California State Energy Profile." Last updated January 16, 2020. Accessed May 2020. https://www.eia.gov/state/print.php?sid=CA.

EIA. 2020c. "Natural Gas Consumption by End Use." May 2020. Accessed May 2020. https://www.eia.gov/dnav/ng/ng_cons_sum_a_EPG0_VC0_mmcf_a.htm.

EIA. 2020d. "California State Profile and Energy Estimates – Table F16: Total Petroleum Consumption Estimates, 2017." Accessed May 2020. https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_use_pa.html&sid=US&sid=CA.

EPA (U.S. Environmental Protection Agency). 2017. "Overview for Renewable Fuel Standard." Last updated June 7, 2017. Accessed May 2019. https://www.epa.gov/renewable-fuel-standard-program/overview-renewable-fuel-standard.

SCE (Southern California Edison). 2019. 2018 Power Content Label. Southern California Edison. July 2019. https://www.sce.com/sites/default/files/inline-files/2018SCEPCL.pdf.

The Climate Registry. 2019. *The Climate Registry's 2018 Default Emission Factors.* May 1. https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf.

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