APPENDIX L

Energy Analysis Report

Energy Analysis Report
La Brea Tar Pits Master Plan
Los Angeles, California

OCTOBER 2022

PREPARED FOR

Los Angeles County Museum of Natural History Foundation

LEAD AGENCY

County of Los Angeles

PREPARED BY

SWCA Environmental Consultants

ENERGY ANALYSIS REPORT
LA BREA TAR PITS MASTER PLAN
LOS ANGELES, CALIFORNIA

Prepared for

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1 INTRODUCTION

The 13-acre La Brea Tar Pits site is located within the eastern and northeastern portions of Hancock Park in Los Angeles, California. The La Brea Tar Pits, the George C. Page Museum (Page Museum), and associated facilities, are owned by the County of Los Angeles (County) but are managed by the non-profit Los Angeles County Museum of Natural History Foundation (Foundation). The Foundation's role is to carry out all County services including public access and programming, administration, and operation of the Natural History Museums of Los Angeles County (NHMLAC), including the La Brea Tar Pits and Page Museum. The Foundation and NHMLAC propose a redevelopment, or "reimagining," of the La Brea Tar Pits site, including renovation of the Page Museum, constructing a new museum building, and developing new amenities in surrounding portions of Hancock Park.

The County is the Lead Agency under the California Environmental Quality Act (CEQA); NHMLAC is a County departmental unit. The NHMLAC retained SWCA Environmental Consultants (SWCA) to prepare an Energy Analysis Report in support of the proposed La Brea Tar Pits Master Plan (project).

This energy analysis has been prepared in accordance with CEQA and Public Resources Code (PRC) 21100(b)(3). This assessment examines the amount of energy expected to be consumed during the construction and operation of the project. This impact analysis evaluates the potential for the project to result in the wasteful use of energy or wasteful use of energy resources during project construction and operation, consistent with PRC 21100(b)(3) and Section 15126.2(b) and Appendices F and G of the State CEQA Guidelines. The analysis provides construction and operational energy use estimates for the project. This information is then used to evaluate whether this energy use would be considered wasteful, inefficient, or unnecessary, taking into account available energy supplies and existing use patterns, the project's energy efficiency features, and compliance with applicable standards and policies aimed to reduce energy consumption, including California's Title 24 Energy Efficiency Standards.

2 PROJECT LOCATION AND DESCRIPTION

2.1 Project Location

The La Brea Tar Pits property (project site) is located at 5801 Wilshire Boulevard within the 23-acre Hancock Park (Assessor's Parcel Number 550-801-6902) (Figures 1 and 2). The project site includes 13 acres of the eastern and northwestern portions of Hancock Park and is directly adjacent to the Los Angeles County Museum of Art (LACMA). The project site is located approximately 5.5 miles west from downtown Los Angeles and approximately 8.6 miles east of the Pacific Ocean. It is bounded by West 6th Street to the north (an approximately 1,200-foot-long frontage), South Curson Avenue to the east (an approximately 830-foot-long frontage), Wilshire Boulevard to the south (an approximately 500-foot-long frontage), and the LACMA to the west (an approximately 250-foot-long frontage). The area is known as the Miracle Mile neighborhood of the city of Los Angeles. The project site can be found on the U.S. Geological Survey (USGS) Hollywood, California 7.5-minute quadrangle in Section 20, Township 1 South, Range 14 West.

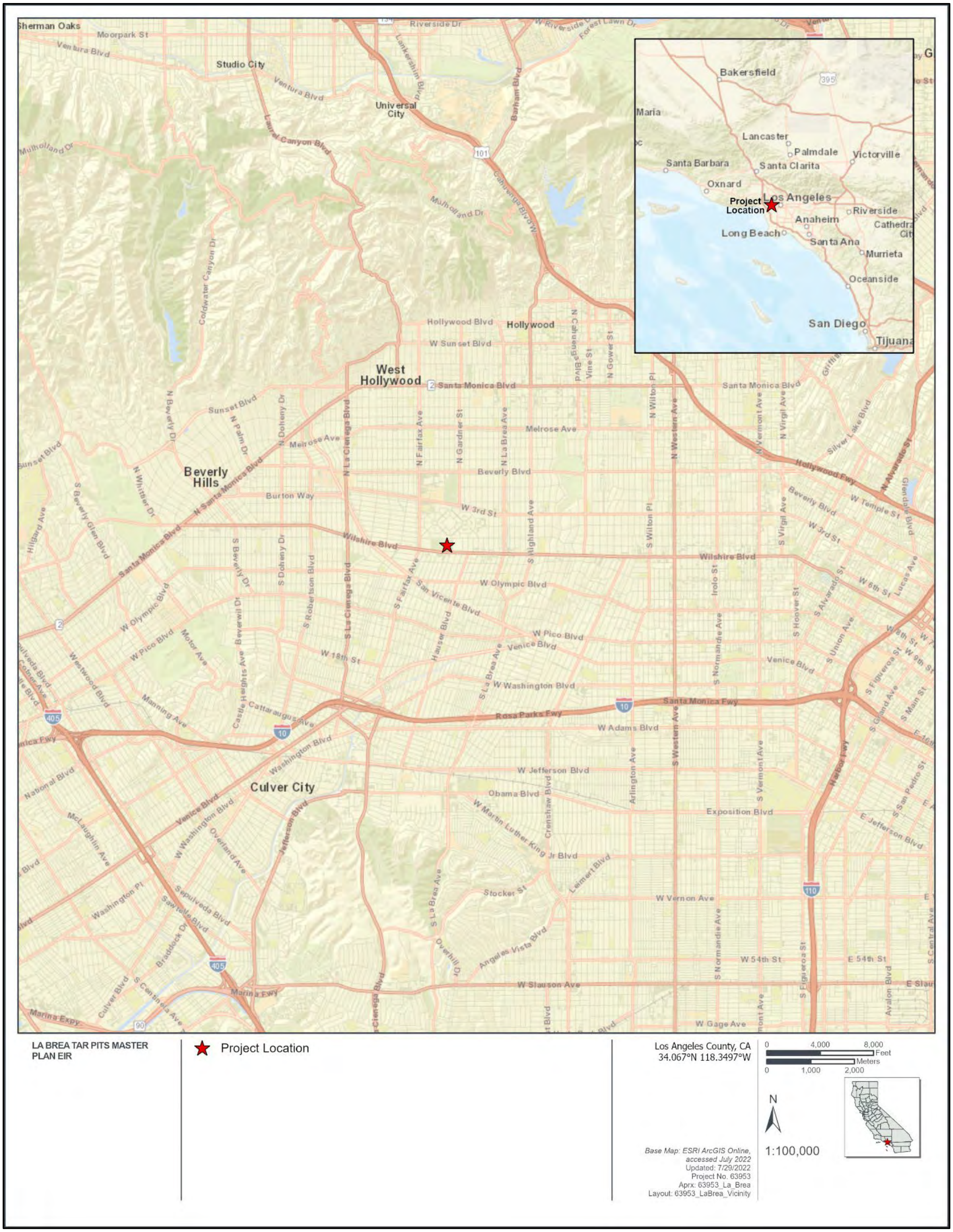

Figure 1. Project vicinity map.

Figure 2. Project location map.

1.1 Existing Conditions and Surrounding Land Uses

The project site includes 13 acres of the eastern and northwestern portions of Hancock Park and broadly encompasses what is known as the La Brea Tar Pits, which includes the Page Museum (see Figure 2). The entirety of Hancock Park is enclosed within an 8- to 10-foot-high metal fence, which serves to secure the site by providing full closure of Hancock Park when the La Brea Tar Pits, Page Museum, and LACMA are closed in the evenings.

The George C. Page Museum is approximately 63,200 square feet and is located on the eastern portion of the project site. The project site contains multiple active fossil quarries, commonly called “tar pits.” The active tar pits (Pits 3, 4, 9, 13, 61, 67, and 91) are located within the northwestern portion of the project site, along with the Observation Pit on the western boundary of the project site. Project 23[1] and Pit 91 are active fossil recovery and excavation sites also located in the northwestern portion of the project site. The Lake Pit is the largest paleontological excavation pit on the grounds of Hancock Park, located in the southeastern portion of the project site.

The project site includes an approximately 28,000-square-foot multipurpose grass lawn, known as the Central Green, located to the west of the Page Museum. Parking for the La Brea Tar Pits is located in the northeast corner of the project site, at the corner of South Curson Avenue and West 6th Street (see Figure 2). Vehicles enter and depart the lot from both directions on South Curson Avenue.

The project site is surrounded by a variety of commercial uses, museums, residential buildings, and schools. The project site is bounded by the Park La Brea Pool and multi-family residential uses to the north across West 6th Street, commercial and residential uses to the east across South Curson Avenue, the Craft Contemporary Museum and other museum and commercial uses south across Wilshire Boulevard, and museum and commercial uses to the west (see Figure 2).

2.2 Project Description

The project would result in a reimagined site design, expansion, and upgrades for the La Brea Tar Pits complex and portions of Hancock Park, including renovations to the Page Museum (Figure 3). Table 1 provides a summary of the project components; more detail on the project components is provided following the table.

2.2.1 Page Museum Renovations

The project would renovate the existing Page Museum within the same footprint as the existing building (currently approximately 63,200 square feet) to allow for enlarged exhibition space, additional storage, a ground floor café, and retail space. The central atrium would be renovated to provide additional exhibitions and provide additional classroom and laboratory space. The second floor of the Page Museum would contain two classrooms and a multipurpose space. An outdoor café and bar would be located next to these spaces on the center terrace on the west side of the Page Museum. A sloped green roof would be installed to the north of the Page Museum and would curve to the west. The project would add several sustainability features to the Page Museum. The features include enhanced daylighting, rainwater collection leading to bioswales, a sloped green roof, and rooftop solar photovoltaic panels.

[1] During construction on the LACMA parking garage in 2006, 16 new paleontological deposits were discovered, including an almost-complete skeleton of an adult mammoth. Given the size of the discoveries, 23 large wooden boxes were built around the various deposits, allowing many of the discoveries to remain intact. “Project 23” has now become the short-hand descriptor for the location and activities related to the excavation of deposits within the 23 large wooden boxes that is now occurring in a portion of the La Brea site.

Table 1. Project Components Summary

Project Component	Description
Page Museum Renovations	Renovate existing building in same footprint (approximately 63,200 square feet). Demolish existing maintenance building and service facilities along the northern boundary, directly west of the parking lot. Construct new 2,000-gross-square-foot (gsf) satellite maintenance and support building.
New Museum Building	Construct a new two-story 40,000-gsf museum building northwest of the Page Museum, including two new theaters.
Wilshire Gateway	Renovate the existing entrance to the La Brea Tar Pits at Wilshire Boulevard and South Curson Avenue with shaded canopy and new welcome pavilion.
The Lake Pit	Construct a pedestrian bridge and walking path over the Lake Pit. Install a new garden bioswale.
6th Street Gateway	Renovate the existing entrance at the northwest corner of West 6th Street and the entrance to the LACMA service drive with shaded canopy and new welcome pavilion.
Tar Pits (Pits 3, 4, 9, 13, 61, 67, and 91; Project 23)	Renovate the existing facilities at all the tar pits in the northwestern portion of the project site.
Pedestrian Path and Recreation Areas	Reconfigure the existing pedestrian pathways on-site into a continuous 1-kilometer-long paved pedestrian path linking existing features on the project site. Improvements to the Central Green (establish a drivable path for food truck access). Establish a children’s play area, picnic areas, and a small dog park west of the 6th Street Gateway.
Circulation and Parking	Expand existing parking lot from 63,000 square feet to 65,000 square feet and relocate approximately 50 to 70 feet to the north. This would require removal and relocation of existing trees on-site. Increase vehicle parking spaces approximately 5 to 15 spaces for a total of 160 to 170 vehicle parking spaces. Addition of new landscaping and vehicle access lanes to the parking lot. Establish new school drop-off/loading area approximately 215 to 230 feet long on South Curson Avenue adjacent to the Wilshire Gateway picnic area.
Landscaping Concept Plan	Establish three distinct landscaping zones encircled by looping pedestrian path. Creation of biofiltration areas for stormwater management. Introduction or relocation of approximately 84 trees from existing locations on-site to new locations on-site.

In addition, the project would demolish the existing maintenance building and service facilities along the northern boundary, directly west of the parking lot. A new 2,000-gross-square-foot (gsf) satellite maintenance and support building would be constructed for additional storage, administration, and research space directly west of the parking lot.

Figure 3. Proposed site plan.

2.2.2 New Museum Building

A new two-story museum building would be located to the northwest of the Page Museum (see Figure 3). The building would be approximately 40,000 gsf and would increase the total museum square footage to 104,000 gsf. The new museum building would include an extended central lobby, exhibit spaces, two theaters, a mechanical equipment room, research and collections rooms, administration spaces, and a loading dock.

The Page Museum and new museum building would be continuously connected on the first floor. The first-floor central lobby would face southwest toward the Central Green and branch off into the Page Museum to the east and the new museum building to the west. An updated retail and café space would be located off the lobby and look out over the Central Green. The Page Museum and the new museum buildings would be disconnected on the second floor, which would rise above the earthen berm. The separated facilities would be accessible through sloped outdoor walkways from the Central Green or interior staircases in the museum. There would be pedestrian entrances leading into the central lobby from the Central Green and from the parking lot. The existing Page Museum entrance would be converted to an educational group and tour entrance, which would be connected to a new school drop-off area on South Curson Avenue.

2.2.3 Entrance Renovation and Other Internal Circulation Improvements

The project would renovate the existing entrance to the La Brea Tar Pits located at Wilshire Boulevard and South Curson Avenue. A large, shaded canopy would stretch down Wilshire Boulevard and curve around to South Curson Avenue to create a new welcome pavilion and shaded entry plaza; this would provide orientation, spaces for gathering and queuing, and restrooms (see Figure 3). A picnic area would also be located under the shaded canopy.

A pedestrian bridge and walking path would be constructed over the Lake Pit. Directly to the east of the Lake Pit, a new garden bioswale would be installed to manage stormwater and would include vegetation related to the relocated mammoths and mastodon sculptures.

A school drop-off area on South Curson Avenue would lead directly to the education museum entrance, enabling the choreography of student tour itineraries that are distinct from general museum visitors and other tour groups.

The project would renovate the existing entrance at the northwest corner of West 6th Street and the entrance to the LACMA parking garage. Similar to the Wilshire Gateway, a shaded canopy and welcome pavilion would provide orientation, legibility, and amenities. As a visible point of arrival from the residential communities to the north, this new entry would welcome visitors to a shaded park space where community park and recreational needs are balanced with the research activities of La Brea. Under the canopy of shade trees, visitors would find diverse destinations, including play areas, picnic areas, seating and interpretation zones at the protected tar seeps, the gentle topography and bioswales along Oil Creek, and the revitalized destinations of the Dorothy Brown Amphitheater, Observation Pit, and Pit 91. Along the south edge of the loop path, connections would allow access to other Hancock Park programs and transportation connections.

2.3 Construction Time Frame and Phasing

Construction of the project, from mobilization to the site to final completion, is expected to occur between 2024 and 2028, and would last for approximately 4 years. The project would be constructed in five phases: 1) demolition and site preparation of the project site; 2) installation of infrastructure improvements; 3) development of the proposed new museum building and parking lot; 4) landscaping and hydroseeding; and 5) roadway improvements.

The energy analysis is based on default values in the latest versions of the California Emission Estimator Model (CalEEMod) Version 2022.1 (California Air Pollution Officers Association 2022) and Emission Factors Model (California Air Resources Board [CARB] 2021). Accordingly, this energy analysis has been conducted with the most recent available tools prepared and accepted by the regulatory agencies. The project phases have been grouped into six CalEEMod phases based on the types of equipment and workload: 1) demolition; 2) site preparation; 3) grading; 4) building construction; 5) paving; and 6) architectural coating.

The 13-acre project site has been divided into the following land uses for purposes of CalEEMod: 1) parking; 2) other non-asphalt surfaces; 3) educational library; and 4) recreational city park. This energy analysis includes quantification of electricity, natural gas, gasoline, and diesel fuel that would be required to construct and operate the project. Construction energy use includes off-road equipment and on-road mobile sources. Sources of operational energy use include building energy use, parking area energy use, on-road mobile sources, and water distribution and treatment.

3 ENVIRONMENTAL SETTING

3.1 Energy Profile

Total energy usage in California was 6,923 trillion British Thermal Units (Btu) in 2020 (the most recent year for which these specific data are available), which equates to an average of 175 million Btu per capita. These figures place California second among the nation’s 50 states in total energy use and 48th in per-capita consumption. Of California’s total energy usage, the breakdown by sector is roughly 34% transportation, 25% industrial, 20% commercial, and 22% residential. Electricity and natural gas in California are primarily consumed by stationary users such as residential dwellings and commercial and industrial facilities, whereas petroleum-based fuel is primarily consumed by transportation-related energy use (U.S. Energy Information Administration [EIA] 2020a).

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 70% of the electrical power needed to meet California’s demand is produced in the state, while approximately 30% is imported from power-generating facilities outside of California, including imports from Mexico. In 2021, California’s in-state electricity use was derived from natural gas (50%), coal (0.2%), large hydroelectric resources (6%), nuclear sources (8%), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (35%) (California Energy Commission [CEC] 2021a).

3.2 Electricity

In 2021, total system electric generation for California was 277,764 gigawatt-hours (GWh), increased 2% from 2020’s total generation. Electricity from non–carbon dioxide-emitting electric generation categories (i.e., nuclear, large hydroelectric, and renewable generation) accounted for 49% of total in-state generation for 2021, compared to 51% in 2020 (CEC 2021a). The change is attributable to the continued impacts from California drought. In-state hydroelectric generation was significantly reduced, some 32% lower than 2020 generation levels. The net imports increased by about 2.4% in 2021, partially offsetting the decreased output from California’s hydroelectric power plants. The overall decline observed in

California's total system electric generation for 2020 is consistent with the recently published *California Energy Demand 2018–2030 Revised Forecast* (CEC 2018).

Total system electric generation for California was slightly increased in 2021. Factors contributing to the increase in total system electric generation include growth in the number of light-duty electric vehicles registered in the state, increased manufacturing electricity consumption, and decreases in savings from energy efficiency programs, as population increases.

Increasingly, electricity is used in multiple transportation modes, including light-duty vehicles, transit buses, and light and heavy rail. In California, electricity use is forecast to emerge in battery-electric medium-duty trucks, battery-electric buses, and high-speed rail. The CEC forecasts that the statewide annual electricity demand for electricity-powered transportation modes will increase from its current level of 2,000 GWh to between 12,000 and 18,000 GWh by 2030, depending on technology development and market penetration of the various vehicle types (CEC 2021b).

The electricity services provided to the project site would be provided by the Los Angeles Department of Water and Power (LADWP), which is a proprietary department of the City of Los Angeles. The LADWP provides electrical service throughout the city of Los Angeles, serving approximately 4 million people within a service area of approximately 465 square miles. The Valley Planning District includes the LADWP service area north of Mulholland Drive, and the Metropolitan Planning District includes the LADWP service area south of Mulholland Drive. The project site is located within LADWP's Metropolitan Planning District.

LADWP generates power from a variety of energy sources, including hydropower, coal, gas, nuclear sources, and renewable resources, such as wind, solar, and geothermal sources. According to LADWP's 2017 Power Strategic Long-Term Resource Plan, LADWP has a net dependable generation capacity greater than 7,531 MW (LADWP 2017). On August 31, 2017, LADWP's power system experienced a record instantaneous peak demand of 6,502 MW (LADWP 2022). Approximately 35% of LADWP's 2021 electricity purchases were from renewable sources, which is similar to the 32% statewide percentage of electricity purchases from renewable sources (LADWP 2021). The annual electricity sale to customers for the 2018–2019 fiscal year was approximately 22,663 million kilowatt hours (kWh). LADWP customers consume approximately 10% of all the electricity consumed in California, while LADWP has a transmission capacity of approximately 25% of California's total transmission capacity. LADWP owns and/or operates approximately 20,000 miles of alternating current (AC) and direct current (DC) transmission and distribution circuits, operating at voltages ranging from 120 volts to 500 kilovolts (kV), which are used to deliver electricity from generating plants to customers. The LADWP transmission and distribution system supplies power to the project site from as many as 34 different sources. LADWP supplies electrical power to the project site from electrical service lines located in the project vicinity.

3.3 Natural Gas

One third of energy commodities consumed in California is natural gas. Although natural gas is the most common energy source for electricity generation in California, 90% of the state's natural gas is imported from the Rocky Mountain region, the Southwest, and Canadian basins. Californians consumed 13,158 million therms of natural gas in 2019, which is equal to approximately 1,315,800,000 million Btu (MMBtu) (California Public Utilities Commission [CPUC] 2021). The natural gas market continues to evolve and service options expand, but its use falls mainly into the following four sectors: residential, commercial, industrial, and electric power generation. In addition, natural gas is a viable alternative to petroleum fuels for use in cars, trucks, and buses. Nearly 45% of the natural gas burned in California is used for electricity generation, and most of the remainder is consumed in the residential (21%), industrial (25%), and commercial (9%) sectors. California depends on out-of-state imports for nearly 90% of its natural gas supply (CPUC 2021). Natural gas has become an increasingly important source of energy since the majority of the state's power plants rely on this fuel.

The natural gas services provided to the project site would be provided by LADWP. Natural gas provides almost one third of the state's total energy requirements and is used in electricity generation space heating, cooking, watering, industrial processes, and as transportation fuel. Natural gas is provided by Southern California Gas Company (SoCalGas). SoCalGas gas serves approximately 21.4 million customers and more than 500 communities encompassing approximately 20,000 square miles throughout central and southern California. SoCalGas receives gas supplies from several sedimentary basins in the western United States and Canada, including supply basins located in New Mexico, west Texas, the Rocky Mountains, and western Canada, as well as local California supplies. The traditional, southwestern United States sources of natural gas will continue to supply most of SoCalGas's natural gas. Gas supply available to SoCalGas from California sources was approximately 2.4 billion cubic feet per day in 2021.

3.4 Transportation Fuels

The energy consumed by the transportation sector accounts for roughly 86% of California's petroleum products demand. Gasoline and diesel, both derived from petroleum (also known as crude oil), are the two most common fuels used for vehicular travel. According to the CEC, the state relies on petroleum-based fuels for 98% of its transportation needs. The transportation sector, including on-road and rail transportation (but excluding aviation), accounts for more than 95% of all motor gasoline use in the United States, at roughly 3.28 million barrels consumed in 2018. California has the second highest transportation-sector petroleum fuel consumption rate of any state and the highest motor gasoline consumption rate. In 2019, approximately 30% of California's crude oil was produced within the state, about 12% was produced in Alaska, and the remaining 58% was produced in foreign lands (CEC 2021a).

In 2019, taxable gasoline sales (including aviation gasoline) in California accounted for approximately 15.4 billion gallons of gasoline, and taxable diesel fuel sales accounted for approximately 3.1 billion gallons of diesel fuel (California Department of Tax and Fee Administration [CDTFA] 2021).

The CEC forecasts that demand for gasoline in California will range from 12.1 billion to 12.6 billion gallons in 2030, with most of the demand generated by light-duty vehicles. While the models show an increase in light-duty vehicles along population and income growth over the forecast horizon, total gasoline consumption is expected to decline, primarily due to increasing fuel economy (stemming from federal and state regulations) and gasoline displacement from the increasing market penetration of zero emission vehicles (ZEVs). For diesel, demand is forecast to increase modestly by 2030, following the growth of California's economy, but would be tempered by an increase in fleet fuel economy and market penetration of alternative fuels, most prominently by natural gas in the medium- and heavy-duty vehicle sectors (EIA 2020b).

As of 2019, California's oil fields make it the seventh largest petroleum-producing state in the United States (federal off-shore excluded), behind Texas, North Dakota, New Mexico, Oklahoma, Colorado, and Alaska. Crude oil is moved from area to area within California through a network of pipelines that carry it from both onshore and offshore oil wells to the refineries that are located in the San Francisco Bay Area, the Los Angeles area, and the Central Valley. As of January 1, 2020, 14 petroleum refineries operate in California, processing approximately 2.0 million barrels per day of crude oil. Other transportation fuel sources used in California include alternative fuels, such as methanol and denatured ethanol (alcohol mixtures that contain no less than 70% alcohol), natural gas (compressed or liquefied), liquefied petroleum gas, hydrogen, and fuels derived from biological materials (i.e., biomass) (CEC 2021c).

According to the CEC, transportation accounted for 34% of California's total energy consumption in 2020 (EIA 2020a). In 2021, California consumed 13.8 billion gallons of gasoline and 3.1 billion gallons of diesel fuel (CDTFA 2021). Petroleum-based fuels currently account for 89% of California's transportation energy sources. However, the State is now working on developing flexible strategies to reduce petroleum use. Over the last decade, California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and greenhouse gases (GHGs) from the transportation sector, and reduce vehicle miles traveled (VMT). Accordingly, gas consumption in California has declined. The CEC predicts that the demand for gasoline will continue to decline over the next 10 years, and there will be an increase in the use of alternative fuels. According to CARB's EMFAC database, Los Angeles County on-road transportation sources consumed 3.81 billion gallons of gasoline and 0.51 billion gallons of diesel fuel in 2021 (CARB 2021).

The existing on-site land uses currently generate a demand for transportation-related fuel use as a result of vehicle trips to and from the project site. Persons traveling to and from the project site also have the option of using public transportation to reduce transportation-related fuel use. The project site is located in an area well served by public transit provided by Los Angeles County Metropolitan Transportation Authority, the Los Angeles Department of Transportation, and the Antelope Valley Transit Authority, including the future Wilshire/Fairfax Station (as part of the Metro Purple Line Extension Project).

4 REGULATORY SETTING

4.1 Federal

Federal policies and regulations set broad energy efficiency standards and incentives for consumer products, automobile and fuel efficiency, etc. Such requirements, as those listed below, tend to be applicable to the manufacturing sector and not directly applicable to the project, but are listed here for informational purposes.

4.1.1 National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products (including hybrid vehicles), constructing energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

Executive Order (EO) 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the Energy Policy Act of 2005. The energy reduction and environmental performance requirements of EO 13423 were expanded upon in EO 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), which was signed in 2009.

The Energy Policy and Conservation Act of 1975 (EPCA) is a United States Act of Congress that responded to the 1973 oil crisis by creating a comprehensive approach to federal energy policy. The primary goals of the EPCA are to increase energy production and supply, reduce energy demand, provide energy efficiency, and give the executive branch additional powers to respond to disruptions in energy supply. Most notably, EPCA established the Strategic Petroleum Reserve, the Energy Conservation Program for Consumer Products, and Corporate Average Fuel Economy regulations.

4.1.2 Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting mandatory Renewable Fuel Standards (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25% greater efficiency for lightbulbs by phasing out incandescent lightbulbs between 2012 and 2014; requiring approximately 200% greater efficiency for lightbulbs, or similar energy savings, by 2020; and
- While superseded by the United States Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) actions described above, 1) establishing miles per gallon targets for cars and light trucks, and 2) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of the Energy Independence and Security Act address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of “green jobs.” A “green job,” as defined by the United States Department of Labor, is a job in business that produces goods or provides services that benefit the environment or conserve natural resources.

4.1.3 Corporate Average Fuel Economy (CAFE) Standards

Established by the U.S. Congress in 1975, the Corporate Average Fuel Economy (CAFE) Standards (49 Code of Federal Regulations 531 and 533) reduce energy consumption by increasing the fuel economy of cars and light trucks. The NHTSA and EPA jointly administer the CAFE standards. The U.S. Congress has specified that CAFE standards must be set at the “maximum feasible level” with consideration given for: 1) technological feasibility; 2) economic practicality; 3) effect of other standards on fuel economy; and 4) need for the nation to conserve energy. When these standards are raised, automakers respond by creating a more fuel-efficient fleet. In 2012, the NHTSA established final passenger car and light truck CAFE standards for model years 2017 through 2021, which the agency projects will require in model year 2021, on average, a combined fleet-wide fuel economy of 40.3 to 41.0 miles per gallon (mpg). Fuel efficiency standards for medium- and heavy-duty trucks have been jointly developed by EPA and NHTSA. The Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018, and result in a reduction in fuel consumption from 6% to 23% over the 2010 baseline, depending on the vehicle type.

The EPA and NHTSA have also adopted the Phase 2 heavy-duty truck standards, which cover model years 2021 through 2027 and require the phase-in of a 5% to 25% reduction in fuel consumption over the 2017 baseline, depending on the compliance year and vehicle type.

In March 2020, the EPA and NHTSA issued the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule that would maintain the CAFE standards applicable in model year 2020 for model years 2021 through 2026. The estimated CAFE standards for model year 2020 are 43.7 mpg for passenger cars and 31.3 mpg for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. However, consistent with President Biden's executive order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, the EPA and NHTSA are now evaluating whether and how to replace the SAFE Rule.

4.2 State

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

The 2019 California Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations [CCR], Title 24, Part 6), commonly referred to as "Title 24," became effective on January 1, 2020. In general, 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. Under 2019 Title 24 standards, nonresidential buildings would use about 30% less energy, mainly due to lighting upgrades, when compared to those constructed under 2016 Title 24 standards. The 2019 Title 24 standards require installation of energy-efficient windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses. All new structures associated with the project would be required to comply with Title 24 standards for energy efficiency.

4.2.2 California Green Building Standards (CALGreen, or Title 24 Part 11)

The CALGreen Code (CCR, 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. The most recent update to the CALGreen Code was adopted in 2019 and went into effect on January 1, 2020. CALGreen requires new buildings to reduce water consumption by 20%, divert 50% of construction waste from landfills, and install low pollutant-emitting materials.

4.2.3 Appliance Efficiency Regulations, California Code of Regulations Title 20

California's Appliance Efficiency Regulations (20 CCR Part 1601-1608) contain standards for both federally regulated appliances and non-federally regulated appliances. The regulations are updated regularly to allow consideration of new energy efficiency technologies and methods. The current regulations were adopted by the CEC on November 18, 2009. The standards outlined in the regulations apply to appliances that are sold or offered for sale in California. More than 23 different categories of appliances are regulated, including refrigerators, freezers, water heaters, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings.

4.2.4 Renewables Portfolio Standard Program

First established in 2002 under Senate Bill (SB) 1078, California's Renewables Portfolio Standards (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33% by 2020 and 50% by 2030. SB 350, signed October 7, 2015, is the Clean Energy and Pollution Reduction Act of 2015. The objectives of SB 350 are: 1) to increase the procurement of electricity from renewable sources from 33% to 50%; and 2) to double the energy savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation. On September 10, 2018, former Governor Jerry Brown signed SB 100, which further increased California's RPS and requires retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, and that the CARB should plan for 100% eligible renewable energy resources and zero-carbon resources by December 31, 2045.

The CPUC and the CEC jointly implement the RPS program. The CPUC's responsibilities include: 1) determining annual procurement targets and enforcing compliance; 2) reviewing and approving each investor-owned utility's renewable energy procurement plan; 3) reviewing contracts for RPS-eligible energy; and 4) establishing the standard terms and conditions used in contracts for eligible renewable energy. In March 2021, the CEC, CPUC, and CARB issued an SB 100 Joint Agency Report that assesses barriers and opportunities to implementing the 100% clean electricity policy. The report's initial findings suggest that the goals of SB 100 are achievable, though opportunities remain to reduce overall system costs; however, the report also notes that the findings are intended to inform state planning and are not intended as a comprehensive nor prescriptive roadmap to 2045, and future work is needed on critical topics such as system reliability and land use to further address energy equity and workforce needs. On April 12, 2011, Governor Brown signed into law SB 2X, which modified California's RPS program to require that both public and investor-owned utilities California receive at least 33% of their electricity from renewable sources by the year 2020. SB 2X also requires regulated sellers of electricity to meet an interim milestone of procuring 25% of their energy supply from certified renewable sources by 2016. These levels of reduction are consistent with the LADWP's commitment to achieve 35% renewable energy by 2020. LADWP indicated that 35.2% of its electricity came from renewable resources in year 2021 (LADWP 2021). Therefore, under SB 2X, LADWP currently meets its RPS requirement.

4.2.5 SB 375 (Sustainable Communities Strategies)

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan (since updated to 2022 Climate Change Scoping Plan [CARB 2022]) for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associate with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations. The Southern California Association of Governments (SCAG) is the metropolitan planning organization for the Southern California region, which includes Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties.

4.2.6 Executive Order S-14-08 and S-21-09

In November 2008, then-Governor Schwarzenegger signed EO S-14-08, which expanded the state's RPS to 33% renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the RPS by signing EO S-21-09, which directed the CARB under its

Assembly Bill (AB) 32 authority to enact regulations to help the state meet its RPS goal of 33% renewable energy by 2020.

4.2.7 SB 350—Clean Energy and Pollution Reduction Act of 2015

SB 350, also known as the Clean Energy and Pollution Reduction Act of 2015, was enacted on October 7, 2015, and provides a new set of objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

1. To increase from 33% to 50% by December 31, 2030, the procurement of California's electricity from renewable sources.

2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

4.2.8 Senate Bill 100

On September 10, 2018, then-Governor Brown signed SB 100, establishing that 100% of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both Investor Owned Utilities and Publicly Owned Utilities from 50% to 60% by 2030. Incrementally, these energy providers are also required to have a renewable energy supply of 33% by 2020, 44% by 2024, and 52% by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350. On the same day that SB 100 was signed, then-Governor Brown signed EO B-55-18, with a new statewide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045 and to maintain net negative emissions thereafter.

4.2.9 Senate Bill 1389

SB 1389 (PRC Sections 25300–25323) requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (PRC Section 25301[a]). The 2021 Integrated Energy Policy Report, the latest published report from CEC, provides the results of the CEC's assessments related to energy sector trends, building decarbonization and energy efficiency, zero-emission vehicles (ZEVs), energy equity, climate change adaptation, electricity reliability in Southern California, natural gas assessment, and electricity, natural gas, and transportation energy demand forecasts (CEC 2022a).

4.2.10 2017 Climate Change Scoping Plan

In response to the passage of AB 32 and the identification of the statewide 2030 GHG reduction target (i.e., 40% below statewide 1990 level GHG emissions by 2030), CARB adopted the 2017 Climate Change Scoping Plan in December 2017. In May 2022, an updated climate scoping plan was published. The 2022 Climate Change Scoping Plan identifies technologically feasible and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health. The 2022 Climate Change Scoping Plan includes policies to require direct GHG reductions at some of the state's largest stationary sources and mobile sources. These policies include the use of lower-GHG fuels, efficiency regulations, and the Cap-and-Trade program, which constrains and reduces emissions at covered sources.

4.2.11 AB 1007 (Pavley)—Alternative Fuel Standards

AB 1007 (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a state plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other state, federal, and local agencies. The final State Alternative Fuels Plan, published in December 2007, attempts to achieve an 80% reduction in GHG emissions associated with personal modes of transportation, even as California's population increases.

4.2.12 California Assembly Bill 1493 (AB 1493, Pavley)

In response to the transportation sector accounting for more than half of California's carbon dioxide emissions, AB 1493 (commonly referred to as CARB's Pavley regulations), enacted on July 22, 2002, requires CARB to set GHG emission standards for new passenger vehicles, light-duty trucks, and other vehicles manufactured in and after 2009 whose primary use is non-commercial personal transportation. Phase I of the legislation established standards for model years 2009–2016 and Phase II established standards for model years 2017–2025. In September 2019, the EPA published the SAFE Vehicles Rule in the Federal Register (Vol. 84, No. 188, Friday, September 27, 2019, Rules and Regulations, 51310–51363) that maintains the vehicle mpg standards applicable in model year 2020 for model years 2021 through 2026. In November 2019, California and 23 other States and environmental groups filed a petition in the U.S. District Court in Washington, D.C., for the EPA to reconsider the published rule. The Court has not yet ruled on these petitions.

In March 2020, despite the pending petitions, the U.S. Department of Transportation and the EPA issued the SAFE Vehicles Rule, which amends existing CAFE standards and tailpipe carbon dioxide emissions standards for passenger cars and light trucks.

4.2.13 Low Carbon Fuel Standard

The Low Carbon Fuel Standard (LCFS), established in 2007 through EO S-1-07 and administered by CARB, requires producers of petroleum-based fuels to reduce the carbon intensity of their products, starting with a 0.25% reduction in 2011. and culminating in a 10% total reduction in 2020. In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the program, including a doubling of the carbon intensity reduction to 20% by 2030.

Petroleum importers, refiners, and wholesalers can either develop their own low carbon fuel products or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, and hydrogen.

4.2.14 Executive Order B-16-12—2025 Goal for Zero Emission Vehicles

In March 2012, then-Governor Brown issued an executive order establishing a goal of 1.5 million ZEVs on California roads by 2025. In addition to the ZEV goal, EO B-16-12 stipulated that by 2015, all major cities in California will have adequate infrastructure and be "zero-emission vehicle ready"; that by 2020, the state will have established adequate infrastructure to support 1 million ZEVs; and that by 2050, virtually all personal transportation in the state will be based on ZEVs, and GHG emissions from the transportation sector will be reduced by 80% below 1990 levels.

4.2.15 CARB's Advanced Clean Car Program

The Advanced Clean Cars emissions-control program was approved by CARB in 2012, and is closely associated with the Pavley regulations. The program requires a greater number of zero-emission vehicle models for years 2015 through 2025 to control smog, soot, and GHG emissions. This program includes the Low-Emissions Vehicle (LEV) regulations to reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles; and the ZEV regulations to require manufactures to produce an increasing number of pure ZEVs (meaning battery and fuel cell electric vehicles) with the provision to produce plug-in hybrid electric vehicles between 2018 and 2025. Due to the federal adoption of the Final Safer Affordable Fuel Efficient (SAFE) Rule, new cars of model years 2021 through 2026 are not currently required to achieve the fuel economy targets set by the Advanced Clean Cars program.

The Mobile Source Strategy of 2016 includes an expansion of the Advanced Clean Cars program and further increases the stringency of GHG emissions for all light-duty vehicles, and 4.2 million zero emission and plug-in hybrid light-duty vehicles by 2030. It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025, as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for Class 3 through Class 7 "last mile" delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45% reduction in GHG emissions and a 50% reduction in the consumption of petroleum-based fuels.

CARB's Mobile Source Strategy includes measures to reduce total light-duty VMT by 15% compared to forecasted 2050 VMT with no measures enacted. In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower, such as bulldozers, loaders, backhoes, and forklifts, as well as many other self-propelled off-road diesel vehicles. The In-Use Off-Road Diesel-Fueled Fleets regulation adopted by CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models (13 CCR Section 2449). The compliance schedule requires full implementation by 2023 in all equipment for large and medium fleets and by 2028 for small fleets.

4.2.16 Airborne Toxic Control Measure to Limit Diesel-Fueled Vehicle Idling

In 2004, CARB adopted an Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling in order to reduce public exposure to diesel particulate matter emissions (13 CCR Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption from unnecessary idling.

In 2021, California consumed 13.8 billion gallons of gasoline and 3.1 billion gallons of diesel fuel (CDTFA 2021). Off-road construction equipment also consumes fuel while idling. CARB implemented the Airborne Toxic Control Measure (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling limits idling to 5 minutes at any one location. This was done to save fuel because CARB estimated that heavy-duty vehicles (off-road equipment) can consume up to 1 gallon of diesel fuel per hour of idling, which can total to 1,500 gallons of diesel fuel per year for vehicles that could idle for 1,500 hours in a year. By implementing this rule, idling is greatly reduced, and the use of diesel fuel is reduced.

4.2.17 Executive Order B-48-18

On January 26, 2018, then-Governor Brown issued an executive order establishing a goal of 5 million ZEVs on California roads by 2030, and spur the installation and construction of 250,000 plug-in electric vehicle chargers, including 10,000 DC fast chargers, and 200 hydrogen refueling stations by 2025.

4.2.18 Executive Order N-79-20

In September 2020, Governor Newsom signed EO N-79-20, which sets a new State goal that 100% of in-state sales of new passenger cars and trucks will be zero-emission by 2035; that 100% of medium- and heavy-duty vehicles in the state will be zero-emission by 2045 for all operations where feasible, as well as by 2035 for drayage trucks; and that 100% of off-road vehicles and equipment will be zero-emission by 2035 where feasible. This order calls upon state agencies including CARB, the CEC, the CPUC, the Department of Finance, and others to develop and propose regulations and strategies to achieve these goals.

4.3 Regional

4.3.1 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

SB 375 requires each metropolitan planning organization to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan (RTP). In general, the SCS outlines a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce vehicle miles traveled from automobiles and light-duty trucks and thereby reduce GHG emissions from these sources. For the SCAG region, the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), adopted on September 3, 2020, is the current RTP/SCS and is an update to the 2016-2040 RTP/SCS.

The 2020-2045 RTP/SCS focuses on the continued efforts of the previous RTP/SCS plans for an integrated approach in transportation and land use strategies in development of the SCAG region through horizon year 2045. The 2020-2045 RTP/SCS projects that the SCAG region will meet the GHG per-capita reduction targets established for the SCAG region of 8% by 2020 and 19% by 2035. Additionally, its implementation is projected to reduce VMT per capita for the year 2045 by 4.1% compared to baseline conditions for the year. Rooted in the 2008 and 2012 RTP/SCS plans, the 2020-2045 RTP/SCS includes "Core Vision" that centers on maintaining and better managing the transportation network for moving people and goods while expanding mobility choices by locating housing, jobs, and transit closer together, and increasing investments in transit and complete streets.

4.4 County of Los Angeles

4.4.1 County of Los Angeles General Plan

The County of Los Angeles General Plan directs future growth and development and establishes goals, policies, and objectives that are established by the County to guide development in the unincorporated areas of the county and projects that are developed under County guidance. The County General Plan is also intended to serve as an advisory countywide document to coordinate land use planning, public service and facilities planning, circulation, environmental management and regional land use, and transportation initiatives with the county's 88 incorporated cities.

The adopted County General Plan contains an Air Resources Element that addresses air quality and GHG emissions. Relevant goals encourage mixed-use development, the use of “green building” principles, energy and water efficiency, reducing vehicle miles traveled and vehicle trips, and promoting alternative modes of transportation. The Air Quality Element of the County General Plan establishes the following goals and policies applicable to the project pertaining to energy:

- Goal AQ3: Implementation of plans and programs to address the impact of climate change.
  - Policy AQ 3.2 - Reduce energy consumption of County operations by 20% by 2015.
  - Policy AQ 3.3 - Reduce water consumption of County operations.
  - Policy AQ 3.5 - Encourage energy conservation in new development and municipal operations.
  - Policy AQ 3.6 - Support rooftop solar facilities on new and existing buildings.

4.5 City of Los Angeles

While the project site is located within the city of Los Angeles, it is owned by the County and is proposed for uses that benefit the public. Accordingly, the project is subject to the regulatory controls of the County of Los Angeles and not the City of Los Angeles. Nonetheless, the policy and regulatory documents of the City of Los Angeles that are most relevant to the project are provided herein for informational purposes.

4.5.1 City of Los Angeles Green LA Action Plan

The City of Los Angeles adopted the Green LA Action Plan to provide energy conservation goals and objectives for its departments, including the LADWP, and to set a policy framework for future energy conservation programs. The plan, published in May 2007, sets forth a goal of reducing the city’s GHG emissions to 35% below 1990 levels by the year 2030. Climate LA is the implementation program that provides detailed information about each action item listed in the Green LA framework. Climate LA includes focus areas addressing environmental issues including, but not limited to, energy, water, transportation, and waste. The energy focus area includes action items with measures that aim to increase the use of renewable energy to 35% by 2020, reduce the use of coal-fired power plants, and present a comprehensive set of green buildings policies to guide and support private sector development.

4.5.2 City of Los Angeles Green New Deal

In April 2019, Mayor Eric Garcetti released the Green New Deal, a program of actions designed to create sustainability-based performance targets through 2050 to advance economic, environmental, and equity objectives. The City’s Green New Deal is the first 4-year update to the City’s first Sustainable City pLAn that was released in 2015, and therefore replaces and supersedes the Sustainable City pLAn. It augments, expands, and elaborates in more detail the City’s vision for a sustainable future and it tackles the climate emergency with accelerated targets and new aggressive goals. Within the Green New Deal, climate mitigation is one of eight explicit benefits that help define its strategies and goals. These include reducing GHG emissions through near-term outcomes:

- Reduce potable water use per capita by 22.5% by 2025; 25% by 2035; and maintain or reduce 2035 per-capita water use through 2050.
- Reduce building energy use per square foot for all building types 22% by 2025; 34% by 2035; and 44% by 2050 (from a baseline of 68 thousand British thermal units per square foot in 2015).
- All new buildings will be net zero carbon by 2030 and 100% of buildings will be net zero carbon by 2050.

- Increase cumulative new housing unit construction to 150,000 by 2025; and 275,000 units by 2035.
- Ensure 57% of new housing units are built within 1,500 feet of transit by 2025; and 75% by 2035.
- Increase the percentage of all trips made by walking, biking, micromobility/matched rides, or transit to at least 35% by 2025, 50% by 2035, and maintain at least 50% by 2050.
- Reduce VMT per capita by at least 13% by 2025; 39% by 2035; and 45% by 2050.
- Increase the percentage of electric and zero emission vehicles in the city to 25% by 2025; 80% by 2035; and 100% by 2050.
- Increase landfill diversion rate to 90% by 2025; 95% by 2035 and 100% by 2050.
- Reduce municipal solid waste generation per capita by at least 15% by 2030, including phasing out single-use plastics by 2028 (from a baseline of 17.85 pounds of waste generated per capita per day in 2011).
- Eliminate organic waste going to landfill by 2028.
- Reduce urban/rural temperature differential by at least 1.7 degrees by 2025; and 3 degrees by 2035.
- Ensure the proportion of Angelenos living within 0.5 mile of a park or open space is at least 65% by 2025; 75% by 2035; and 100% by 2050.

4.5.3 City of Los Angeles Green Building Code

Chapter IX of the Los Angeles Municipal Code (LAMC) is referred to as the “Los Angeles Green Building Code”. which incorporates by reference portions of the CALGreen Code. Specific mandatory requirements and elective measures are provided for three categories: 1) low-rise residential buildings; 2) nonresidential and high-rise residential buildings; and 3) additions and alterations to nonresidential and high-rise residential buildings. The Los Angeles Green Building Code includes mandatory measures for newly constructed nonresidential and high-rise residential buildings. The Los Angeles Green Building Code includes some requirements that are more stringent than State requirements such as increased requirements for electric vehicle charging spaces and water efficiency, which results in potentially greater energy demand reductions from improved transportation fuel efficiency and water efficiency.

4.5.4 City of Los Angeles Solid Waste Reduction and Diversion Programs and Ordinances

The waste produced on the project site would be removed by waste haulers subject to the City of Los Angeles solid waste diversion programs and ordinances. The recycling of solid waste materials contributes to reduced energy consumption. Specifically, when products are manufactured using recycled materials, the amount of energy that would have otherwise been consumed to extract and process virgin source material is reduced. For example, in 2015, 3.61 million tons of aluminum were produced by recycling in the United States, saving enough energy to produce electricity to 7.5 million homes.

The City of Los Angeles includes several programs and ordinances related to solid waste reduction and diversion. They include the following: 1) the RENEW LA Plan, which is a resource management blueprint with the aim to achieve a zero waste goal through reducing, reusing, recycling, or converting the resources now going to disposal so as to achieve an overall diversion level of 90% or more by 2025; 2) the Waste Hauler Permit Program, which requires all private waste haulers collecting solid waste to obtain compliance permits and to transport construction and demolition waste to City-certified construction and demolition processing facilities; and 3) the Exclusive Franchise System Ordinance, which, among other requirements, sets maximum annual disposal levels and specific diversion requirements for franchise waste haulers and the City to promote solid waste diversion from landfills in an effort to meet the City's zero waste goals. These solid waste reduction programs and ordinances not only help to reduce the number of trips to haul solid waste, therefore reducing the amount of petroleum-based fuel, but also help to reduce the energy used to process solid waste.

5 IMPACT ANALYSIS

5.1 Methodology

This analysis addresses the project's potential energy usage, including electricity and transportation fuel. Energy consumption during both construction and operation is assessed. For purposes of this analysis, consistent with Appendix G of the State CEQA Guidelines, impacts associated with energy would be significant if the project would:

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The project's estimated energy consumption was calculated using CalEEMod Version 2022.1. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operation of a variety of land use projects.
The model uses widely accepted federal and state models for emission estimates and default data from sources such as EPA AP-42 emission factors, CARB vehicle emission models, and studies from California agencies such as the CEC. The model quantifies direct emissions from construction and operations, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Additional details regarding CalEEMod assumptions for the project are presented in the *La Brea Tar Pits Master Plan Air Quality and Greenhouse Gas Technical Report* (SWCA 2022). Specific analysis methodologies are discussed below.

5.1.1 Construction Energy Estimates

5.1.1.1 OFF-ROAD EQUIPMENT

Off-road equipment is the most significant source of construction fuel usage. Diesel fuel consumption associated with on-site off-road construction equipment has been estimated based on the construction schedule, equipment list, and CARB-estimated diesel consumption rate for off-road equipment. Details on the construction schedule and equipment are provided in the *La Brea Tar Pits Master Plan Air Quality and Greenhouse Gas Technical Report* (SWCA 2022). For the purposes of the energy analysis, all equipment was assumed to be diesel-fueled; electricity- or gasoline-fueled equipment would not be expected to substantially affect energy resource demands. It is also important to note that engine tier does not affect fuel consumption rates. Fuel consumption rates in gallons per horsepower-hour were calculated from CARB's Off-road Diesel Emission Factors database. Further details on the fuel usage by year, construction phase, and equipment are shown in Appendix A.

5.1.1.2 ON-ROAD VEHICLES

On-road construction vehicles such as light-duty automobiles and trucks that workers would use for commuting to and from the construction site are assumed to be fueled by gasoline; and on-road trucks, such as vendor and haul trucks for demolition debris, soil, and other material hauling, are assumed to be fueled by diesel fuel. This analysis conservatively assumes that no electric on-road vehicles would be used during construction of the project; electric vehicles would not be expected to substantially affect energy resource demands. The fuel quantities that would be required for on-road vehicles during construction have been calculated based on fuel efficiency factors estimated for each vehicle type using the EMFAC tool (CARB 2021). Fuel efficiency factors and energy use calculations are shown in Appendix A. CalEEMod defaults were used for the trip counts and for worker, vendor, and haul trip lengths. Summaries of the total estimated project construction energy use requirements for diesel fuel and gasoline are presented in Appendix A.

The project would be required to be compliant with the ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling limits idling to 5 minutes at any one location during the estimated 4-year construction period.

5.1.2 Operations

Project operations would require long-term consumption of energy in the form of electricity, natural gas, gasoline, and diesel fuel. The electricity, natural gas, and water usage that would be required for operation of the proposed buildings has been estimated based on project-specific building area estimates and CalEEMod default factors. Electricity would be used as the primary power source for the proposed buildings, including to operate the heating, ventilation, and air conditioning (HVAC) system.

In addition, water use for buildings would require the consumption of electricity to supply and distribute potable water to the buildings' water fixtures and to treat wastewater. Natural gas use for the buildings would primarily be associated with space and water heating. Mobile source fuel use associated with operation of the project has been estimated based on VMT and the fleet-average fuel consumption (in gallons per mile) from EMFAC (CARB 2021). CalEEMod calculates the annual VMT during operations using a fleet mix consisting of all different vehicle types accounting for the various traffic to the project site (visitors, workers, maintenance workers, etc.) at 3,905,278 VMT per year. This figure was used to calculate annual fuel usage.

In addition to the direct and indirect emissions created from project construction and operation, the project's renewable electricity generation would create an indirect emissions reduction of GHGs. The project would implement measures to further reduce energy consumption, such as enhanced daylighting, rainwater collection leading to bioswales, a sloped green roof, and rooftop solar photovoltaic panels. However, the energy analysis presented in this report conservatively does not take credit for the reduction in energy usage due to implementation of these sustainability features. By including these features, the project avoids wasteful, inefficient, or unnecessary consumption of fuel or energy.

5.1.2.1 BUILDING AND FACILITY ENERGY USE

The new buildings and facilities would incorporate sustainability design features such as enhanced daylighting, rainwater collection leading to bioswales, a sloped green roof, and rooftop solar photovoltaic panels. However, the energy analysis presented in this report conservatively does not take credit for the reduction in energy usage due to implementation of these sustainability features.

5.1.2.2 WATER SUPPLY, TREATMENT, AND DISTRIBUTION ENERGY USE

Additional electricity use is required to supply, treat, and distribute potable water and to treat the resulting wastewater. Site-level water usage was based on CalEEMod defaults for all land uses that make up the project site. This is a conservative assumption as it does not take into account the installation of water-efficient appliances and drought-tolerant landscaping. Electricity usage rates for the supply and treatment of water were calculated using CalEEMod default factors.

5.1.2.3 MOBILE ENERGY USE

Mobile fuel usage for the project is detailed in Appendix A. Gasoline, diesel, natural gas, and electricity use rates were calculated based on CalEEMod default trip rates, default trip lengths, and fuel efficiency rates derived from EMFAC and the U.S. Department of Energy. Fuel efficiency for gasoline, diesel, and natural gas–fueled vehicles was calculated from EMFAC daily VMT and fuel consumption data, averaged across all vehicle categories for operations.

5.1.2.4 STATIONARY AND OFF-ROAD EQUIPMENT ENERGY USE

Three emergency generators and one forklift are included as part of the project operations.
The emergency generator and forklift diesel use for the project is calculated in Appendix A. Annual fuel usage was calculated based on fuel consumption rates (in gallons per hour) and annual operating hours.

5.2 Construction

During project construction, energy would be consumed in the form of electricity on a limited basis for powering lights, electronic equipment, and for water conveyance for dust control. Project construction would also consume energy in the form of petroleum-based fuels associated with the use of off-road construction vehicles and equipment on the project site, construction workers traveling to and from the project site, and delivery and haul truck trips (e.g., hauling of demolition material to off-site reuse and disposal facilities).

Table 2 provides a summary of the annual average electricity, gasoline fuel, and diesel fuel estimated to be consumed during project construction. As shown in Table 2, a total of 142,095 gallons of gasoline and 272,696 gallons of diesel is estimated to be consumed during project construction. Appendix A provides additional calculation details.

Table 2. Total Construction-Related Fuel Consumption

Diesel		
On-Road Construction Trips*	58,522	gallons
Off-Road Construction Equipment†	214,174	gallons
Diesel Total	***272,696***	***gallons***
Gasoline		
On-Road Construction Trips*	142,095	gallons
Off-Road Construction Equipment‡	0	gallons
Gasoline Total	***142,095***	***gallons***
Total	**414,791**	**gallons**

* On-road mobile source fuel use based on VMT from CalEEMod for construction and fleet-average fuel consumption in gallons per mile from EMFAC web-based data for South Coast Air Basin.

† Off-road mobile source fuel usage based on a fuel usage rate of 0.05 gallon of diesel per horsepower (HP)-hour, based on South Coast Air Quality Management District CEQA Air Quality Handbook, Table A9 -3E.

‡ All emissions from off-road construction equipment were assumed to be diesel.

Each of these is discussed and analyzed in greater detail in the sections below. As specified earlier, these figures represent a highly conservative estimate, in that it assumes the maximum volume of on-road and off-road construction equipment usage every day for each phase of construction.

5.2.1 Electricity

During construction of the project, electricity would be consumed, on a limited basis, to power lighting, electric equipment, and supply and convey water for dust control and for an on-site construction trailer. Electricity would be supplied to the project site by LADWP and would be obtained from the existing electrical lines that connect to the project site. The electricity demand at any given time would vary throughout the construction period based on the construction activities being performed and would cease upon completion of construction. Electricity use from construction would be short term, limited to working hours, used for necessary construction-related activities, and would represent a small fraction of the project's net annual operational electricity. When not in use, electric equipment would be powered off so as to avoid unnecessary energy consumption. Furthermore, the electricity used for off-road light construction equipment would have the co-benefit of reducing construction-related air pollutant and GHG emissions from more traditional construction-related energy in the form of diesel fuel. Therefore, impacts from construction electrical demand would be less than significant and would not result in the wasteful, inefficient, and unnecessary consumption of energy.

5.2.2 Natural Gas

As stated above, construction activities, including the construction of new buildings and facilities, typically do not involve the consumption of natural gas. Accordingly, natural gas would not be supplied to support project construction activities; thus, there would be no expected demand generated by construction of the project. Therefore, the project would result in no impacts from construction natural gas demand and would not result in the wasteful, inefficient, and unnecessary consumption of energy.

5.2.3 Transportation Energy

During project construction, on- and off-road vehicles would consume an estimated annual average of approximately 142,095 gallons of gasoline and 272,696 gallons of diesel. Project construction activities would last for approximately 4 years. Construction of the project would use fuel-efficient equipment consistent with state and federal regulations, such as fuel efficiency regulations in accordance with the CARB Pavley Phase II standards, the anti-idling regulation in accordance with Section 2485 in 13 CCR, and fuel requirements in accordance with 17 CCR Section 93115. The project would benefit from fuel and automotive manufacturers' compliance with CAFE standards, which would result in more efficient use of transportation fuels (lower consumption). As such, the project would indirectly comply with regulatory measures to reduce the inefficient, wasteful, and unnecessary consumption of energy, such as petroleum-based transportation fuels. While these regulations are intended to reduce construction emissions, compliance with the anti-idling and emissions regulations discussed above would also result in fuel savings from the use of more fuel-efficient engines.

In addition, the project would divert mixed construction and demolition debris to City-certified construction and demolition waste processors using City-certified waste haulers, consistent with the Los Angeles City Council approved Ordinance No. 181519 (LAMC Chapter VI, Article 6, Section 66.32-6.32.5). Diversion of mixed construction and demolition debris would reduce truck trips to landfills, which are typically located some distance away from City centers and would increase the amount of waste recovered (e.g., recycled, reused, etc.) at material recovery facilities, thereby further reducing transportation fuel consumption.

Based on the analysis above, construction would use energy only for necessary on-site activities and to transport construction materials and demolition debris to and from the project site. As discussed above, idling restrictions and the use of cleaner, energy efficient equipment and fuels would result in less fuel combustion and energy consumption, and thus minimize the project's construction-related energy use. Therefore, construction of the project would not result in the wasteful, inefficient, and unnecessary consumption of energy.

5.3 Operations

During operation of the project, energy would be consumed for multiple purposes, including, but not limited to, HVAC, refrigeration, lighting, and the use of electronics, equipment, and machinery. Energy would also be consumed during project operations related to water usage, solid waste disposal, and vehicle trips. Development of the project would result in an annual estimated energy demand of 1,082,928 kWh per year and require 155,576 gallons of gasoline and 4,493 gallons of diesel per year (Table 3). Appendix A provided additional calculation details.

Table 3. Total Operations-Related Energy Consumption

Fuel Type	Energy Consumption	Units
Electricity		
Building*	1,026,740	kWh/year
Parking Lot*	19,372	kWh/year
Water†	36,816	kWh/year
Total Electricity	**1,082,928**	kWh/year
Natural Gas		
Building*	**3,745,669**	kBTU/year
Mobile‡		
Gasoline	155,576	gallons/year
Diesel	3,175	gallons/year
Equipment§		
Diesel	1,318	gallons/year
Total Gallons Diesel	**4,493**	gallons/year
Total Gallons Gasoline	**155,576**	gallons/year

* Building electricity and parking lot electricity and natural gas use provided by CalEEMod defaults.

† Calculated based on the project's annual water consumption using CalEEMod South Coast Air Quality Management District energy intensity of 0.0111 kWh per gallon for indoor water and 0.009727 kWh per gallon for outdoor water.

‡ Mobile source fuel use based on annual VMT from CalEEMod output and fleet-average fuel consumption in gallons per mile from EMFAC web-based data in South Coast Air Basin.

§ Stationary and off-road operational equipment is based on CalEEMod equipment assumptions to calculate total gallons of diesel fuel.

kWh = kilowatt hours
kBTU = thousand British Thermal Units

The project would be designed to meet the State and County green building requirements and include the installation of additional features to reduce energy use throughout the buildings. The project includes the incorporation of several energy efficient features to the Page Museum. The features include enhanced daylighting, rainwater collection leading to bioswales, a sloped green roof, and incorporation of rooftop solar photovoltaic panels onto the buildings, where possible.[2] Daylighting is the controlled admission of natural light, direct sunlight, and diffused-skylight into a building to reduce electric lighting and save energy. By providing a direct link to the dynamic and perpetually evolving patterns of outdoor illumination, daylighting helps create a visually stimulating and productive environment for building occupants, while reducing as much as one-third of total building energy costs. Water conservation measures could include the use of drought-tolerant planting, installation of dual plumbing in order to use reclaimed water for toilet flushing, use of restaurant faucets of a self-closing design, and stormwater retention through a biofiltration flow-through system to treat the first flush of stormwater runoff before it is captured in belowgrade cisterns, and used on-site for toilets, urinals, landscape irrigation. These features would further maximum energy efficiency. The project's estimated demand for natural gas has been determined by CalEEMod defaults and is considered conservative.

The project's annual net new operational energy demand for electricity, natural gas, and gasoline and diesel transportation fuels is summarized below.

5.3.1 Electricity

With compliance with Title 24 standards and applicable CALGreen requirements, at buildout, the project would result in a projected net increase in the on-site annual demand for electricity totaling 1,082,928 kWh for the project (see Table 3). The project would include energy-saving measures, including natural light to be harvested for the main spaces using large expanses of glass and skylights; daylighting systems to coordinate the levels of artificial lighting; HVAC systems that would be sized and designed in compliance with the CALGreen Code to maximize energy efficiency caused by heat loss and heat gain; and new and existing tree canopies to be used to protect building walls from sun exposure and provide shade for the ground area. These measures were generally accounted for based on compliance with Title 24 standards. In addition to compliance with CALGreen, the project would also incorporate rooftop solar photovoltaic panels onto the buildings, where possible.

Further, it is important to note that the total net project energy demand shown in Table 3 does not reflect the fact that project operational-related energy would likely be lower, as the project would provide sustainability features that would reduce the project's indoor and outdoor water demand. These measures include rainwater collection leading to bioswales and drought-tolerant landscaping, resulting in a reduction in water demand and less use of pesticides. These measures were conservatively not accounted for since a specific outdoor water reduction value could not conclusively be calculated.

In addition, LADWP was required to procure at least 33% of its energy portfolio from renewable sources by 2020 (LADWP has met this requirement as discussed below). With the passage of SB 100 in September 2018, LADWP will be required to update its long-term plans to demonstrate compliance, including providing 60% of its energy portfolio from renewable sources by December 31, 2030, and ultimately planning for 100% eligible renewable energy resources and zero-carbon resources by December 31, 2045. LADWP's current sources include biomass and biowaste, geothermal, eligible hydroelectric, solar, and wind sources. These sources accounted for 35% of LADWP's overall energy mix

[2] At this stage of the design process, it is undetermined whether it will be feasible to incorporate solar panels on both the new museum building and the existing Page Museum. To the extent it is practicable within other limitations (e.g., existing structural and historic considerations), solar panels would be incorporated.

in 2021, the most recent year for which data are available, and represent the available off-site renewable sources of energy that would meet the project's energy demand.

LADWP generates its load forecast to account for regional economic and population growth based on multiple forms of data from various agencies, including historical sales from the General Accountings Consumption and Earnings report, historical Los Angeles County employment data provided from the State's Economic Development Division, plug-in electric vehicle projections from the CEC account building permits when determining electricity Load Forecasts, solar rooftop installations from the Solar Energy Development Group, electricity price projections from the Financial Services organization, and LADWP program efficiency forecasts. In addition, LADWP considers projected Los Angeles County building permit amounts calculated by the UCLA Anderson School of Management when determining its load forecast and would, therefore, account for the project's electricity demand.

Based on the LADWP 2017 Power Strategic Long-Term Resource Plan, LADWP forecasts that its total energy sales in the 2028–2029 fiscal year (the project's buildout year) will be 24,341 gigawatt hours (GWh) of electricity (LADWP 2017). As such, the project-related annual electricity consumption of 1.13 GWh per year would be less than 0.005% of LADWP's projected sales in 2028. As previously described, the project incorporates a variety of energy and water conservation measures and features to reduce energy usage and minimize energy demand. Therefore, with the incorporation of these measures and features, operation of the project would not result in the wasteful, inefficient, or unnecessary consumption of electricity.

5.3.2 Natural Gas

The project would increase the demand for natural gas resources. With compliance with Title 24 standards and applicable CALGreen requirements, at buildout, the project is projected to generate a net increase in the on-site annual demand for natural gas totaling 3,745,669 cubic feet.

SoCalGas accounts for anticipated regional demand based on various factors, including growth in employment by economic sector, growth in housing and population, and increasingly demanding State goals for reducing GHG emissions. SoCalGas accounts for an increase in employment and housing between 2018 to 2035. The project forecasted annual consumption would fall within SoCalGas' projected consumption for the area and would be consistent with SoCalGas' anticipated regional demand from population or economic growth. As would be the case with electricity, the project would comply with the applicable provisions of Title 24 and the CALGreen Code in effect at the time of building permit issuance to minimize natural gas demand. As such, the project would minimize energy demand. Therefore, with the incorporation of these measures and features, operation of the project would not result in the wasteful, inefficient, or unnecessary consumption of natural gas.

5.3.3 Transportation Energy

During operations, project-related traffic would result in the consumption of petroleum-based fuels related to vehicular travel to and from the project site. A majority of the vehicle fleet that would be used by project visitors and employees would consist of light-duty automobiles and light-duty trucks, which are subject to fuel efficiency standards.

As shown in Table 3, the project's estimated annual net increase in petroleum-based fuel usage would be 155,576 gallons of gasoline and 4,493 gallons of diesel for the project. Based on the CEC's California Retail Fuel Outlet Annual Reporting (CEC 2022b), Los Angeles County consumed 3,559,000,000 gallons of gasoline and 563,265,306 gallons of diesel fuel in 2019.

Transportation fuels (gasoline and diesel) are produced from crude oil, which can be domestic or imported from various regions around the world. Based on current proven reserves, crude oil production would be sufficient to meet over 50 years of worldwide consumption. The project would benefit from fuel and automotive manufacturers' compliance with CAFE standards, which would result in more efficient use of transportation fuels (lower consumption). Project-related vehicle trips would also indirectly benefit from Pavley Standards, which are designed to reduce vehicle GHG emissions by mandating increasingly stringent emissions standards on new vehicles but would also result in fuel savings from more efficient engines in addition to compliance with CAFE standards.

The project would support statewide efforts to improve transportation energy efficiency and reduce transportation energy consumption with respect to private automobiles for the reasons provided below. The project would not conflict with the 2020-2045 RTP/SCS goals and benefits intended to improve mobility and access to diverse destinations, provide better "placemaking," provide more transportation choices, and reduce vehicular demand and associated emissions. The project would support these strategies by creating a community serving recreational development comprising recreational uses (including a museum, park, and cafe) that offer employment and other community-serving opportunities. The project supports the development of a balanced mixed of uses by co-locating complementary land uses on an infill project site that is in close proximity to existing off-site commercial and residential uses, being located within 0.25 of off-site commercial and residential uses, and located within an identified high-quality transit area (HQTA) in a highly walkable area well-served by public transportation (refer to the *Air Quality and Greenhouse Gas Technical Report* [SWCA 2022] for additional information regarding the 2020-2045 RTP/SCS). The project would concentrate recreational and athletic facility uses within an HQTA in an urban infill location in proximity to multiple public transit stops. There would be pedestrian entry gates along the perimeter of the project site that would provide access to the park, museum, and landscaped areas. The project would minimize vehicle trips and VMT by virtue of being in a location that has existing high-quality public transit (with access to existing regional bus and rail service), employment opportunities, restaurants and entertainment, all within walking distance—and by including features that support and encourage increase transit use, pedestrian activity, and other non-vehicular transportation.

Additionally, the project design would provide for the installation of the conduit and panel capacity to accommodate EV charging stations for a minimum of 10% of the parking spaces pursuant to the CALGreen Code. Based on the above, the project would minimize operational transportation fuel demand consistent with state, regional, and city goals. Therefore, operation of the project would not result in the wasteful, inefficient, and unnecessary consumption of energy.

5.4 Conclusion

As demonstrated by the previous analysis, the project would not cause wasteful, inefficient, or unnecessary consumption of energy during construction or operation. The project's energy usage during peak and base periods would also not conflict with electricity, natural gas, and transportation fuel future projections for the region. During operations, the project would comply with and exceed existing minimum energy efficiency requirements, such as the Title 24 standards and CALGreen Code. In summary, the project's energy demands would not significantly affect available energy supplies and would comply with existing energy efficiency standards. Therefore, project impacts related to energy use would be less than significant during construction and operation, and would not cause wasteful, inefficient, and unnecessary consumption of energy.

The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. With respect to truck fleet operators, the EPA and NHSTA have adopted fuel efficiency standards for medium- and heavy-duty trucks. The Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles, and are phased in for model years 2014 through 2018 and result in a reduction in fuel consumption from 6% to 23% over the 2010 baseline, depending on the vehicle type. The EPA and NHTSA also adopted the Phase 2 heavy-duty truck standards, which would be phased in from model years 2021 through 2027 and require the phase-in of a 5% to 25% reduction in fuel consumption over the 2017 baseline, depending on the compliance year and vehicle type. The energy modeling for trucks does not take into account specific fuel reductions from these regulations, since they would apply to fleets as they incorporate newer trucks meeting the regulatory standards; however, these regulations would have an overall beneficial effect on reducing fuel consumption from trucks over time as older trucks are replaced with newer models that meet the standards. In addition, construction equipment and trucks are required to comply with CARB regulations regarding heavy-duty truck idling limits of 5 minutes at a location and the phase-in of off-road emission standards that result in an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines. Although these regulations are intended to reduce criteria pollutant emissions, compliance with the anti-idling and emissions regulations would also result in the efficient use of construction-related energy.

Project construction activities would not conflict with energy conservation plans and impacts would be less than significant. A detailed discussion of the project's comparison with the applicable actions and strategies in the City's Green New Deal is provided in the *Air Quality and Greenhouse Gas Technical Report* (SWCA 2022). The project is designed in a manner that is consistent with and not in conflict with relevant energy conservation plans that are intended to encourage development that results in the efficient use of energy resources. The project would comply with applicable regulatory requirements for the design of new buildings, including the provisions set forth in the Title 24 standards and CALGreen Code. Electricity and natural gas usage during project operations (see Table 3) would be minimized through incorporation of applicable Title 24 standards and applicable CALGreen requirements. Furthermore, the project incorporates energy-conservation measures beyond regulatory requirements, which includes solar panels that would offset some of its overall energy usage with on-site renewable electricity. The project would also provide sustainability features that would all reduce the project's indoor and outdoor water demand. The project would also be consistent with and not conflict with regional planning strategies that address energy conservation. As part of the approach, the 2020-2045 RTP/SCS focus on reducing fossil fuel use by decreasing VMT, encouraging the reduction of building energy use, and increasing use of renewable sources. The project's design and its location on an infill site within an HQTA in proximity to transit; its proximity to existing off-site retail, restaurant, entertainment, commercial, and job destinations; and its walkable environment would achieve a reduction in VMT.

These land use characteristics are included in the transportation fuel demand for the project's mobile sources. With respect to operational transportation-related fuel usage, the project would support statewide efforts to improve transportation energy efficiency and reduce transportation energy consumption with respect to private automobiles. The project would also benefit from fuel and automotive manufacturers' compliance with CAFE fuel economy standards and the Pavley Standards, which are designed to result in more efficient use of transportation fuels.

As a result, the project would implement project design features and incorporate water conservation, energy conservation, landscaping, and other features consistent with applicable actions and strategies in the City's Green New Deal. The project's design would comply with existing energy standards and incorporate project design features to reduce energy consumption. Therefore, the project would not conflict with energy conservation plans and impacts would be less than significant.

6 CUMULATIVE IMPACTS

Cumulative impacts occur when the incremental effects of a proposed project are significant when combined with similar impacts from other past, present, or reasonably foreseeable projects in a similar geographic area. The geographic context for the analysis of cumulative impacts on electricity is LADWP's service area, and the geographic context for the analysis of cumulative impacts on natural gas in SoCalGas' service area, because the project and related projects are located within the service boundaries of LADWP and SoCalGas. While the geographic context for transportation-related energy use is more difficult to define, the City has determined to consider the project in the context of countywide consumption, given the tendency for vehicles to travel within and through the county and the availability of county-level data. Growth within these geographies is anticipated to increase the demand for electricity, natural gas, and transportation energy, as well as the need for energy infrastructure, such as new or expanded energy facilities.

6.1 Electricity

Buildout of the project, related projects, and additional forecasted growth in LADWP's service area would cumulatively increase the demand for electricity supplies and on infrastructure capacity. However, LADWP, in coordination with the CEC, accounts for future increases in service area demand based on various economic, population, and efficiency factors. LADWP relies on multiple forms of data from various agencies, including historical sales from the General Accountings Consumption and Earnings report, historical Los Angeles County employment data provided from the State's Economic Development Division, plug-in electric vehicle projections from the CEC account building permits when determining electricity Load Forecasts, solar rooftop installations from the Solar Energy Development Group, electricity price projections from the Financial Services organization, and LADWP program efficiency forecasts. As described in LADWP's 2017 Power Strategic Long-Term Resource Plan, LADWP would continue to expand delivery capacity as needed to meet demand increases within its service area at the lowest cost and risk consistent with LADWP's environmental priorities and reliability standards. The 2017 Power Strategic Long-Term Resource Plan takes into account future energy demand, advances in renewable energy resources and technology, energy efficiency, conservation, and forecast changes in regulatory requirements. Accordingly, LADWP considers projected Los Angeles County building permit amounts calculated by the UCLA Anderson School of Management when determining its load forecast and would, therefore, account for the project's and the related projects' electricity demand within its forecasts. Thus, LADWP considers growth from related projects within its service area for the increase in demand for electricity, as well as the need for energy infrastructure, such as new or expanded energy facilities.

Although project development would result in the use of renewable and nonrenewable electricity resources during construction and operation, which could affect future availability, the project's use of such resources would be on a relatively small scale and would be reduced by measures rendering the project more energy efficient. Related projects, as with the project, would be required to evaluate energy impacts during construction and operation related to the wasteful, inefficient, or unnecessary use of electricity, incorporate energy conservation features, comply with applicable regulations including the City's Green Building Code, the Title 24 standards and CALGreen Code, and incorporate mitigation measures, as necessary under CEQA. Related projects, as with the project, would also be required to evaluate potential impacts related to local and regional supplies or capacity based on regional growth plans, such as the SCAG 2020-2045 RTP/SCS, and LADWP energy supply projections for long-term planning. Each of the related projects would be reviewed by the local utility provider to identify necessary electricity service connections to meet the needs of their respective projects. In addition, the local utility provider would provide service letters (which take into account all current uses and projected future development projects) for each related project, confirming availability of adequate electricity supplies and infrastructure as part of the total load growth of the regional power system. Project applicants would be required to provide for the needs of their individual projects, thereby contributing to the electrical infrastructure in the project site area.

Additionally, LADWP was required to procure a minimum of 33% of its energy portfolio from eligible renewables sources by 2020, which LADWP has achieved. LADWP's current sources of renewable energy include biomass and biowaste, geothermal, eligible hydroelectric, solar and wind, and accounted for 34% of LADWP's overall energy mix, the most recent year for which data are available. This represents the available off-site renewable sources of energy that could meet the project's and related projects' energy demand. Therefore, the project and related projects would comply with the energy conservation plans and efficiency standards required to ensure efficient energy use.

Therefore, the project's impact, when considered together with related projects, would not be cumulatively considerable and would not result in cumulatively significant impacts related to wasteful, inefficient, or unnecessary use of electricity.

6.2 Natural Gas

Buildout of the project, related projects, and additional forecasted growth in SoCalGas' service area would cumulatively increase the demand for natural gas supplies and on infrastructure capacity. SoCalGas forecasts consider projected population growth and development based on local and regional plans, and the project's growth and development would not conflict with those projections. Additionally, as with the project, each of the related projects would be reviewed by SoCalGas to identify necessary natural gas service connections to meet the needs of their respective projects, and SoCalGas would provide service letters for each related project confirming availability of adequate natural gas supplies as part of the total load growth of the regional natural gas system. Natural gas infrastructure is expanded and improved in response to increasing demand and it is expected that SoCalGas would continue to expand delivery capacity if necessary to meet growth requirements in the service area. Although project development would result in the use of natural gas resources, which could limit future availability, the use of such resources would be on a relatively small scale, would be reduced by measures rendering the project more energy-efficient, would be consistent with regional and local growth expectations for SoCalGas' service area, and would not result in the need to construct new or expand existing natural gas facilities or distribution lines.

Related projects, as with the project, would be required to evaluate natural gas impacts during construction and operation related to the wasteful, inefficient, or unnecessary use of natural gas, incorporate energy conservation features, comply with applicable regulations including the Los Angeles Green Building Code, the Title 24 standards and CALGreen Code, and incorporate mitigation measures, as necessary under CEQA. As with the project, related projects would also be required to obtain evidence of service from SoCalGas, or the appropriate utility provider, to ensure that natural gas service would be available and provided to meet related project demands. Furthermore, the related projects are generally infill projects in a highly urbanized area already served by existing facilities and are generally residential, mixed-use, and commercial projects, and not high-energy-demand facilities, such as heavy industrial uses.

Therefore, the project's contribution to cumulative impacts due to wasteful, inefficient, and unnecessary use of natural gas would not be cumulatively considerable, and, thus, cumulative impacts would be less than significant.

6.3 Transportation Energy

Buildout of the project, related projects, and additional forecasted growth would cumulatively increase the demand for transportation-related fuel in the state and region. As described above, at buildout, the project would consume a total net increase of 155,576 gallons of gasoline and 4,493 gallons of diesel per year.

Additionally, petroleum currently accounts for 90% of California's transportation energy sources; however, over the last decade, the State has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHGs from the transportation sector, and reduce VMT, which would reduce reliance on petroleum fuels.

The project would not conflict with the energy efficiency policies emphasized by the 2020-2045 RTP/SCS. As discussed previously, the project would be consistent with and not conflict with SCAG's land use type for the area and would encourage alternative transportation and a reduction in overall VMT. The project site is an infill location close to jobs, off-site housing, shopping, and entertainment uses and is in close proximity to existing public transit stops, which would result in reduced VMT, as compared to a project of similar size and land uses at a location without close and walkable access to off-site destinations and public transit stops. The project would concentrate recreational and athletic facility uses within an HQTA in an urban infill location in proximity to multiple public transit stops. Therefore, operation of the project would provide visitors and employees with transportation options, and the implementation of construction features would reduce idling times and construction transportation fuel use.

The 2020-2045 RTP/SCS is a regional planning tool that addresses cumulative growth and resulting environmental effects and is applicable to the project and related projects with respect to transportation energy efficiency. Related projects would be required under CEQA to evaluate if their respective developments would conflict with the energy efficiency policies emphasized by the 2020-2045 RTP/SCS, such as the per-capita VMT targets, promotion of alternative forms of transportation, proximity to public transportation options, and provisions for encouraging multi-modal and energy efficient transit, such as by accommodating bicycle parking and EV chargers at or above regulatory requirements.

Furthermore, as with the project, the related projects within the project vicinity and HQTA would similarly be expected to reduce VMT by encouraging the use of alternative modes of transportation and other design features that promote VMT reductions that would not be in conflict with applicable provisions of the SCAG 2020-2045 RTP/SCS for the land use type.

Since the project would not conflict with the 2020-2045 RTP/SCS, the project's contribution to cumulative impacts due to wasteful, inefficient, or unnecessary use of transportation fuel would not be cumulatively considerable, and, thus, cumulative impacts would be less than significant.

6.4 Conclusion

Based on the analysis provided above, the project's contribution to cumulative impacts related to energy consumption (i.e., electricity, natural gas, and transportation energy) would not result in a cumulatively considerable effect related to potentially significant environmental impacts due to the wasteful, inefficient, and unnecessary consumption of energy during construction or operation. Therefore, the project's cumulative energy impacts would be less than significant.

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APPENDIX A

Fuel Usage and Energy Calculations

Total Construction-Related Fuel Consumption

Diesel		
On-Road Construction Trips[1]	58,522	Gallons
Off-Road Construction Equipment[2]	214,174	Gallons
Diesel Total	**272,696**	**Gallons**
Gasoline		
On-Road Construction Trips[1]	142,095	Gallons
Off-Road Construction Equipment[3]	-	Gallons
Gasoline Total	**142,095**	**Gallons**
Total	**414,791**	**Gallons**

Notes:
1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod for construction and fleet-average fuel consumption in gallons per mile from EMFAC web based data for the South Coast Air Basin to ensure a conservative analysis.
2. Off-road mobile source fuel usage based on a fuel usage rate of 0.05 gallons of diesel per horsepower (HP)-hour, based on SCAQMD CEQA Air Quality Handbook, Table A9 -3E.
3. All emissions from off-road construction equipment were assumed to be diesel.

On-Road Construction Trip Estimates

Trip Type	Trips	Trip length	Vehicle Miles Traveled (VMT)	Fuel Efficiency	Annual Fuel Usage[1]	
	(trips)	**(miles)**	**(miles)**	**(mpg)**	**(Fuel)**	**(gallon)**
Worker[2,3]	188,180	18.5	3,481,330	24.5	Gasoline	142,095
Vendor[4]	17,160	10.2	175,032	6.9	Diesel	25,367
Hauling[5]	11,356	20	227,120	6.9	Diesel	32,916
Onsite Truck[6]	1,647	1.00	1,647	6.9	Diesel	239

Notes:
1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod output for all years of construction and fleet-average fuel consumption in gallons per mile from EMFAC web based data in the South Coast Air Basin.
2. Worker trips were assumed to be 100% gasoline powered vehicles.
3. Per CalEEMod, worker Trips were assumed to be 50% LDA, 25% LDT1, and 25% LDT2.
4. Vendor trips were assumed to be 50% MHDT and 50% HHDT, split evenly between the MHDT and HHDT construction categories.
5. Per CalEEMod, hauling trips were assumed to be 100% HHDT.
6. Per CalEEMod, onsite truck trips were assumed to be 100% HHDT.

Calculation of Diesel Usage During Construction (Off-Road Equipment)								
Phase Name	**Off-Road Equipment Type**	**Units**	**Hours**	**HP**	**Load Factor**	**Avg. Daily Factor**	**Number of Days**	**Diesel Fuel Usage**
Demolition	Rubber Tired Dozers	2	8	367	0.4	1	262	30,769.28
Demolition	Excavators	3	8	36	0.38	1	262	4,300.99
Demolition	Concrete/Industrial Saw	1	8	33	0.73	1	262	2,524.63
Site Preparation	Rubber Tired Dozers	3	8	367	0.4	1	262	46,153.92
Site Preparation	Tractors/Loaders/Backhoes	4	8	84	0.37	1	262	13,028.74
Grading	Graders	1	8	148	0.41	1	52	1,262.14
Grading	Excavators	2	8	36	0.38	1	52	569.09
Grading	Tractors/Loaders/Backhoes	2	8	84	0.37	1	52	1,292.93
Grading	Scrapers	2	8	423	0.48	1	52	8,446.46
Grading	Rubber Tired Dozers	1	8	367	0.4	1	52	3,053.44
Building Construction	Aerial Lifts	3	8	82	0.2	1	808	15,901.44
Building Construction	Bore/Drill Rigs	1	8	14	0.74	1	808	3,348.35
Building Construction	Cranes	1	8	367	0.29	1	808	34,398.18
Building Construction	Forklifts	1	8	46	0.45	1	808	6,690.24
Building Construction	Generator Sets	3	8	84	0.37	1	808	30,135.17
Paving	Pavers	2	8	81	0.42	1	184	5,007.74
Paving	Paving Equipment	2	8	89	0.36	1	184	4,716.29
Paving	Rollers	2	8	36	0.38	1	184	2,013.70
Architectural Coating	Air Compressors	1	8	37	0.48	1	79	561.22
Total Diesel Usage for Construction (Offroad Equipment):								**214,173.94**

gallons of diesel fuel per horsepower hour= 0.05

Notes: Equipment assumptions are provide in the CalEEMod output files and fuel usage estimate of 0.05 gallons of diesel fuel per horsepower-hour is from the SCAQMD CEQA Ait Quality Handbook, Table A9-3E

Annual Calculation of Diesel Usage During Construction (Off-Road Equipment)		
Year	**Construction Phases**	**Total Diesel Usage for Construction (Offroad Equipment):**
2024	Demolition; Site Preparation; Grading	111401.624
2025	Building Construction	40869.78
2026	Building Construction; Architectural Coating	41430.996
2027	Building Construction; Paving	20471.544

Annual Energy Consumption from Operation		
Fuel Type	**Energy Consumption**	**Units**
Electricity		
Buildings[1]	1,026,740	kWh/year
Parking Lot[1]	19,372	kWh/year
Water[2]	36,816	kWh/year
Total Electricity	**1,082,928**	kWh/year
Natural Gas		
Buildings[1]	3,745,669	kBTU/year
Mobile[3]		
Gasoline	155,576	gallons/year
Diesel	3,175	gallons/year
Equipment[4]		
Diesel	1,318	gallons/year
Total Gallons Diesel	**4,493**	gallons/year
Total Gallons Gasoline	**155,576**	gallons/year

Notes:
1. Building electricity and parking lot electricity and natural gas use provided by CalEEMod defaults.
2. Calculated based on the Project's annual water consumption using CalEEMod SCAQMD energy intensity of 0.0111 kWhr per gallon for indoor water and 0.009727 kWhr per gallon for outdoor water.
3. Mobile source fuel use based on annual vehicle miles traveled (VMT) from CalEEMod output and fleet-average fuel consumption in gallons per mile from EMFAC web-based data in South Coast Air Basin.
4. Stationary and off-road operational equipment is based on CalEEMod equipment assumptions to calculate total gallons of diesel fuel.

On-Road Operations Trip Estimates				
Trip Type	**Vehicle Miles Traveled (VMT)**	**Fuel Efficiency**	**Annual Fuel Usage[1]**	
	(miles per year)	**(mpg)**	**(Fuel)**	**(gallon)**
Weekday	2,851,680	24.6	Gasoline/Diesel	115,922
Saturday	617,474	24.6	Gasoline/Diesel	25,101
Sunday	436,125	24.6	Gasoline/Diesel	17,729

Notes:
1. Mobile source fuel use based on annual vehicle miles traveled (VMT) from CalEEMod output and fleet-average fuel consumption in gallons per mile from EMFAC web based data in South Coast Air Basin.

Calculation of Diesel Equipment Usage During Operations								
Phase Name	**Equipment Type**	**Units**	**Hours**	**HP**	**Load Factor**	**Daily Factor**	**Number of Days**	**Diesel Fuel Usage**
Operations	Forklifts	1	4	82	0.2	1	260	852.80
Operations	Generator Sets	3	2	85	0.73	1	25	465.38