3.5 ENERGY

Environmental impacts may arise from direct and indirect consumption of energy resources during construction and operation of land use development projects. A significant energy impact would occur if the Project would directly or indirectly consume electricity, natural gas, or transportation fuels in a wasteful, excessive, or inefficient manner. The Project would offset increased energy demands with development of onsite solar energy generation facilities atop proposed buildings. The Project would not result in the generation of substantial new demand for energy supplies and would result in negligible increases in demand compared to regional and statewide demands. With implementation of applicable mitigation, the proposed Project would be consistency with state, regional, and local regulations adopted to reduce energy demands or preventing the wasteful or inefficient use of energy resources.

This section analyzes the direct and indirect energy resource consumption associated with implementation (i.e., construction and operation) of the proposed Los Angeles Zoo (Zoo) Vision Plan (Project), and encourages measures to avoid or reduce any inefficient, wasteful, or unnecessary consumption of energy. The information has been prepared in accordance with Public Resources Code (PRC) section 21100(b)(3), California Environmental Quality Act (CEQA) Guidelines Section 15126.2(b), and CEQA Guidelines Appendix F.

3.5.1 Topical Background

The analysis of direct and indirect energy resource consumption considers electricity use, natural gas use, and transportation fuels during construction and future operations.

Electricity

The production of electricity requires the consumption or conversion of other natural resources, whether it be water (hydroelectric power), wind, oil, gas, coal, or solar energy. The delivery of electricity as a utility involves several system components for distribution and use. Electricity is distributed through a network of transmission and distribution lines referred to as a power grid. Energy capacity, or electrical power, is generally measured in watts (W), while energy use is measured in watt-hours (Wh), which is the integral electricity consumption over a period of one hour. On a utility scale, the capacity of electricity generation and amount of consumption is generally described in megawatts (MW) and megawatt-hours (MWh), respectively. The Los Angeles Department of Water and Power (LADWP) provides electrical power to the Project site, and is discussed in greater detail in 3.5.2, *Environmental Setting*.

Natural Gas

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is a fossil energy source formed deep beneath the earth's surface. Surveys are performed

to identify potential productive natural gas deposits, and wells are drilled either vertically or horizontally to extract the gas from its origin. Natural gas consumed in California is obtained from its naturally occurring subterranean reservoirs and delivered through high-pressure transmission pipelines. Natural gas provides almost one-third of the total energy requirements in California and is generally measured in units of standard cubic feet or British thermal units (BTU). The Southern California Gas Company (SoCalGas) is the natural gas provider for the City, and is discussed in greater detail in 3.5.2, *Environmental Setting*.

Transportation Fuels

The spark-ignited internal combustion engines of on-road motor vehicles and off-road equipment use fossil fuel energy for propulsion. Gasoline and diesel fuel are formulations of fossil fuels refined for use in various applications. Gasoline is the primary fuel source for most passenger automobiles, and diesel fuel is the primary fuel source for most off-road equipment and medium and heavy-duty trucks. The assessment of energy resources includes a quantitative evaluation of the transportation fuels that would be consumed during construction and operation of the proposed Project.

Other aspects of the proposed Project's environmental impacts related to energy resources are assessed in sections of this Environmental Impact Report (EIR) as follows: energy consumption and associated air pollutant emissions are addressed in Section 3.2, *Air Quality* and 3.8, *Greenhouse Gas Emissions*, vehicle trips associated with Zoo operations are addressed in 3.15, *Transportation*, and the provision of energy by utility services is addressed in 3.16, *Utilities and Service Systems*.

3.5.2 Environmental Setting

Regulatory Setting

Federal, state, and local laws and regulations have been enacted that address energy consumption and efficiency from various end uses.

Federal Regulations

At the federal level, the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy, and the U.S. Department of Transportation are the three agencies with the most direct influence over national energy policies, especially transportation energy consumption. Generally, federal agencies establish and enforce fuel economy standards for automobiles and light trucks, fund energy-related research and development projects, and fund transportation infrastructure projects to manage transportation energy resource demand.

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States (U.S.). Pursuant to the Act, the National Highway Traffic Safety Administration (NHTSA) is

responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 Federal Register 62624–63200). Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the U.S.

Energy Policy Act of 1992

The Energy Policy Act of 1992 was passed to reduce U.S. dependence on foreign petroleum and improve air quality. The Energy Policy Act includes several provisions intended to build an inventory of alternative fuel vehicles in large, centrally fueled fleets in metropolitan areas. The Energy Policy Act requires certain Federal, state, and local government and private fleets to purchase a percentage of light duty alternative fuel vehicles each year. Financial incentives were also included in the Energy Policy Act, such as federal tax deductions for businesses and individuals to cover the incremental cost of alternative fuel vehicles. States are also required by the Energy Policy Act to consider a variety of incentive programs to help promote the expansion of alternative fuel vehicle fleets.

Energy Policy Act of 2005

The Energy Policy Act of 2005 includes provisions for renewed and expanded tax credits for electricity generated by qualified energy sources (i.e., landfill gas), provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification, and establishes a Federal purchase requirement for renewable energy called the Renewable Fuels Standard (RFS).

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. This federal legislation requires ever-increasing levels of renewable fuels (the RFS) to replace petroleum. The EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the U.S. contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

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

The EISA includes several key provisions that will increase energy efficiency and the availability of renewable energy, which will reduce GHG emissions as a result. The EISA facilitates the reduction of GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard 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;
- Achieving approximately 25 percent greater efficiency for light bulbs by phasing out old incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and,
- While superseded by the 2019 EPA and NHTSA actions described above in Section 3.3, *Air Quality*, the Act included, a) establishing a minimum average fuel economy of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by 2020, and b) 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 EISA 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.

Light-Duty Vehicle Greenhouse Gas and Corporate Average Fuel Economy Standards

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the U.S. auto industry. The adopted federal standard applied to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpassed the prior Corporate Average Fuel Economy standards and required an average fuel economy standard of 35.5 mpg and 250 grams of CO_2 per mile by model year 2016, based on EPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 passenger cars and light-duty trucks. By 2020, new vehicles are projected to achieve 41.7 mpg—if GHG reductions are achieved exclusively through fuel economy improvements—and 213 grams of CO2 per mile (Phase 2 standards). By 2025, new vehicles are projected to achieve 54.5 mpg and 163 grams of CO_2 per mile, a reduction of approximately 50 percent relative to 2010.

On September 27, 2019, the EPA and the NHTSA published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" (84 Federal Register 51310 [September 27, 2019]). The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle (ZEV) mandates in California. Both the GHG emission standards and the ZEV sales standards reduce GHG emissions and fossil fuel energy consumption; as a result of the loss of ZEV sales requirements, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years. California expects Part Two of these regulations to be adopted in 2020, and it is anticipated that the federal

government may adopt revised GHG emission standards and fuel efficiency standards. In November 2019, California and 23 other states, environmental groups, and the cities of Los Angeles and New York, filed a petition with the U.S. Court of Appeals for the District of Columbia Circuit, for the EPA to reconsider the published rule. The Court has not yet ruled on the lawsuit.

Heavy-Duty Vehicle Program

The Heavy-Duty Vehicle Program was adopted on August 9, 2011 to establish the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with the model year 2014.

State Regulations

California has adopted statewide legislation to address issues related to various aspects of energy consumption and efficiency. Several regulatory entities administer energy policy throughout the state. The California Public Utilities Commission (CPUC) is a state agency created by a constitutional amendment to regulate privately owned utilities providing the telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation services. The CPUC is responsible for assuring that California utility customers have safe, reliable utility services at reasonable rates, while protecting utility customers from fraud. The CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities and local distribution pipelines of natural gas. The California Energy Commission (CEC) is the primary energy policy and planning agency in California. Created by the State Legislature in 1974, the CEC has five major responsibilities: forecasting future energy needs and maintaining a historical energy database; licensing thermal power plants 50 MW or larger; promoting energy efficiency through appliance and building standards; developing energy technologies and supporting renewable energy; and planning for and directing statewide response to energy emergencies.

Warren-Alquist Act

The California Legislature passed the Warren-Alquist Act in 1974. The Warren-Alquist Act created the CEC. The legislation directed the CEC to formulate and adopt the nation's first energy conservation standards for both buildings constructed and appliances sold in California; removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high-demand projections, and transferred it to a more impartial CEC; and directed CEC to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as non-conventional energy sources.

Renewable Energy Standard/Renewable Portfolios Standard

Senate Bill 1078 and Senate Bill 107

Senate Bill (SB) 1078 (2002) and SB 107 (2006) created the Renewable Energy Standard, which required electric utility companies to increase procurements from eligible renewable energy resources by at least 1 percent of their retail sales annually until reaching 20 percent by 2010. SB 2X 1 (2011) requires a Renewables Portfolio Standard, functionally the same thing as the Renewable Energy Standard, of 33 percent by 2020. In 2013, the statewide average for the three largest electrical suppliers (Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric) was 22.7 percent. As noted below, SB 350 increased the renewable requirement to 50 percent for 2030.

Senate Bill 350

The Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Edmund G. Brown, Jr. on October 7, 2015. SB 350 does the following: (1) increases the standards of California's Renewables Portfolio Standard (RPS) program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) requires the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provides for the evolution of the Independent System Operator into a regional organization; and (4) requires the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation (SB 350, Clean Energy and Pollution Reduction Act 2015).

California Building Standards Code

Title 24 Standards

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The Energy Efficiency Standards for Residential and Nonresidential Buildings focuses on several key areas to improve the energy efficiency of renovations and addition to existing buildings as well as newly constructed buildings and

renovations and additions to existing buildings. The major efficiency improvements to the residential Standards involve improvements for attics, walls, water heating, and lighting, whereas the major efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning Engineers 90.1-2013 national standards. Furthermore, the standards require that enforcement agencies determine compliance with the California Code of Regulations, Title 24, Part 6 before issuing building permits for any construction.

California Green Building Standards Code

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality." The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.

Renewable Energy

The state has adopted regulations to increase the proportion of electricity from renewable sources. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewables Portfolio Standard to 33 percent renewable power by 2020. On April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's Renewables Portfolio Standard to 33 percent by 2020. SB 350 (Chapter 547, Statues of 2015) further increased the Renewables Portfolio Standard to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. On September 10, 2018, Governor Jerry Brown signed SB 100, which further increased California's Renewables Portfolio Standard to achieve 50 percent renewable resources by December 31, 2026, and a 60 percent target by December 31, 2030, while requiring retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030, and that the California Air Resources Board (CARB) should plan for 100 percent eligible renewable energy resources and zero-carbon resources by December 31, 2045.

State of California 2015 Integrated Energy Policy Report

On April 29, 2015, Governor Edmund G. Brown Jr. signed Executive Order B-30-15, establishing a new statewide goal to reduce GHG emissions 40 percent below 1990 levels by 2030. Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires 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. The 2015 Integrated Energy Policy Report, adopted by CEC in February 2016, provides the results of the CEC's assessments of a variety of energy issues facing California (CEC 2016).

State CEQA Guidelines

CEQA Guidelines Appendix F provides a goal of conserving energy in the state of California. Under CEQA (PRC Section 21100(b)(3)), EIRs must include a discussion of the potential significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The appendix indicates the following methods to achieve this goal: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on natural gas and oil, and (3) increasing reliance on renewable energy sources. In addition to building code compliance, other relevant considerations may include, among others, the project size, location, orientation, equipment use and any renewable energy features that are incorporated into the project (CEQA Guidelines Section 15126.2(b)).

Regional and Local Regulations

Southern California Association of Governments (SCAG)

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties. SCAG addresses regional issues related to transportation, the economy, community development, and the environment. SCAG develops plans pertaining to transportation, growth management, hazardous waste management, housing, and air quality. SCAG prepares the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) that supports the land use and transportation components of the Air Quality Management Plans, which provide some GHG-reduction co-benefits. The 2016–2040 RTP/SCS integrates land use and transportation strategies to achieve required emission reductions per SB 375 of 8 percent by 2020 and 13 percent by 2035 relative to the base year of 2005 (SCAG 2016). The RTP/SCS was adopted on April 7, 2016. The SCS set forth a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, aims to reduce GHG emissions from automobiles and light trucks consistent with CARB targets for SCAG. SCAG is currently developing the 2020-2045 RTP/SCS.

City of Los Angeles GreenLA Climate Action Plan

The City has issued guidance promoting sustainable development to reduce GHG emissions Citywide in the form of a Climate Action Plan. The objective of GreenLA is to reduce GHG emissions 35 percent below 1990 levels by 2030 (City 2007). GreenLA identifies goals and actions designed to make the City a leader in confronting global climate change. The measures would reduce emissions directly from municipal facilities and operations and create a framework to address citywide GHG emissions. GreenLA lists various focus areas in which to implement GHG reduction strategies. Focus areas include energy, water, transportation, land use, waste, port, airport, and ensuring that changes to the local climate are incorporated into planning and building decisions.

The City published an implementation document titled ClimateLA (City 2008). ClimateLA presents the existing GHG inventory for the City, describes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels, which were estimated to be approximately 54.1 million metric tons.

Therefore, the City will need to lower annual GHG emissions to approximately 35.1 million metric tons per year by 2030. To achieve these reductions the City has developed strategies that focus on energy, water use, transportation, land use, waste, open space and greening, and economic factors. To reduce emissions from energy usage, ClimateLA proposes the following goals: increase the amount of renewable energy provided by LADWP; present a comprehensive set of green building policies to guide and support private sector development; reduce energy consumed by City facilities and utilize solar heating where applicable; and help citizens to use less energy. Regarding waste, ClimateLA sets the goal of reducing or recycling 70 percent of trash by 2015. Regarding open space and greening, ClimateLA includes the following goals: create 35 new parks; revitalize the Los Angeles River to create open space opportunities; plant one million trees throughout the City; identify opportunities to "daylight" streams; identify promising locations for stormwater infiltration to recharge groundwater aquifers; and collaborate with schools to create more parks in neighborhoods.

City of Los Angeles Sustainable City pLAn (pLAn)

In addition to GreenLA, Mayor Eric Garcetti released Los Angeles's first-ever pLAn on April 8, 2015 (City 2015). The pLAn is a roadmap to achieving short-term results and sets a path to strengthen and transform the City in future decades. Recognizing the risks posed by climate change, Mayor Garcetti set time-bound outcomes on climate action, most notably to reduce GHG emissions by 45 percent by 2025, 60 percent by 2035, and 80 percent by 2050, all against a 1990 baseline. Los Angeles' emissions are 20 percent below the 1990 baseline as of 2013, putting Los Angeles nearly halfway to the 2025 pLAn reduction target of 45 percent. In

addition, the 20 percent reduction exceeds the 15 percent statewide goal listed in the First Update to the AB 32 Scoping Plan.

City of Los Angeles Green Building Program

The purpose of the City's Green Building Program is to reduce the use of natural resources, create healthier living environments and minimize the negative impacts of development on local, regional, and global ecosystems. The program consists of a Standard of Sustainability and Standard of Sustainable Excellence. The Standard of Sustainability establishes a requirement for non-residential projects at or above 50,000 square feet (sf) of floor area to meet the intent of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Certified level. The Standard also applies to existing buildings that meet the minimum thresholds described above when redevelopment construction costs exceed a valuation of 50 percent of the existing building's replacement cost.

The voluntary Standard of Sustainable Excellence establishes an incentive program for projects that register with the LEED program, contract with a certified LEED professional, and can demonstrate how the project will achieve LEED certification at a Silver or higher level. These projects are eligible for priority processing services within the Department of City Planning and expedited services within the Bureau of Engineering. The Department of Building and Safety provides priority plan check processing and Priority Service Planning is offered by LADWP.

Los Angles Green Building Code

The City adopted the Green Building Code to reduce the City's carbon footprint. The Green Building Code is applicable to new buildings and alterations with building valuations over $200,000 (residential and non-residential). The Green Building Code is based on the 2010 California Green Building Standards Code Title 24, Part 11, commonly known as CALGreen, that was developed and mandated by the state to attain consistency among the various jurisdictions within the state; reduce the building's energy and water use; and reduce waste (see discussion of CALGreen, above).

Existing Buildings Energy and Water Efficiency (EBEWE) Program (LAMC Section 91.9701 et seq, Ordinance Nos. 184674, 185198, and 185586)

Effective in 2017, the EBEWE Program added Division 97 to Article I, Chapter IX and amended Division 4 of Article 8, Chapter IX, and makes public the annual energy and water consumption of all buildings over 20,000 sf in the City. Beginning in 2017, privately owned buildings that are 20,000 sf or more and buildings owned by the City that are 7,500 or more are required to be benchmarked, and owners must disclose annual energy and water consumption. Privately owned buildings that are 100,000 sf or more must begin benchmarking reporting by December 1, 2017, and smaller buildings must begin reporting over the following two years. This Ordinance is designed to facilitate the comparison of

buildings' energy and water consumption, and reduce building operating costs, leading to reduced GHG emissions.

2017 LADWP Power Strategic Long-Term Resource Plan (SLTRP)

The SLTRP is a 20-year roadmap that guides the LADWP power system in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner (LADWP 2017). One of the main focuses of the SLTRP is to reduce GHG emissions, while maintaining cost competitive rates and reliable electric service. The SLTRP examines multiple strategies to reduce GHG emissions, including early coal replacement, accelerated RPS, energy efficiency, local solar, energy storage, and transportation electrification.

As LADWP starts the process to investigate, study, and determine the investments needed for a 100 percent clean energy portfolio, the 2017 SLTRP provides a path towards this goal with a combination of GHG reduction strategies, including early coal replacement two years ahead of schedule by 2025, accelerating RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, doubling of energy efficiency from 2017 through 2027, repowering coastal in-basin generating units with new, highly efficient potential clean energy projects by 2029 to provide grid reliability and critical ramping capability, accelerating electric transportation to absorb GHG emissions from the transportation sector, and investing in the Power System Reliability Program to maintain a robust and reliable Power System.

LA's Green New Deal (Sustainable City pLAn 2019)

In April 2019, Mayor Eric Garcetti released L.A.'s Green New Deal (Sustainable City pLAn 2019). Rather than an adopted plan, the Green New Deal is a mayoral initiative that consists of a program of actions designed to create sustainability-based performance targets through 2050 that advance economic, environmental, and equity objectives. L.A.'s Green New Deal (Sustainable City pLAn 2019) is the first four-year update to the City's first Sustainable City pLAn that was released in 2015. It augments, expands, and elaborates in even more detail L.A.'s vision for a sustainable future and it addresses climate change with accelerated targets and new aggressive goals.

While not a plan adopted solely to reduce GHG emissions, within L.A.'s Green New Deal (Sustainable City pLAn 2019), 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 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.
- Reduce building energy use per sf for all building types 22 percent by 2025; 34 percent by 2035; and 44 percent by 2050 (from a baseline of 68 million BTU/sf in 2015).
- All new buildings will be net zero carbon by 2030 and 100 percent 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 percent of new housing units are built within 1,500 feet of transit by 2025; and 75 percent by 2035.
- Increase the percentage of all trips made by walking, biking, micro-mobility/matched rides, or transit to at least 35 percent by 2025, 50 percent by 2035, and maintain at least 50 percent by 2050.
- Reduce vehicle miles traveled (VMT) per capita by at least 13 percent by 2025; 39 percent by 2035; and 45 percent by 2050.
- Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.
- Increase landfill diversion rate to 90 percent by 2025; 95 percent by 2035 and 100 percent by 2050.
- Reduce municipal solid waste generation per capita by at least 15 percent by 2030, including phasing out single-use plastics by 2028 (from a baseline of 17.85 lbs. 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 proportion of Angelenos living within 0.5 miles of a park or open space is at least 65 percent by 2025; 75 percent by 2035; and 100 percent by 2050.

Existing Energy Conditions

Electricity

Electricity, natural gas, and renewable energy production, consumption, research, and conservation within the state are managed by the CEC. In 2018, Californians consumed 284,436,261,624 kWh (284,436 gigawatt hours [GWh]) of electricity, while future annual electricity consumption is projected to increase to approximately 328,215 GWh by 2027 (CEC 2018b; U.S. Census Bureau 2019). In the County of Los Angeles, 68,486,187,103 kWh (68,486 GWh) were consumed in 2018 (CEC 2019a; City of Santa Monica 2018).

Of the entire power mix for California in 2018, 35 percent was generated by natural gas-fired power plants, 3 percent was generated by coal-fired power plants, 11 percent came from large hydroelectric dams, <0.1 percent was generated by oil and other petroleum or waste heat, and 9 percent came from nuclear power plants. The remaining 31 percent of electricity production in California was supplied by renewable sources including biomass, geothermal, small hydro,

solar, and wind power. An additional 11 percent of California's total power mix, was provided from imported power sources (see Table 3.5-1; CEC 2019b).

LADWP provides electrical service throughout the City, including the Project site, serving approximately four million people within a service area of approximately 465 square miles. LADWP generates power from a variety of energy sources, such as wind, solar, and geothermal sources. According to LADWP's 2017 Power Strategic Long-Term Resource Plan, the department has a net dependable generation capacity greater than 7,880 MW and experienced a net record instantaneous peak demand of 6,500 MW in 2017. Approximately 30 percent of LADWP's 2017 electricity purchases were from renewable sources (see Table 3.5-1), which is similar to the statewide proportion. By 2030, LADWP forecasts its energy supply sourcing to be approximately 26 percent natural gas, 60 percent renewable, nine percent nuclear, and five percent large hydroelectric infrastructure. In 2019, LADWP committed with the City to achieve carbon neutrality by 2050, and updated its RPS targets to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036. As the power supply becomes more dependent upon renewable energy, overall grid efficiency will increase and associated GHG emissions will be reduced.

Table 3.5-1. LADWP Power Content Label

Energy Resources	2018 Power Mix	2018 Green Power for Green L.A. Power Mix	2018 California Power Mix
Eligible Renewable	32%	100%	31%
-- Biomass & Biowaste	*0%*	*0%*	*2%*
-- Geothermal	*7%*	*0%*	*5%*
-- Eligible Hydroelectric	*2%*	*0%*	*2%*
-- Solar	*13%*	*0%*	*11%*
-- Wind	*11%*	*100%*	*11%*
Coal	18%	0%	3%
Large Hydroelectric	3%	0%	11%
Natural Gas	30%	0%	35%
Nuclear	10%	0%	9%
Other	0%	0%	<1%
Unspecified*	6%	0%	11%
Total	100%	100%	100%

*"Unspecified" means electricity from transactions that are not traceable to specific generation sources.
Source: LADWP 2019.

Electricity is consumed by various components of Zoo facilities. Existing conditions at the Zoo require annual electricity use of approximately 8,000 MWh, and the conveyance of water (approximately 107,508,000 gallons) and treatment of wastewater (approximately 69,191,000 gallons) indirectly requires an additional 1,453 MWh associated with conveyance and distribution.

Natural Gas

Natural gas is provided to the City and Project site by SoCalGas, which is the principal distributor of natural gas in Southern California, serving residential, commercial, and industrial markets. SoCalGas services approximately 21.6 million customers in 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 U.S. and Canada, including supply basins located in New Mexico (San Juan Basin), West Texas (Permian Basin), the Rocky Mountains, and Western Canada as well as local California supplies. The traditional, southwestern U.S. sources of natural gas will continue to supply most of SoCalGas demand. Gas supply available to SoCalGas from California averaged 334.6 billion BTU per day in 2017.

Natural gas use associated with Zoo facilities was estimated based on the square footage of building structures and the operations of those building structures (refer to Section 2.0, *Project Description*). The total building area served by the natural gas system under existing conditions at the Zoo is approximately 231,914 sf, which accounts for administration and service areas, retail, visitor center, food and beverage, the Children's Discovery Center and the Gottlieb Animal Health and Conservation Center. Natural gas use at the Project site is predominantly used for water and space heating, as well as the food preparation areas. Existing annual natural gas use at the Zoo is approximately 2,783 million BTU (MBTU) based on estimates calculated for the existing Zoo in the California Emissions Estimator Model (CalEEMod Version 2016.3.2; see Appendix D).

Transportation Fuels

According to the CEC, transportation fuels account for nearly 40 percent of statewide total energy demand and approximately 39 percent of the state's GHG emissions (CEC 2018). In 2018, California consumed 15.5 billion gallons of gasoline and 3.7 billion gallons of diesel fuel. Petroleum-based fuels currently account for more than 90 percent of California's transportation fuel use. To address the magnitude of transportation fuel consumption, California has implemented several polices, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce on-road VMT. The California initiatives have begun to gradually reduce statewide dependence on fossil fuels, and the CEC predicts that demand for gasoline will continue to decline as the expansion of public transit infrastructure and use of alternative fuels becomes more prevalent.

The CEC maintains a statewide database of annual transportation fuel retail sales in accordance with the Petroleum Industry Information Reporting Act (PIIRA) called the *California Retail Fuel Outlet Annual Reporting (CEC-A15)* system. Annual gasoline and diesel fuel sales are available by county within the database for years 2010 through 2018. According to the CEC-A15 data, retail transportation fuels sales in Los Angeles County in 2018 were approximately 3,638 million gallons of gasoline and approximately 253 million gallons

of diesel fuel (CEC 2019). More transportation fuels were purchased in Los Angeles County than any other county in the state, accounting for approximately 24 percent of statewide gasoline sales and 14 percent of statewide diesel sales. Retail transportation fuels are provided by approximately 2,078 service stations throughout the County.

Transportation fuel use was analyzed on an annual basis for the proposed Project. As described in 3.15, *Transportation*, existing employee and visitor trips generate approximately 22,189,284 annual VMT. Based on the regional fleet averages obtained from the CARB EMissions FACtor (EMFAC) mobile source emissions inventory, existing VMT associated with Zoo operations consume approximately 866,266 gallons of gasoline and 8,954 gallons of diesel fuel annually.

3.5.3 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, the Project would have a potentially significant effect related to energy if it would:

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Methodology

The methodology used in the analysis of proposed Project energy consumption was consistent with the analysis presented in Section 3.2, *Air Quality* and Section 3.8, *Greenhouse Gas Emissions*. As discussed in Section 2.0, *Project* Description, Project activities have been separated into near-term improvements occurring within the first 10 years of implementation (2020–2030) and long-term improvements that would occur during the latter 10 years of the Vision Plan (2030–2040). The near-term improvements are separated into three phases and summarized in Table 2-22, and the long-term improvements are separated into four phases and summarized in Table 2-23. The assessment for construction activities characterized the transportation fuel use that would be required during the three near-term phases, and conservatively doubled the consumption to account for the long-term improvements. The operational assessment characterized annual electricity, natural gas, and transportation fuels consumption that would be required by improvements completed by the interim near-term development year of 2030, as well as the ultimate completion year of 2040.

To satisfy CEQA requirements of analyzing proposed Project impacts relative to existing conditions, a baseline analysis year of 2019 was utilized for the energy consumption analysis. This approach represents a conservative characterization of proposed Project energy consumption, as it does not account for mandated improvements in fuel efficiency and alternative fuel technologies ratified by CARB, nor does it account for improvements to Title

24 energy efficiency standards beyond those incorporated into CalEEMod (2013 standards). As a general consideration, the CARB anticipates that the regional fleet average fuel efficiency will improve by approximately 28 percent between 2019 and 2030 and approximately 36 percent between 2019 and 2040 based on fleet turnover, the introduction of more fuel-efficient vehicles, and the expansion of availability of alternative fuel vehicles. Additionally, all new and renovated buildings under the Project would be constructed in accordance with 2019 Title 24 energy efficiency standards and LEED Silver green building practices, which would reduce operational energy associated with end uses regulated under Title 24 by up to 37 percent relative to those analyzed in CalEEMod, as discussed in 3.8, *Greenhouse Gas Emissions*. Under the City and LADWP commitments in the 2017 SLTRP, the proportion of LADWP power supplied by renewable sources is required to increase from approximately 30 percent in 2017 to 50 percent in 2025. Therefore, by 2030 Vision Plan operations, regional average nonrenewable energy consumption by LADWP to supply electricity would decrease by approximately 28 percent relative to existing conditions. Increasing the proportion of energy supplied by renewable sources would decrease the per-gallon energy expenditure to supply, treat, and distribute water, creating cascading effects of improving LADWP systemwide efficiency. The operational energy analysis does not account for these improvements and presents a conservative existing plus proposed Project analysis.

Construction

Construction of the proposed Project is not anticipated to require significant electricity or natural gas consumption. On a limited and incidental basis, electricity may be used for small equipment, such as lighting, electronic devices, and other minor construction activities necessitating electrical power; however, it is speculative to quantify these minor sources, and equipment may already be in use under existing conditions throughout the Project site. Construction of the proposed Project would expend energy resources through the spark-ignited internal combustion engines of off-road equipment and on-road motor vehicles consuming transportation fuels. CARB has compiled inventories and forecasted projections of diesel and gasoline fuel use by off-road equipment and on-road motor vehicles.

Off-Road Construction Equipment

Using the CARB OFFROAD 2011 model database and a CARB fuel density value of 7.07 pounds per gallon (lbs/gal), the average diesel fuel consumption factor for off-road equipment used in proposed Project construction is estimated to be approximately 0.052 gallons per horsepower-hour (gal/hp-hr). Consumption of diesel fuel associated with off-road equipment was estimated based on the equipment inventories used in CalEEMod for each of the near-term improvement phases of the proposed Project, described in Table 3.2-6. CalEEMod contains default horsepower ratings and load factors based on equipment surveys that were incorporated into the diesel fuel consumption analysis. Refer to Appendix D for detailed emissions modeling input parameters and CalEEMod output files.

On-Road Vehicle Travel

Construction of the proposed Project would require on-road vehicle trips for crew members, vendor deliveries, and cut and fill material hauling. Consumption of diesel fuel and gasoline associated with on-road vehicle trips described in Table 3.2-6 was estimated using the CARB EMFAC mobile source emissions inventory data—which contains data related to air pollutant emissions and fuel consumption from on-road motor vehicles in California—that is programmed into CalEEMod and emissions factors for GHG emissions inventories prepared by the EPA for fuel carbon intensity. The EPA estimates that combustion of one gallon of diesel fuel will generate approximately 10.21 kilograms of carbon dioxide (10.21 kg CO_2), and combustion of one gallon of gasoline will generate approximately 8.78 kg CO_2. CalEEMod output for vehicle trip CO_2 emissions was used to estimate construction-related transportation fuel consumption in conjunction with the EPA emission inventory factors.

Operation

Similar to the analyses presented for GHG emissions, annual operational energy consumption was analyzed for the proposed Project following completion of near-term improvements in 2030 and full Vision Plan buildout in 2040. Energy resource consumption considered electricity, natural gas, and transportation fuel use associated with proposed Project operations.

Electricity and Natural Gas

Annual electricity consumption between 2011–2016 was provided by Zoo facility administrators and averaged approximately 7,800 MWh. Existing conditions in 2019 were conservatively estimated at 8,000 MWh annually, with an additional 1,453 MWh indirectly attributed to LADWP water system operations providing the existing facility water demand presented in Table 3.16-12. Future electricity use associated with improvements and expansion of Zoo facilities was estimated using extrapolation based on new building structure and lighted areas and assumed to proportional to water use increases throughout the Project site. Future projected water demand in 2040 provided by Zoo facility administrators was used to estimate corresponding indirect electricity consumption, and approximately 75 percent of additional consumption was assumed to occur by 2030. Natural gas consumption was estimated using a CalEEMod natural gas consumption factor of 12 kBTU per square foot of building area per year (kBTU/sf/year) from facilities described in Section 2.0, *Project Description*.

Transportation Fuels

Operation of Zoo facilities generates vehicle trips from employees and visitors. The CARB EMFAC mobile source emissions database contains air pollutant emissions and fuel consumption data for the statewide on-road vehicle fleet. Fuel consumption rates in gallons per mile were derived from the EMFAC database for the non-truck vehicle fleet, which accounts for passenger vehicles, light duty trucks, motorcycles, and other vehicles that would

characterize the employee and visitor vehicle travel. The fuel consumption factors are derived based on the regional vehicle fleet and aggregate average fuel efficiency. To satisfy CEQA requirements, the operational transportation fuel consumption analysis utilized factors for the 2019 Existing Conditions baseline year that do not account for anticipated future improvements in fuel efficiency. Based on the regional mobile source emissions inventory, the average fuel consumption factors for the operational vehicle trips are approximately 0.039 gallons of gasoline per VMT and 0.0004 gallons of diesel fuel per VMT. Annual VMT data produced by the *Los Angeles Zoo Vision Plan Transportation Assessment*, included as Appendix N of this EIR, were used for the operational transportation fuels calculations. Annual VMT under Existing Conditions and in 2030 and 2040 were multiplied by the fuel consumption factors to estimate annual transportation fuel use.

Energy-Saving Features

The Project would incorporate numerous features that contribute to energy efficiency. Proposed features described in Section 2.0, *Project Description* include, but are not limited to, LEED Silver design standards for new structures, infrastructure, utilities, and landscaping, installation of photovoltaic solar panels providing up to 50 percent of Zoo electricity demand, and provision of electric vehicle (EV) charging stations. The proposed Project also includes a stormwater capture and treatment system that would reduce annual water demand by approximately 35 million gallons, decreasing associated electricity required to supply and distribute water. Additionally, **MM T-2** outlined in Section 3.15, *Transportation* (see also Appendix N) would reduce VMT and associated transportation fuels demand associated with proposed Project operations. These features are addressed qualitatively.

3.5.4 Environmental Impacts Analysis

EN-1: Would the proposed Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Energy resource expenditures for the Vision Plan improvements are analyzed for direct, one-time consumption of diesel and gasoline fuels during construction activities, and annual operational energy requirements following the completion of near-term improvements in 2030 and the entirety of the Vision Plan redevelopment in 2040.

Construction

As discussed in detail in Section 2.0, *Project Description*, construction of the proposed Project facilities would be separated into near-term improvements to be completed by 2030 (Phase 1 through Phase 3) and long-term improvements (Phase 4 through Phase 7) to be developed between 2030 and 2040. A greater degree of detail regarding the schedule of improvements and required construction inventories is available for Phase 1 through Phase 3. Given the scope of work to be completed in each Phase—and acknowledging that construction

equipment and vehicle fuel efficiency will improve on average in future years as more stringent emissions standards and newer fleets are introduced—it is anticipated that annual transportation fuel consumption would be higher during the near-term improvements than during the latter 10 years of the Project. CalEEMod was used to prepare the equipment and vehicle inventories for activities comprising Phase 1, Phase 2, and Phase 3 construction described in Table 3.2-6. For equipment, a fuel consumption factor of 0.052 gal/hp-hr was applied to estimate diesel fuel required to power construction equipment throughout the duration of Vision Plan improvements. On-road motor vehicle emissions (i.e., crew vehicles, vendor deliveries, and cut and fill material haul trucks) were estimated based on the CalEEMod output CO_2 emissions and the carbon intensity of diesel fuel (10.21 kg CO_2/gal) and gasoline (8.78 kg CO_2/gal), as described above in Section 3.5.3, *Impact Assessment Methodology*.

As a conservative approach without detailed construction activity information for the 2030–2040 years, it was assumed that transportation fuels consumption during long-term improvements would be equal in magnitude to consumption during the near-term improvements. Table 3.5-2 presents the transportation fuels consumption that would be generated by construction of Phase 1 through Phase 3 during near-term improvements.

Table 3.5-2. Vision Plan Energy Consumption – Construction

Phase	Start Year	End Year	Off-Road Equipment Fuel (Gal Diesel)	On-Road Truck Fuel (Gal Diesel)	On-Road Non-Truck Fuel (Gal Gasoline)
Phase 1	2020	2025	266,275	180,763	56,984
Phase 2	2025	2027	161,108	74,427	26,860
Phase 3	2027	2030	190,647	95,803	31,388
Project Construction Energy Analysis					
Near-Term Improvements Total (Gallons)			618,030	350,933	155,233
Annual Average Consumption			***61,803***	***35,093***	***15,523***
Vision Plan Construction Total (Gallons)			1,230,060	701,886	310,466

As shown in Table 3.5-2, the one-time expenditure of transportation fuels required for construction of the proposed Project would average approximately 96,896 gallons of diesel fuel (61,803 gallons attributed to off-road equipment use and 35,093 attributed to on-road diesel trucks) and 15,523 gallons of gasoline annually. Annual average construction diesel fuel consumption would constitute approximately 0.04 percent of annual Los Angeles County use in 2018 (253 million gallons), and proposed Project gasoline consumption would be equivalent to approximately 0.0004 percent of Los Angeles County demand in 2018 (3,638 million gallons). The incremental increase in annual diesel and gasoline consumption is not considered to be an undue burden on transportation fuel supply. Construction of the

proposed Project would utilize 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 Title 13 of the California Code of Regulations, and fuel requirements in accordance with Section 93115 in Title 17 of the California Code of regulations, and would comply with state measures to reduce the inefficient, wasteful, and unnecessary consumption of energy. Therefore, expenditures of energy resources during construction of the proposed Project would result in a *less than significant impact.*

Operation

Near-Term Project Phases (2030)

As discussed further in Section 3.15, *Transportation,* the Project would expand Zoo capacity and accommodate more attendance over the next 20 years. Under existing conditions, Zoo operations generate between approximately 1,489 to 2,328 daily vehicle trips, depending on the day of the week, which results in approximately 22,189,284 annual VMT. In 2030, implementation of near-term Vision Plan improvements would increase daily vehicle trips to between 2,465 and 3,803, and annual VMT would be approximately 36,278,268, representing an increase of 14,088,984 VMT. Building structure and ancillary facility area served by natural gas lines is expected to increase from 231,914 sf under existing conditions to 436,064 sf under the proposed Project in 2030. Annual natural gas demand would increase to approximately 5,233 MBTU per year, and electricity use under the 2030 proposed Project would be approximately 10,091 MWh/year for general facilities and lighting and an additional 1,918 MWh/year for water resources, for a total of approximately 12,008 MWh/year.

Table 3.5-3 presents the annual operational energy consumption associated with the Project near-term improvements, as well as an estimate of energy consumption under existing conditions, the annual transportation fuel demand during construction activities, and the net change in annual energy use applying 2019 consumption and fuel efficiency factors.

Table 3.5-3. Proposed Near-term Operational Energy Demand: Existing plus Project

Scenario	Electricity (MWh/year)	Natural Gas (MBTU/yr)	Gasoline (Gal/year)	Diesel Fuel (Gal/year)
Operational Consumption				
Vision Plan 2030	12,008	5,233	1,416,296	14,639
Existing Conditions	9,453	2,783	866,265	8,954
Construction Consumption				
Annual Average	-	-	15,523	96,896
Regional Analysis				
Net Annual Change	2,555	2,500	565,554	102,581

Implementation of the near-term improvements would generate a maximum potential annual increase in energy consumption of approximately 2,555 MWh of electricity, 2,500

MBTU of natural gas, 565,554 gallons of gasoline, and 102,581 gallons of diesel fuel after accounting for annual average ongoing construction transportation fuels use. To reiterate, these values represent conservative estimates of annual average energy consumption, and likely overestimate the proposed Project's energy demands that would materialize in 2030. The increase in electricity and natural gas use would not place an undue burden on LADWP or SoCalGas resources, respectively, and would represent a nominal increase above existing demands. The proposed Project gasoline consumption would increase Los Angeles County consumption by approximately 0.016 percent relative to the 2018 baseline, and diesel fuel consumption would increase County consumption by approximately 0.04 percent.

All new and redevelopment activities would be subject to the provisions of the LA Green Building Code, LEED Silver design standards and best management practices, and LA's Green New Deal pertaining to energy efficiency for non-residential buildings. Furthermore, all new structures with rooftop area greater than 250 sf will be considered for the feasibility of solar panel installations. As details on the phasing of solar installation are not available, the associated reductions in energy consumption have not been accounted for in the energy assessment. Ultimately, it is anticipated that the Project would reduce facility electricity demand by up to 50 percent through the incorporation of photovoltaic solar panels producing on-site renewable energy. Overall, the Project in 2030 would not result in a wasteful, inefficient, or excessive expenditure of energy resources and this impact would be *less than significant*.

Long-Term Project Phases (2040)

In 2040, implementation of long-term Vision Plan improvements would increase daily vehicle trips to between 2,673 and 4,095, and annual VMT would be approximately 39,084,812, representing an annual increase of 16,895,528 VMT. Based on the average fuel consumption factors, the operational vehicle trips are approximately 0.039 gallons of gasoline per VMT and 0.0004 gallons of diesel fuel per VMT. Building structure and ancillary facility area served by natural gas lines is expected to increase from 231,914 sf under existing conditions to 441,314 sf under the proposed Project in 2040. Annual natural gas demand would increase to approximately 5,296 MBTU per year, and electricity use under the 2040 proposed Project would be approximately 10,786 MWh/year for general facilities and lighting and an additional 2,073 MWh/year for water resources, for a total of approximately 12,860 MWh/year. Installation of the stormwater capture and treatment system is anticipated to reduce potable water demand by approximately 35 MMgal (24 percent) annually, which is feasible to quantify in the analysis of energy demand reductions.

Table 3.5-4 presents the annual operational energy consumption associated with the Project long-term improvements, as well as an estimate of energy consumption under existing conditions, and the net change in annual energy use applying 2019 consumption and fuel efficiency factors.

Table 3.5-4. Proposed Long-term Operational Energy Demand: Existing plus Project

Scenario	Electricity (MWh/year)	Natural Gas (MBTU/yr)	Gasoline (Gal/year)	Diesel Fuel (Gal/year)
Operational Consumption				
Vision Plan 2040	12,860	5,296	1,525,863	15,771
Existing Conditions	9,453	2,783	866,265	8,954
Regional Analysis				
Net Annual Change	3,407	2,513	659,598	6,817

The Project in 2040 would generate a maximum potential annual increase in energy consumption of approximately 3,407 MWh of electricity, 2,513 MBTU of natural gas, 659,598 gallons of gasoline, and 6,817 gallons of diesel fuel. To reiterate, these values represent conservative estimates of annual average energy consumption, and likely overestimate the proposed Project's energy demands that would materialize in 2040. As an example, the stormwater capture and treatment system would reduce electricity associated with water conveyance by approximately 24 percent. The increase in electricity and natural gas use presented in Table 3.5-4 would not place an undue burden on LADWP or SoCalGas resources, respectively, and would represent a nominal increase above existing demands. The proposed Project gasoline consumption would increase Los Angeles County consumption by approximately 0.018 percent relative to the 2018 baseline, and diesel fuel consumption would increase County consumption by approximately 0.003 percent.

All new and redevelopment activities would be subject to the provisions of the LA Green Building Code, LEED Silver design standards and best management practices, and LA's Green New Deal (Sustainable City pLAn 2019) pertaining to energy efficiency for non-residential buildings. Furthermore, all new structures with rooftop area greater than 250 sf would be considered for the feasibility of solar panel installations. As details on the phasing of solar installation are not available, the associated reductions in energy consumption have not been accounted for in the energy assessment. Ultimately, the Project would reduce facility electricity demand by up to 50 percent through the incorporation of photovoltaic solar panels producing on-site renewable energy. Overall, the Project in 2040 would not result in a wasteful, inefficient, or excessive expenditure of energy resources and this impact would be *less than significant*.

EN-2: Would the proposed Project Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The Project may cause a significant environmental impact if it would conflict with applicable statewide or regional plans, policies, or regulations adopted to expand renewable energy resource infrastructure or achieve energy efficiency targets. As described in the regulatory framework, a robust set of regulations are in place pertaining to renewable energy and energy efficiency, as well as transportation fuel consumption. For the proposed Project—which is a 20-year master plan improvements project for regional attraction—this analysis considers the

proposed Project's consistency with the following renewable energy and energy efficiency initiatives:

- Statewide regulations requiring the expansion of the RPS to 60 percent by the end of 2030 as mandated by SB 100, updating the SB 350 target of 50 percent renewable energy supply by 2030;
- California Title 24 Standards and California Green Building Code;
- The 2017 LADWP and City SLTRP, which accelerates RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, and doubling of energy efficiency from 2017 through 2027; and,
- LA's Green New Deal (Sustainable City pLAn 2019).

The Project and associated energy use are evaluated in the context of outlined strategies and objectives that are critical components of achieving the mandated reduction targets in each of the regulations, plans, and policies above.

Project Energy-Saving Design Features

The Project would enhance and revitalize Zoo facilities over a 20-year timespan. The proposed Vision Plan improvements would include numerous best management practices (BMPs), design features, and other elements that would diminish energy resource demand relative to the unmitigated operational emissions presented in Tables 3.2-14 through 3.2-17. Staged utility and infrastructure improvements would be implemented over the 20-year project horizon to replace and upgrade aging systems, serve anticipated growth in visitation through approximately 2040, substantially improve water and energy conservation, and reduce maintenance costs and resource demands. Such improvements are anticipated to include major upgrades to stormwater conveyance, onsite storage, and recycling through onsite treatment and retention of stormwater runoff, which would allow onsite reuse onsite or permit release of treated water to the Los Angeles River. Major electrical energy initiatives would include generation of substantial electrical energy onsite, installation of photovoltaic solar panels, increased efficiency through use of LEED construction, and visitor space environmental climate controls. The Project includes improvements to water delivery systems, wastewater collection, and new restrooms. The proposed Project is characterized by the following features that would reduce energy consumption:

Energy

Project design features that would reduce facility energy consumption are listed below.

Building Energy

Throughout all phases of the Project, new structures, infrastructures, utilities, and landscaping would meet the LEED Silver standards of design or better, including all Visitor Centers, to ensure energy- and resource-efficient structures. All renovated and new structures

will be outfitted with reduced-flow plumbing fixtures and energy efficient appliances (i.e., restaurant facilities) and comply with all provisions of the Los Angeles Green Building Code.

Alternative Energy

In addition to the LADWP's independent solar installation project[1] (separate from the proposed Project; refer to Section 3.18, *Cumulative Impacts*), the Vision Plan would include installation of up to 70,000 sf (1.6 acres) of solar panels on several buildings and structures throughout the Zoo campus. The Zoo's entire photovoltaic system would cover approximately 232,000 sf of rooftops and produce up to 50 percent of the Zoo's total energy use, or a substantial portion of the increases in power demand. The proposed Project solar installations would reduce electricity consumption by up to 50 percent.

Lighting

Intersection improvements at I-5 and Western Heritage Way would install a signalized intersection with LED traffic lights. Parking lot improvements would install high-efficiency outdoor lighting throughout Zoo parking facilities. All new lighting within building structures will be ensured to meet LEED Silver or equivalent standards.

Water

Water Supply

The proposed Project would implement a stormwater treatment system with capacity up to capture and reuse 35 million gallons of stormwater annually, reducing potable water demand and associated energy to supply water by approximately 24 percent. The stormwater capture cisterns would be installed with an end goal of capturing 80 percent of onsite stormwater for treatment and reuse onsite or release to the Los Angeles River.

Water Use

The Zoo currently uses approximately 11.5 million gallons of recycled water annually for parking lot irrigation. The recycled water consumption with the Project would increase to approximately 25.9 million gallons in 2040. Expanding recycled water use minimizes electricity to provide water to the proposed Project.

Transportation

Proposed Project design features that would reduce transportation source fuel consumption in accordance with SB 375 are listed below.

[1] LADWP is currently pursuing plans to install approximately 163,000 sf of solar panels at the Zoo, including 149,000 sf of solar panels on carports in the Zoo's north parking lot and 14,000 sf of solar panels on rooftops within the Zoo entry. This separate project would be completed prior to commencement of the proposed Project.

Pedestrian Improvements and Active Transportation

Under the proposed Project, Western Heritage Way/Crystal Springs Drive would be realigned to the southern perimeter of the parking lots for efficiency and safety, creating a unified guest parking lot, and reducing pedestrian street crossings. This would more strongly link existing parking spaces and the North Hollywood High School Zoo Magnet Center to the main Zoo campus, eliminating the need for Zoo visitors to cross this busy street.

The Zoo would encourage bicycle and pedestrian travel from neighboring communities by coordinating with Los Angeles Department of Transportation (LADOT) to ensure that new bicycle and pedestrian linkages are well-signed and safe, providing convenient bicycle parking adjacent to the Zoo entrance, providing a bike share station at the Zoo, and providing measurable incentives to visitors and employees to walk or bike to the Zoo.

Site Enhancement and Traffic Calming

The proposed Project would consolidate service and functional areas of the Zoo to one location, and the Zoo would have the space to include enlarged service and food storage areas for more efficient bulk purchasing, thereby reducing annual vendor deliveries and internal circulation congestion.

Transit Access Improvements

The proposed realignment of Western Heritage Way/Crystal Springs Drive would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to these attractions.

Parking Policy

The expansion of the EV and ZEV infrastructure is a critical component to incentivizing alternative fuel vehicle use. The Zoo administration and facilities buildings would have EV charging stations. A minimum of two stations shall be provided for each designated parking area of Zoo vehicles.

Construction

Construction activities will comply with the provisions of the CARB Airborne Toxic Control Measure to limit idling of diesel-fueled commercial motor vehicles to not more than five minutes at any location, including when queuing within 100 feet of sensitive receptors. Reducing idling and ensuring that equipment and vehicles are regularly inspected and maintained to manufacturer specifications would reduce energy use from those sources. Additionally, construction of the proposed Project will use LEED Silver construction techniques outlined in the Sustainable City pLAn to meet the 80 percent construction and demolition waste recycling requirements. Additionally, the installation of electronic communications lines to automatically control exhibit utilities and environmental conditions would further reduce potential future demand.

Project Consistency with Statewide, Regional, and Local Energy Initiatives

Table 3.5-5 provides a topical overview of the statewide consistency analysis, organized by the applicable plan source category or strategy.

Table 3.5-5. Vision Plan Consistency with Statewide Energy Initiatives

Objective or Strategy	Relationship to Project
SB 350 increases the Renewable Portfolio Standard for California's renewable electricity procurement requirement from 33 percent in 2020 to 50 percent by 2030. SB 100 accelerated the 2030 target to 60 percent renewable energy by the end of the year.	Consistent. The proposed Project would not interfere with statewide initiatives to increase renewable energy production from public utilities and would implement up to 70,000 sf of solar panels for on-site renewable energy generation to reduce LADWP demand. Additionally, LADWP is separately outfitting the Zoo with approximately 163,000 sf of solar panels which would be completed prior to the commencement of the Vision Plan (see Section 3.18, *Cumulative Impacts*).
SB 350 mandates that state achieve cumulative doubling in energy efficiency savings in electricity and natural gas end uses by 2030.	Consistent. The proposed Project would remove outdated building structures and facilities that would be replaced by buildings meeting LEED Silver or equivalent energy efficiency. All end uses within Zoo facilities would at a minimum comply with the most recent applicable Title 24 energy efficiency standards, currently 2019. The Vision Plan would not interfere with SB 350 goals to double energy efficiency savings by 2030.
Implement Mobile Source Strategy requiring at least 4.2 million zero-emission and plug-in hybrid vehicles by 2030.	Consistent. The proposed Project would not interfere with zero-emission and plug-in hybrid vehicle production or sales. The Vision Plan would include EV charging stations at all new facility buildings to encourage the use of electric vehicles, which would expand the EV infrastructure.
Implement California Sustainable Freight Action Plan to improve freight system efficiency; increase near-zero emission fleet.	Consistent. The Project would not conflict with the California Sustainable Freight Action Plan; Vision plan improvements would enhance the circulation network and consolidate commercial deliveries to one central location, increasing operational efficiency.

Table 3.5-6 presents the consistency analysis for the proposed Project in the context of regional plans and policies to reduce energy consumption. The evaluation focuses on consistency with elements of the SCAG RTP/SCS, which was derived to comply with SB 375 and determined to contain sufficient targets to meet statewide emissions reduction goals associated with regional transportation planning. These goals are also correlated to improving energy efficiency and reducing the consumption of transportation fuels.

Table 3.5-6. Vision Plan Consistency with Regional Energy Initiatives

Objective or Strategy	Relationship to Project
SB 375 and SCAG 2016–2040 RTP/SCS	
Focus new growth around transit, develop livable corridors, and provide more options for short trips.	Consistent. The proposed Project would not introduce a new land use development outside of a high-quality transit area, nor would it impede the development of livable corridors throughout the local communities. Vision Plan improvements would be limited to Griffith Park and the immediate surrounding roadway circulation network. The Project would provide additional bicycle parking to encourage local trips and would enhance pedestrian access and safety to the Zoo from the parking lots and surrounding uses (i.e., Zoo Magnet School, Autry Museum of the American West).
Preserve and improve our current system, manage congestion, and promote safety and security and active transportation.	Consistent. The Project would not cause any deterioration to the existing roadway system. Reconfiguration of the parking lot and Western Heritage Way would improve internal circulation and site accessibility, as well as pedestrian safety and active transportation accommodations through bicycle parking.
Implement Transportation Demand Management	Consistent. As discussed in Section 3.15, *Transportation*, with implementation of **MM T-2**, the Zoo would implement a comprehensive Transportation Demand Management (TDM) Program to provide trip reduction strategies for Zoo visitors and employees. The TDM Program will include establishment of a measurable and replicable approach to developing a transit mode share baseline and establishment of protocols for regular and longitudinal mode share monitoring. The Zoo will monitor mode share to and amend, maintain, or grow mode transit and non-motorized mode share, develop appropriate transit and bike-oriented incentives to reach mode-share goals, promote transit and alternative mode transportation to the Zoo, develop effective marketing tools to advertise transit availability and incentives. Ultimately, through a series of incentive programs, employee VMT may be reduced by up to 10 percent. With implementation of **MM T-2**, visitor VMT would also be reduced below projected conditions.
Implement variable parking pricing to discourage single-occupancy vehicle trips.	Consistent. As discussed in Section 3.15, *Transportation*, with implementation of **MM T-2**, a comprehensive TDM Program to provide trip reduction strategies for Zoo visitors and employees, which may include a Paid Parking Program as one strategy to discourage personal vehicle trips to the Zoo to meet the goal of reducing the Zoo's projected visitor-based VMT.
Expand electric vehicle infrastructure to reduce reliance on fossil fuels.	Consistent. The proposed Project would provide EV charging infrastructure and parking accommodations within visitor and employee parking lots, consistent with City required ratios at the time of construction.
Achieve 19 percent reduction in per-capita GHG emissions from passenger vehicles throughout the SCAG region by 2035.	Consistent. The Project would not change land use patterns or introduce a new source of vehicle trips to the SCAG region. Per-capita VMT for visitors and employees would remain unchanged or decrease marginally relative to existing conditions due to incentive programs. The SCAG staff determined that the 2020 RTP/SCS would be consistent with the SB 375 reduction goals. The proposed Project would not conflict with regional objectives to reduce per-capita GHG emissions from passenger vehicles.

Table 3.5-6. Vision Plan Consistency with Regional Energy Initiatives (Continued)

Objective or Strategy	Relationship to Project
Actively encourage and create incentives for energy efficiency, where possible.	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).

Table 3.5-7 presents the consistency analysis for the proposed Project in the context of local City regulations.

Table 3.5-7. Vision Plan Consistency with City Energy Programs and Policies

Objective or Strategy	Relationship to Project
City of Los Angeles General Plan	
Air Quality Element	
Policy 5.1.2. Effect a reduction in energy consumption and shift to non-polluting sources of energy in its buildings and operations.	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels with the goal of providing up to 50 percent of the Zoo's energy demand, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).
Policy 5.1.4. Reduce energy consumption and associated air emissions by encouraging waste reduction and recycling.	Consistent. The City currently recycles and would continue to recycle applicable waste under operation of the Vision Plan. The Zoo would also continue "Zoo Doo" operations associated with the Griffith Park Composting Facility to recycle animal bedding (i.e., hay) and waste. The Zoo would continue to be a source for food waste diversion, working with World Harvest to use appropriate and quality food waste for animal feed, thereby preventing landfill disposal.
Conservation Element	
Section 13 Policy 1. Continue striving to meet the city's water, power, and other needs while at the same time striving to be a good steward of natural resources and minimizing impacts on the environment.	Consistent. As discussed above and in Section 3.6, *Urban Forestry Resources*, Section 3.8, *Recreation*, Section 3.10, *Hydrology and Water Quality*, Section 3.13, *Public Services*, Section 3.15, *Transportation*, and Section 3.16, *Utilities*, proposed utilities would be resource-efficient, including onsite solar energy collectors and stormwater treatment facilities, to ensure that resources and services provided by the City would be sufficient to address growth in demand while minimizing potential impacts on the environment. For example, the Project would provide up to 70,000 square feet of solar photovoltaic panels to generate solar energy and reduce the Zoo's energy consumption, while required mitigation measures **MM T-2** identified in Section 3.15, *Transportation* would increase opportunities for alternative transportation to reduce VMT and fuel energy demands.

Table 3.5-7. Vision Plan Consistency with City Energy Programs and Policies (Continued)

Objective or Strategy	Relationship to Project
Section 19 Policy 1. Continue to encourage energy conservation and petroleum product reuse.	Consistent. The Vision Plan would guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes. Project implementation would ensure all new development at the Zoo complies with all applicable state and local building codes. Additional improvements across all phases include the installation of electronic communications lines to automatically control exhibit utilities and environmental conditions, further reducing future utility demand.
Hollywood Community Plan	
Other Public Facilities	
Policy 2. That new equipment for public facilities be energy efficient.	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand.
Griffith Park Vision Plan	
Sustainable Design Principles. Sustainable design principles should be applied throughout the Park to all aspects of additions and restoration, repairs, and maintenance, including building orientation, design and materials, and site design issues such as planting and native plant restoration, habitat enhancement, storm water management and watershed connections to the Los Angeles River (Page 52).	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code). The Project would install a comprehensive subterranean stormwater collection and treatment system, including five underground cisterns, that would allow for capture and reuse of runoff in Zoo landscaping. The Project would continue to treat all runoff through existing water treatment facilities prior to discharge to the Los Angeles River. Refer to Section 3.10, *Hydrology and Water Quality*.
Sustainable Design Principles. Consistent with sustainable design principles and the Urban Wilderness Identity, materials used should be low-maintenance, durable, and vandal-resistant. Whenever possible, previously used and recycled materials should be used. Improvements should comply with the energy efficiency requirements found in Title 24 of the California Code of Regulations (Page 52).	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code). The Project would balance soils onsite to the extent feasible to minimize import of new materials during excavation.

Table 3.5-7. Vision Plan Consistency with City Energy Programs and Policies (Continued)

Objective or Strategy	Relationship to Project
Sustainable City pLAn and Green New Deal (2015 & 2019)	
Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.	Consistent. The Project would incorporate a stormwater capture and treatment system to reduce potable water use and associated energy demand by approximately 24 percent. Additional water conservation strategies would include plumbing connections and fixtures and appliances to comply with the provisions of the Los Angeles Green Building Code related to water flow controls. The proposed Project would be consistent with per-capita water potable water reductions.
All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.	Consistent. All new buildings constructed in the long-term improvements of the Vision Plan shall comply with the net-zero carbon standards promulgated by the LA Green New Deal.
Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.	Consistent. The Project would not interfere with the desired expansion of the electric and zero emission vehicle fleet throughout the City. The Vision Plan would provide EV charging infrastructure to encourage the use of such vehicles.
Make key upgrades to transmission and distribution systems, substations, and other equipment to enable renewable energy integration into the electricity grid.	Consistent. The proposed Project would provide up to 70,000 square feet of solar photovoltaic panels to generate solar energy and reduce the Zoo's energy consumption by up to 50 percent.
2017 City and LADWP SLTRP	
Increase RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, and double energy efficiency from 2017 through 2027.	Consistent. The Project would include up to 70,000 sf of solar panels, providing up to 50 percent of the Zoo's energy. The proposed Project would not interfere with the 2017 SLTRP RPS targets and would provide renewable energy infrastructure to reduce demand on the LADWP system.
Increase local solar energy capacity to 900 MW by 2025 and 1,500 MW by 2035.	Consistent. The Project would include up to 70,000 sf of solar panels providing local solar energy.
Increase local energy storage to 404 MW by 2025 to integrate renewable sources.	Consistent. The Project would not impede local energy storage and would generate energy from installation of 70,000 sf of solar panels onsite.

The proposed Project would not interfere with any statewide, regional, or local initiatives to expand renewable energy supply or improve energy efficiency. The proposed Project would be consistent with the stringent provisions of the LA Green Building Code and LEED Silver design standards and best management practices and would contribute to the expansion of renewable energy infrastructure by installing 70,000 sf of rooftop solar panels. Additionally, the proposed Project would enhance transportation sustainability by providing a more efficient internal circulation network for patrons, employees, and vendors, providing high efficacy outdoor lighting throughout the Zoo property and in the parking lots and parking structure, and improving pedestrian and bicyclist safety and public transit accessibility along

Western Heritage Way by roadway reconfigurations and signalizing the intersection of Zoo Drive and Western Heritage Way. However, implementation of the proposed Project has potential to conflict with regional plans and policies governing transportation energy initiatives due to the substantial increase in annual Zoo visitation and VMT generated by new Zoo visitors and employees. **MM T-2** would ensure consistency with these plans and policies by requiring the Zoo implement a TDM Program to reduce single occupancy vehicle trips to the Zoo, thereby reducing demand for transportation fuels. Therefore, with implementation of these measures, the proposed Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of expanding renewable energy or improving energy efficiency and impacts would be l*ess than significant with mitigation*.

3.5.5 Mitigation Measures

MM T-2 would apply.

3.5.6 Impacts Summary

The proposed Project would not generate substantial new demand for electricity or natural gas supplies or result in the wasteful or inefficient use of these resources. With implementation of **MM T-2** a, the proposed Project would be consistent with statewide, regional, and local policies, objectives, and strategies governing the consumption of energy supplies, particularly transportation fuels. As such, impacts to consumption and conservation of energy resources would be *less than significant*. Therefore, significant unavoidable adverse impacts would not occur.