4.3 Energy

4.3.1 Introduction

This section evaluates the potential energy impacts of the proposed Project and identifies plans, programs and policies that would preclude the wasteful, inefficient, and unnecessary consumption of energy.[1] Energy is a measure of power; the proposed Project would have the potential to result in impacts as a result of changes to electricity consumption, natural gas consumption, and transportation-related fuel consumption. Air pollutant and greenhouse gas (GHG) emissions associated with energy consumption are evaluated in Section 4.1.1, *Air Quality,* and Section 4.4, *Greenhouse Gas Emissions*, respectively.

4.3.2 Methodology

The analysis evaluates whether the proposed Project would result in wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation, and whether the proposed Project would conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Short-term energy demand would result from construction of the proposed Project, including energy demand from worker, vendor, and haul vehicle trips, as well as construction equipment usage. Long-term energy consumption would occur at Concourse 0, Terminal 9, and the Terminal 9 parking facility,[2] and from aircraft operations and passenger-related trips during Project operations. The methodologies used to evaluate energy consumption are discussed below.

4.3.2.1 Electricity/Natural Gas

The proposed Project would result in increases in electricity and natural gas consumption, primarily from operating Concourse 0 and Terminal 9. New electricity-consuming activities would include terminal and concourse lighting, air circulation and cooling, dining facilities and passenger amenities, and use of power and pre-conditioned air by aircraft at gates. Electricity would also be consumed to support a fractional increase in the delivery, treatment, and distribution of water and wastewater used and generated by the new facilities, respectively. New natural gas-consuming activities would include terminal and concourse heating, and dining facilities and passenger amenities.

As identified in Chapter 2, *Description of the Proposed Project,* implementation of the proposed Project would require the removal and/or relocation of a number of uses in order to accommodate the proposed improvements. In some cases, this would entail the demolition of existing uses that currently consume electricity and/or natural gas. This analysis does not account for the reduction in electricity and natural gas associated with the removal of these uses. Therefore, the calculations of Project-related electricity and natural consumption are conservative (i.e., overstate total Project-related consumption).

The California Emissions Model (CalEEMod) is a statewide land use criteria air pollutant and GHG emissions model[3] that can be used to analyze future energy use using generic demand factors. Generic demand factors from CalEEMod are based on use classifications; however, the model does not have use classifications specific to airport facilities or terminals. LAX-specific demand factors are more precise than using generic demand factors and they enable a realistic estimate of anticipated electricity and natural gas consumption based on existing terminal and building operations at LAX. As such, LAX-specific demand

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1 Public Resources Code, Section 21100(b)(3); California Code of Regulations, Title 14, Section 15126.4(a)(1)(C); California Natural Resources Agency, *California State CEQA Guidelines,* Appendices F & G, 2020.

2 Energy consumption associated with the Terminal 9 Automated People Mover (APM) station, which would only be a boarding/deboarding platform, would be negligible.

3 California Air Pollution Control Officers Association, *California Emissions Estimator Model, Version 2016.3.2*. Available: http://www.caleemod.com/.

factors were used to estimate energy demand associated with Concourse 0 and Terminal 9. However, as described further below, CalEEMod was used to estimate energy demand associated with the Terminal 9 parking facility.

Building energy demand (including that for airport terminals) is closely correlated with total building area; the electricity and natural gas demand for Concourse 0 and Terminal 9 was estimated by applying LAX-specific generation/demand factors for the new square footage to be constructed. LAWA tracks and analyzes electricity and natural gas consumption data for internal operational purposes and for accreditation under the voluntary Airport Carbon Accreditation (ACA) program managed by the Airports Council International-Europe.[4] Consumption data are collected by a network of meters and submeters throughout the airport. The LAX-specific demand factors for electricity and natural gas consumption used in this analysis were developed based on three years of historic data (2016, 2017, and 2018) for the Tom Bradley International Terminal. The data for the Tom Bradley International Terminal were used because this building was recently renovated and the building's energy consumption profile is representative of the planned facilities under the proposed Project. Historic data for Terminal 2, Terminal 6, Terminal 7, and Terminal 8 were also available and were used to validate the data for the Tom Bradley International Terminal. This robust data set enabled calculation of LAX-specific demand factors based on verified consumption rates and facility square footages.

LAWA does not separately track consumption data for parking facilities; therefore, this analysis used a generic demand factor from CalEEMod to analyze potential energy use from the proposed parking facility at Terminal 9. The representative demand factor from the CalEEMod User's Guide Appendix D Default Data Tables that was used in the analysis was the demand factor for an enclosed parking structure with elevator.[5]

Electricity demand associated with water consumption and wastewater generation was calculated by using energy intensity factors from CalEEMod.[6]

The total projected increase in electricity and natural gas consumption was evaluated against the anticipated capacity of the service providers based on the existing and planned capacities of each utility, as identified by utility providers, to determine consistency with utility providers' supply planning. The projected increase in electricity and natural gas consumption was also evaluated in the context of existing and planned regulations, policies, and programs addressing energy conservation, as well as features of the proposed Project that would serve to reduce energy consumption, to determine if the Project would result in wasteful, inefficient, or unnecessary consumption of energy resources, or would conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

4.3.2.2 Mobile Source and Transportation-Related Fuels

The analysis evaluates the potential changes in mobile source and transportation-related fuel consumption that would result from the proposed Project.

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4 Los Angeles World Airports, *LAX and Van Nuys Airports Receive International Certification for Greenhouse Gas Reductions*, September 2019. Available: https://www.lawa.org/en/news-releases/2019/news-release-106.

5 California Air Pollution Control Officers Association, *California Emissions Estimator Model, Appendix D Default Data Tables,* prepared by BREEZE Software in collaboration with the South Coast Air Quality Management District and the California Air Districts, October 2017. Available: http://www.caleemod.com/.http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4. The Terminal 9 parking facility would be either a surface parking lot or a parking structure. In order to provide a conservative analysis with respect to energy consumption, a parking structure was assumed.

6 California Air Pollution Control Officers Association, *California Emissions Estimator Model, Appendix D Default Data Tables,* prepared by BREEZE Software in collaboration with the South Coast Air Quality Management District and the California Air Districts, October 2017. Available: http://www.caleemod.com/.http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4.

4.3.2.2.1 Construction

Fuel consumption associated with construction activities would result from the construction worker, vendor, and haul trips; and use of heavy equipment, water trucks, and other on-site vehicles.

The methodology for estimating construction equipment usage and worker, vendor, and haul trips is provided in Section 4.1.1, *Air Quality.* Fuel usage was derived from the estimated construction GHG emissions discussed and analyzed in Section 4.4, *Greenhouse Gas Emissions*. Specifically, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines used by the California Air Resources Board (CARB) for its own GHG and fuel inventories, fuel consumption was estimated by converting the carbon dioxide (CO_2) emissions from gasoline and diesel fuel consumption during each phase of construction to gallons using established conversion factors for CO_2 to gallons of gasoline or diesel.[7] The conversion factor for gasoline is 8.89 kilograms (kg) CO_2 per gallon (kg CO_2/gal) and the conversion factor for diesel is 10.16 kg CO_2/gal.[8]

4.3.2.2.2 Operations

The proposed Project would also result in changes to mobile source and transportation-related fuel consumption during operations resulting from increases in annual passengers and aircraft operations, as well as changes to the roadway system. Gasoline and diesel would be consumed by privately-owned vehicles; government-owned vehicles; commercially-owned/operated ground transportation vehicles, such as rental cars, shuttles, buses, taxicabs, transportation network companies (TNCs) like Uber and Lyft, and trucks; auxiliary power units (APUs); and ground support equipment (GSE). As with construction-related fuel use, operational fuel use was determined by applying U.S. Environmental Protection Agency (USEPA) carbon content factors to the estimated GHG emissions for the corresponding fuel type.[9]

Aviation fuel (i.e., Jet A) would be consumed by aircraft engines and APUs. Jet fuel consumption was derived from FAA's Aviation Environmental Design Tool Version 3b (AEDT 3b).[10,11]

Using the methodologies outlined above, total operational fuel consumption with implementation of the proposed Project in 2028 was determined. The results were compared to fuel consumption under baseline (2018) conditions in order to determine incremental impacts associated with the proposed Project. As further discussed under the heading "Analytical Framework" at the beginning of this chapter (Environmental Impact Analysis), for purposes of this analysis, baseline conditions are from calendar year 2018, which provides a full years' worth of aircraft-related activity data prior to the publication of the Notice of Preparation (NOP) in April 2019.

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7 Intergovernmental Panel on Climate Change, *2006 IPCC Guidelines for National Greenhouse Gas Inventories,* Volume 2 – Energy, Chapter 3 – Mobile Combustion, 2006. Available: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_3_Ch3_Mobile_Combustion.pdf.

8 U.S. Energy Information Administration, *Carbon Dioxide Emissions Coefficients,* release date February 2, 2016. Available: https://www.eia.gov/environment/emissions/co2_vol_mass.php.

9 U.S. Environmental Protection Agency, *Emission Factors for Greenhouse Gas Inventories*, March 9, 2018. Available: https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf.

10 Federal Aviation Administration, *Aviation Environmental Design Tool (AEDT) Version 3b*, September 2019. Available: https://aedt.faa.gov/3b_information.aspx, accessed March 26, 2020. As noted in Section 4.1.1, *Air Quality*, an updated version of AEDT, specifically AEDT 3c, was released by the FAA on March 6, 2020; however, the environmental analysis process for this Project, including modeling with AEDT 3b, was already well underway at that time. Paragraph 4-2.b. of FAA Order 1050.1F states: "*In the event a model is updated or replaced after the environmental analysis process is underway, the updated or replacement model may be used to provide additional disclosure concerning noise or air quality impacts, but use of the updated or replacement model is not required*." As such, the aircraft noise modeling and aircraft air quality modeling for the Project were completed using AEDT 3b.

11 It should be noted that, unlike cars, where changes in emissions are recognized in the fuel economy standards applied to future vehicle trips, AEDT does not assume any future emissions reductions due to increased fuel economy, aircraft design improvements, or federal rules pertaining to aircraft engines. Therefore, future aircraft-related GHG emissions may be overstated.

4.3.3 Existing Conditions

This section presents a summary of energy providers and facilities at the Project site and surrounding area, as well as conservation programs and policies currently being implemented.

4.3.3.1 Regulatory Setting

4.3.3.1.1 Federal

Federal Energy Laws

The Federal Energy Policy and Conservation Act of 1975, the Energy Policy Act of 1992, the Federal Energy Policy Act of 2005, and the Energy Independence and Security Act of 2007 require the U.S. Department of Energy (DOE) to establish and periodically update mandatory federal energy-efficiency requirements. DOE's Building Technologies Office establishes and updates notices and rules related to commercial and residential buildings.

Federal Fuel Efficiency Standards

Federal Corporate Average Fuel Economy (CAFE) standards were adopted in 2010 for passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2012 through 2016. The standards surpassed the prior CAFE standards and required an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO_2 per mile by model year 2016, based on USEPA calculation methods. In August 2012, standards were adopted for model year 2017 through 2025, which required vehicles to achieve 54.5 mpg and 163 grams of CO_2 per mile by 2025.[12]

In August 2018, USEPA and the National Highway Traffic Safety Administration (NHTSA) proposed amendments to state waivers granted under the Clean Air Act and the CAFE standards. These amendments were termed the ''Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks'' (SAFE Vehicles Rule).[13] In September 2019, USEPA and NHTSA published a final rule, the "SAFE Vehicles Rule Part One: One National Program" (84 Fed. Reg. 51,310; effective November 26, 2019), which revoked California's waiver to set vehicle emissions and fuel economy standards more stringent than national standards under Section 209 of the Clean Air Act.[14] The final rule takes the position that those state programs were preempted under NHTSA's nationally applicable fuel economy standards. California and a coalition of other states have sued both the USEPA and the NHTSA, challenging the final rule, which blocks states from setting automobile emissions standards more stringent than national standards.[15,16]

In April 2020, a related final rule, called the SAFE Vehicles Rule, was published (84 Fed. Reg. 24,174; effective June 29, 2020).[17] The final rule amends the CO_2 emissions standards and CAFE standards for model year 2021-2026 passenger cars and light trucks. Under the final rule, the CAFE and CO_2 emissions

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12 U.S. Environmental Protection Agency, *Regulatory Announcement: EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks*, August 2012. Available: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF.

13 U.S. Environmental Protection Agency and National Highway Traffic Safety Administration, *The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks*, 83 FR 42,986, August 24, 2018.

14 U.S. Environmental Protection Agency and National Highway Traffic Safety Administration, *Withdrawal of Waiver, Final Rule - The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program*, 84 FR 51,310, September 27, 2019.

15 *California v. Wheeler*, No. 19-1239 (D.C. Cir. Pet'n filed Nov. 15, 2019).

16 State of California, Department of Justice, *Press Release: Attorney General Becerra Files Lawsuit Challenging Trump Administration's Attempt to Trample California's Authority to Maintain Longstanding Clean Car Standards*, September 20, 2019. Available: https://oag.ca.gov/news/press-releases/attorney-general-becerra-files-lawsuit-challenging-trump-administration%E2%80%99s, accessed December 9, 2019.

17 U.S. Environmental Protection Agency and National Highway Traffic Safety Administration, *Final Rule, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks*, 85 FR 24,174, April 30, 2020. Available: https://www.govinfo.gov/content/pkg/FR-2020-04-30/pdf/2020-06967.pdf.

standards increase in stringency by only 1.5 percent per year for each model year over model year 2020 levels.[18] These standards are less stringent than the previous standards, which would have increased fuel efficiency standards by 4 percent per year. On May 27, 2020, a multistate coalition lead by California filed a lawsuit against the USEPA and the NHTSA challenging this ruling.[19] In its lawsuit, the coalition argues that the rollback of the nation's emissions standards is unlawful as the rollbacks "violate the statutory text and congressional mandates they are bound by" and relied on erroneous analysis and unfounded assumptions, among other things.[20] CARB has developed model adjustment factors that account for the SAFE Vehicles Rule.[21,22] The adjustment factors were applied to the estimates of passenger car and light truck emissions used in this analysis which, in turn, were used to estimate fuel consumption.

USEPA and NHTSA established Heavy-Duty National Program fuel efficiency standards for medium- and heavy-duty trucks in 2011. 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 percent over a 2010 baseline, depending on the vehicle type.[23] The Phase 2 heavy-duty truck standards adopted in 2016 cover model years 2021 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over a 2017 baseline, depending on the compliance year and vehicle type.[24]

4.3.3.1.2 State

Title 24 Energy Standards

The California Building Standards Code (California Code of Regulations [CCR], Title 24) contains the implementing regulations for building standards in California. CCR Title 24 Part 1 Chapter 10 and CCR Title 24 Part 6 are known collectively as the California Energy Code. The California Energy Code contains energy efficiency standards for residential and non-residential buildings, which are known as the Building Energy Efficiency Standards.[25] The efficiency standards apply to new construction of residential and non-residential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit process. Local government agencies may adopt and enforce energy standards for new buildings provided these standards meet or exceed those provided in Title 24 guidelines.

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[18] National Highway Traffic Safety Administration, *NHTSA and EPA finalize CAFE and carbon dioxide emissions standards for model years 2021-2026*, March 31, 2020. Available: https://www.nhtsa.gov/corporate-average-fuel-economy/safe, accessed June 4, 2020.

[19] *California v. Wheeler*, No. 20-1167 (D.C. Cir. Pet'n filed May 27, 2020).

[20] State of California, Department of Justice, Press Release: *Attorney General Becerra Files Lawsuit Challenging Trump Administration's Reckless Rollback of America's Clean Car Standards*, May 27, 2020. Available: https://oag.ca.gov/news/press-releases/attorney-general-becerra-files-lawsuit-challenging-trump-administration%E2%80%99s-2.

[21] California Air Resources Board, *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*, November 20, 2019. Available: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf.

[22] California Air Resources Board, *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO_2) Emissions to Account for the SAFE Vehicles Rule Part One and the Final SAFE Rule*, June 26, 2020. Available: https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf.

[23] U.S. Environmental Protection Agency, *Regulatory Announcement: EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles*, August 2011. Available: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100BOT1.PDF?Dockey=P100BOT1.PDF.

[24] U.S. Environmental Protection Agency, Federal Register, Vol. 81, No. 206, *Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles - Phase 2*, October 25, 2016. Available: https://www.govinfo.gov/content/pkg/FR-2016-10-25/pdf/2016-21203.pdf.

[25] California Energy Commission, *2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*, December 2018. Available: https://ww2.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf.

Green Building Standards

Adopted in 2010 and updated annually, the 2013 California Green Building Standards Code (24 CCR Part 11; also referred to as CALGreen)[26] identifies mandatory building measures and voluntary measures that may be incorporated into the design of buildings. Relative to energy usage, CALGreen contains requirements for cool roofs, exterior lighting, bicycle parking, and electric vehicle charging. In addition, CALGreen requires mandatory inspections of energy systems (e.g., heat furnace, air conditioner, and mechanical equipment) for non-residential buildings larger than 10,000 square feet to ensure that all are working at their maximum capacity and according to their design efficiencies.

California Energy Commission Requirements

The California Energy Commission (CEC) is tasked with conducting assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety (PRC Section 25301(a)).

California Renewable Portfolio Standard

California's Renewable Portfolio Standard,[27] established by Senate Bill (SB) 1078 (Chapter 516, Statutes of 2002), requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide a portion of sold electricity from eligible renewable energy resources. SB XI-2, passed in 2011, requires utilities to procure renewable energy products equal to 33 percent of retail sales by December 31, 2020, and also established interim targets of 20 percent by December 31, 2013, and 25 percent by December 31, 2016. The Los Angeles Department of Water and Power (LADWP), the utility provider for the City of Los Angeles, achieved both the three-year average target of 21.6 percent for 2014-2016 and the 25 percent renewable energy milestone in 2016.[28,29] Subsequent legislation further increased the Renewable Portfolio Standard and accelerated its timeframe for implementation. The most recent, SB 100 (Chapter 312, Statutes of 2018), increased the requirement to 50 percent by December 31, 2026, 60 percent by December 31, 2030, and 100 percent by December 31, 2045.

Regulations on Greenhouse Gas Emissions

In addition to the plans, policies, and regulations listed above, California has adopted a wide range of plans, policies, and regulations focused specifically on reducing point- and non-point source GHG emissions. Although such regulations are not specifically focused on reducing energy use, a primary method used to reduce GHG emissions is to reduce fuel input and improve fuel efficiency. As a result, many of these plans, policies, and regulations indirectly reduce energy use and are, therefore, relevant to the analysis of energy.

Such plans, policies, and regulations include various Executive Orders, Assembly Bills, and Senate Bills; and CARB's California Advanced Clean Cars Program, Zero-Emission Airport Shuttle Bus regulation, Zero-Emission Airport Ground Support Equipment measure, and proposed Advanced Clean Trucks Rule.

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26 24 California Code of Regulations, Part 11, California Building Standards Commission, *2019 California Green Building Standards Code (CALGreen)*. Available: https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen.

27 Public Utilities Code, Section 399.11 et seq.

28 California Energy Commission, *Commission Final Report – Renewables Portfolio Standard Verification Results: Los Angeles Department of Water and Power Compliance Period 2 (2014-2016)*, March 2019. Available: https://ww2.energy.ca.gov/portfolio/documents/verification_results/cp02_2014-2016/pous_reports_cmf.php.

29 City of Los Angeles, Los Angeles Department of Water and Power, *LADWP Achieves 25 Percent Renewable Energy Milestone*, March 23, 2017. Available: http://www.ladwpnews.com/ladwp-achieves-25-percent-renewable-energy-milestone-2/.

For more information on these plans, policies, and regulations, refer to Section 4.4, *Greenhouse Gas Emissions*.

4.3.3.1.3 Local

Los Angeles Department of Water and Power Plan

LADWP provides electricity to the City of Los Angeles. In 2017, LADWP adopted the *2017 Power Strategic Long-Term Resource Plan* (SLTRP), an energy resource planning document whose goal is to meet the City's future energy needs at the lowest cost and risk consistent with LADWP's environmental priorities and reliability standards.[30] The SLTRP builds upon the prior Power Integrated Resource Plan (IRP), and includes updated renewable energy requirements, electrical load forecasts, and revenue and rate impacts. The SLTRP outlines adequate electricity supply and transmission capability to meet the needs of its customers within the Los Angeles area, including LAX, through 2050.

City of Los Angeles Green Building Code

In December 2013, the Los Angeles City Council approved Ordinance No. 182,849, which updated Chapter IX of the Los Angeles Municipal Code (LAMC) by amending certain provisions of Article 9 to incorporate by reference portions of the 2013 CALGreen Code and also added other miscellaneous conservation-related measures. The code update (referred to as the Los Angeles Green Building Code [LAGBC]) applies to both residential and non-residential development. The Los Angeles Building Code was most recently updated in December 2019 to reflect the 2019 update to the CALGreen Code.[31] The requirements of the adopted LAGBC apply to new building construction, building renovations, and building additions within the City of Los Angeles. The LAGBC contains a wide range of codes related to energy, including measures to directly and indirectly reduce electricity and fuel consumption.

Sustainable City pLAn and the Green New Deal

In 2014, Mayor Eric Garcetti launched the City of Los Angeles' first-ever Sustainable City Plan ("pLAn"). The pLAn was a comprehensive and actionable policy roadmap intended to prepare the City for an environmentally healthy, economically prosperous, and equitable future for all.[32] Mayor Garcetti released the pLAn in April 2015 along with corresponding Executive Directive No. 7 that incorporated the pLAn into City-wide management.[33] Through the pLAn, Mayor Garcetti committed the City to becoming a national leader in carbon reduction and climate action by prioritizing energy efficiency, among other actions.

In 2019, Mayor Garcetti launched the *Green New Deal* as a comprehensive update to the 2015 pLAn.[34] With respect to energy, the *Green New Deal* goals include acceleration of renewable energy targets, acceleration of energy efficient building targets, and increases in zero emission vehicles (ZEVs), among others.

On February 20, 2020, Los Angeles Mayor Eric Garcetti issued Executive Directive No. 25 to accelerate the Green New Deal and adopt new steps and stronger accountability measures to achieve the City's climate

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30 Los Angeles Department of Water and Power, *2017 Power Strategic Long-Term Resource Plan*, December 2017. Available: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-integratedresourceplanning?_adf.ctrl-state=k9rvf53qz_51&_afrLoop=11262527660851.

31 City of Los Angeles, *Ordinance 186488*, Adopted December 11, 2019, Effective December 27, 2019. Available: https://www.ladbs.org/forms-publications/publications/codes.

32 City of Los Angeles, Office of the Mayor, Mayor Eric Garcetti, *Sustainable City pLAn, Transforming Los Angeles, Environment - Economy - Equity*, April 8, 2015. Available: https://www.dropbox.com/s/e768n31r3k379w7/the-plan.pdf?dl=0.

33 City of Los Angeles, Office of the Mayor, Mayor Eric Garcetti, *Executive Directive No. 7, Subject: Sustainable City pLAn*, April 8, 2015. Available: https://www.lamayor.org/sites/g/files/wph446/f/page/file/ED7-SustainableCitypLAn.pdf.

34 City of Los Angeles, Office of the Mayor, Mayor Eric Garcetti, *L.A.'s Green New Deal: Sustainable City pLAn*, 2019. Available: http://plan.lamayor.org/sites/default/files/pLAn_2019_final.pdf.

objectives.[35] For example, Executive Directive No. 25 includes measures aimed at reducing building energy use and reducing fossil fuel use through transportation improvements.

LAWA Sustainability Plans and Guidelines

LAWA began formally planning for sustainability in 2007, with adoption of a series of plans and policies. Relevant design policies addressing sustainability were later consolidated into LAWA's *Design and Construction Handbook*,[36] which includes sustainable guidelines for all construction projects. Policies in the *Design and Construction Handbook* that relate to energy consumption include use of grid-based power at construction sites, where feasible, and installation of ground power and pre-conditioned air at new aircraft gates and parking positions.

In 2017, LAWA adopted the *Sustainable Design and Construction Policy,* which requires that new building construction and renovation projects at LAX be designed to Leadership in Energy and Environmental Design® (LEED®) Silver certification or better unless exempted by LAWA's LEED® Review Committee.[37] The policy also identifies criteria for determining policy applicability and specifies sustainability requirements for airport-related construction/non-building projects that are not able to achieve, or are exempt from, LEED®. To complement the *Sustainable Design and Construction Policy*, LAWA developed the *Los Angeles International Airport Sustainable Design and Construction Requirements*.[38] This document provides design and construction requirements for new construction and major renovation projects that are not able to achieve LEED® Silver certification or better, nor LAGBC Tier 1 or better, based on project size and scope.

Also in 2017, LAWA updated the *LAX Alternative Fuel Vehicle Requirement Program*,[39] which requires, with certain exemptions, that all on-road vehicles with a gross vehicle weight rating of 8,500 pounds or more must be alternative fuel or other low emission fuel vehicles, with an engine no older than 13 years old. This requirement applies to trucks, shuttles, passenger vans, and buses used in operation at LAX, and would apply to covered vehicles used at Concourse 0 and Terminal 9. The LAX Alternative Fuel Vehicle Requirement Program does not apply to construction equipment or vehicles.

In December 2019, LAWA entered into a voluntary Memorandum of Understanding (MOU) with the SCAQMD under which LAWA developed Air Quality Improvement Measures (AQIM) to further reduce air pollutant emissions from non-aircraft sources operating at LAX.[40] One component identified in the MOU is the enhanced GSE Emission Reduction Policy,[41] with new GSE airport-wide emission factor targets to be achieved at rates faster than are required under existing off-road equipment standards by 2023 and 2031. Further, these new airport-wide emission factor targets have been formally adopted by the Los Angeles Board of Airport Commissioners as an update to the existing GSE policy and would apply to all GSE used at Concourse 0 and Terminal 9. Although these measures are primarily designed to control nitrogen oxides

35 City of Los Angeles, Office of the Mayor, Mayor Eric Garcetti, *Executive Directive No. 25, Subject: L.A.'s Green New Deal: Leading by Example*, February 10, 2020. Available: https://www.lamayor.org/sites/g/files/wph446/f/page/file/20200210ExecutiveDirective25.pdf.

36 City of Los Angeles, Los Angeles World Airports, *2020 Design and Construction Handbook (DCH), Version 1.0,* June 30, 2020. Available: https://www.lawa.org/en/lawa-businesses/lawa-documents-and-guidelines/lawa-design-and-construction-handbook.

37 City of Los Angeles, Los Angeles World Airports, *LAWA Sustainable Design and Construction Policy*, September 7, 2017. Available: https://www.lawa.org/-/media/lawa-web/tenants411/file/lawa-sustainable-design-and-construction-policy.ashx.

38 City of Los Angeles, Los Angeles World Airports, *Los Angeles International Airport Sustainable Design & Construction Requirements*, August 4, 2017. Available: https://www.lawa.org/-/media/lawa-web/tenants411/file/sustainable-design-construction-requirements.ashx.

39 City of Los Angeles, Los Angeles World Airports, *Alternative Fuel Vehicle Requirement Program (LAX Only)*, October 16, 2017. Available: https://www.lawa.org/-/media/lawa-web/environment/files/altfuelvehreq.ashx.

40 *Memorandum of Understanding between the South Coast Air Quality Management District and the City of Los Angeles Department of Airports*, December 2019. Available: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/mou-la-department-of-airports.pdf?sfvrsn=6.

41 The MOU enhances the LAX GSE Emissions Reduction Policy originally adopted in 2015, which was the first policy of its kind in the nation. The enhanced policy has more stringent emission factor targets and extends to policy requirements to 2031.

(NO_X) emissions, they would also reduce consumption of fossil fuels. For more information on this MOU, refer to Section 4.1.1, *Air Quality*.

In 2019, LAWA adopted a *Sustainability Action Plan* to address climate change and ensure a healthy, prosperous future for the region.[42] The *Sustainability Action Plan* contains goals and implementation actions to improve energy efficiency, increase renewable energy dependence, improve energy resilience, and demonstrate leadership in energy sustainability.

4.3.3.2 Environmental Setting

4.3.3.2.1 Electricity

Regional Electricity Consumption and Supply

As discussed under Section 4.3.3.1, *Regulatory Setting*, electrical power within the City of Los Angeles (including LAX) is supplied by LADWP, which serves approximately 3.8 million people.[43] Its service area covers a 465-square-mile area in Los Angeles and much of the Eastern Sierra Nevada Mountain range in Owens Valley. LADWP's annual sales exceed 23 million megawatt-hours (MWh) and it is the third largest California electric utility in terms of consumption. LADWP obtains electricity from various generating sources that utilize coal, nuclear, natural gas, hydroelectric, and renewable resources to generate power.

LADWP reports on existing and projected electricity demand in the SLTRP. In 2017, the LADWP service area used approximately 26,010,000 MWh of electricity. LADWP's load forecast in the SLTRP indicates that the power demand within the service area will be approximately 24,738,000 MWh in 2030. LADWP experienced an all-time net energy-for-load peak demand of 6,431 megawatts (MW) on August 31, 2017, and an instantaneous peak demand of 6,555 MW on September 1, 2017. LADWP's projected peak demand growth through 2027 is estimated to be 0.4 percent, or approximately 30 MW per year. By 2027-2028, LADWP projects a Base Case Peak Demand of 6,182 MW. LADWP's installed net dependable generation capacity is 7,531 MW.[44]

LADWP has committed to increasing the share of renewable energy and promoting increased energy efficiency and conservation by its customers. Diversification of LADWP's energy portfolio, increasing electricity from renewable energy, LADWP's demand response program, and new customer energy efficiency measures will help meet all of the City's needs through the SLTRP's planning horizon of 2050. LADWP has adopted a number of initiatives to increase its use of renewable energy resources to support the goals of reducing GHG emissions, reducing reliance on fossil fuels, meeting state mandates requiring all utilities to provide 60 percent of their energy from renewable resources by 2030, and meeting the Los Angeles City Council's directive to explore pathways for LADWP to achieve a 100 percent renewable energy portfolio.

LAX Baseline Electricity Consumption and Supply

Electricity is primarily used at LAX for lighting, cooling, and equipment operation in buildings. Electricity is also used for airfield lighting and operations and indirectly in the delivery, treatment, and distribution of

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42 City of Los Angeles, Los Angeles World Airports, *LAWA Sustainability Action Plan*, 2019. Available: https://cloud1lawa.app.box.com/s/63i2teszgnld5aws68xbou6yc0inl5rp.

43 Los Angeles Department of Water and Power, *2017 Power Strategic Long-Term Resource Plan*, December 2017. Available: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-integratedresourceplanning?_adf.ctrl-state=k9rvf53qz_51&_afrLoop=11262527660851.

44 Los Angeles Department of Water and Power, *2017 Power Strategic Long-Term Resource Plan*, December 2017. Available: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-integratedresourceplanning?_adf.ctrl-state=k9rvf53qz_51&_afrLoop=11262527660851.

water used at the airport and the treatment of wastewater. Total electricity consumption at LAX in 2018 was approximately 184,727 MWh.[45]

LADWP supplies electrical power to the Project area primarily through Receiving Station "N" (RS-N), which is located on the north side of West Florence Avenue at Isis Avenue, approximately one-half mile north of the Project site. Two 138 kilovolt (kV) subterranean transmission lines along Aviation Boulevard connect RS-N with the Scattergood Generating Station in Playa del Rey. Overhead and underground distribution lines run along rights-of-way throughout the area from RS-N to distribution points, including Distribution Station 111 (DS-111), located on the east side of Vicksburg Avenue between W. 96th and W. 98th Streets. DS-111 provides secondary power to the Project area through high-voltage feeder cables within conduit banks underneath rights-of-way.

LAWA is constructing a new electrical Receiving Station "X" (RS-X) and associated electrical infrastructure improvements in order to address persistent power reliability and capacity issues at LAX. The new RS-X will be located in the northwest corner of LAX property, near the intersection of Westchester Parkway and Pershing Drive, and will accommodate the electrical demand of future infrastructure projects at LAX, including the proposed Airfield and Terminal Modernization Project. The new RS-X will be a purpose-built structure, designed to accommodate 120 megavolt amperes (MVA) of redundant capacity. Construction of the new RS-X will commence in August 2020 and be completed in mid-2023.

In 2015, LAWA completed construction of a new highly energy-efficient Central Utility Plant (CUP) to replace LAX's 50-year old CUP. The new CUP became fully operational in September 2015. The new CUP utilizes co-generation technology to produce and deliver heating and cooling to existing terminals and other buildings within the Central Terminal Area (CTA). Natural gas powers two combustion turbine generators to generate electricity, which is used to power multiple chillers. A pair of steam generators captures and reuses the heat exhaust from the combustion for heating. The new CUP is 25 percent more energy efficient and more environmentally-friendly than the former facility. The new CUP is considered the first sustainable utility plant at a U.S. airport.[46]

4.3.3.2.2 Natural Gas

Regional Natural Gas Consumption and Supply

The Southern California Gas Company (SoCalGas), a subsidiary of Sempra Energy, supplies natural gas to nearly all of Southern and Central California, including the City of Los Angeles. In 2017, SoCalGas delivered approximately 2,504 million cubic feet (MMcf) of natural gas per day.[47] SoCalGas projects total gas demand to decline at an annual rate of 0.74 percent from 2018 to 2035. The decline in demand is due to modest economic growth, mandated energy efficiency standards and programs, Title 24 Codes and Standards, renewable electricity goals, and conservation savings linked to Advanced Metering Infrastructure.

SoCalGas obtains the majority of its natural gas from out-of-state sources, with roughly 97 percent of delivered natural gas sourced from out-of-state. Projections indicate that SoCalGas delivery requirements in 2025 and 2035 will be approximately 2,422 MMcf per day and 2,313 MMcf per day, respectively. SoCalGas' projected supply capacity in 2025 and 2035 is 3,775 MMcf per day for both years. These projections indicate that the projected natural gas supplies will be adequate to meet the projected demand within the SoCalGas service area in 2025 and 2035.

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[45] City of Los Angeles, Los Angeles World Airports, *Los Angeles World Airports 2018 Sustainability Report*. Available: https://cloud1lawa.app.box.com/v/2018-Sustainability-Report.

[46] City of Los Angeles, Los Angeles World Airports, *Los Angeles World Airports Sustainability Report 2015.* Available: https://www.lawa.org/lawa-sustainability/resources.

[47] The California Gas and Electric Utilities, *2018 California Gas Report*, 2018. Available: https://www.socalgas.com/regulatory/documents/cgr/2018_California_Gas_Report.pdf.

LAX Baseline Natural Gas Consumption and Supply

Natural gas is primarily used at LAX for electricity generation, space heating, food preparation, and maintenance activities. Natural gas is also consumed by some medium- and heavy-duty GSE and is used at the CUP. Total natural gas consumption at LAX in 2018 was approximately 493 MMcf.[48]

4.3.3.2.3 Mobile Source and Transportation-Related Fuels

A variety of mobile source and transportation-related fuels are used at LAX: Jet A for aircraft and gasoline, diesel, and alternative fuels for automobiles, trucks, APUs, and other GSE. In addition, passenger vehicle trips associated with the airport require fuel, mainly gasoline and diesel.

Supplies of Jet A, gasoline, diesel, and alternative fuels are dependent on energy reserves, both domestic and international. Fuels used for ground transportation vehicles are delivered, stored, and consumed in a distributed manner, as ground transportations functions are performed by a range of airport and non-airport vehicles. Aviation jet fuel at LAX is managed and supplied by LAXFUEL Corporation. LAXFUEL dispensed approximately 2 trillion gallons of aviation jet fuel to aircraft at LAX in 2018.[49]

Table 4.3-1 shows the existing estimated annual fuel consumption at LAX in 2018. The estimated fuel consumption was derived based on outputs from the transportation analysis presented in Section 4.8, *Transportation,* and from the GHG emissions analysis presented in Section 4.4, *Greenhouse Gas Emissions*.

Table 4.3-1
Existing Fuel Consumption and Energy Use (2018)

Source	Fuel Type	Fuel Consumption (gallons per year)	Total Energy Use (MMBtu)[1]
Aircraft	Jet A	95,068,497	12,834,247
APUs	Jet A	4,610,978	622,482
GSE	Diesel	1,008,728	138,580
	Gasoline	1,407,398	174,986
Motor Vehicles[2]	Diesel	11,137,876	1,530,132
	Gasoline	111,237,785	13,830,565

Source: **Appendix C** of this EIR.

Notes:

[1] Total energy use is the fuel use converted to million British Thermal Units (MMBtu) for each year based on conversion factors published in the U.S. Energy Information Administration, *Monthly Energy Review*, Appendix A01, February 2020.

[2] Motor vehicles source includes all landside motor vehicle traffic, including LAX fleet vehicles, LAX employee vehicles, LAX passenger vehicles, shuttles, taxis, TNCs, and all other on-road vehicles. Refer to Section 4.8, *Transportation,* for further analysis of vehicle traffic.

4.3.4 Thresholds of Significance

A significant energy use impact would occur if the proposed Project would:

Threshold 4.3-1 Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation.

[48] City of Los Angeles, Los Angeles World Airports, *Los Angeles World Airports 2018 Sustainability Report*. Available: https://cloud1lawa.app.box.com/v/2018-Sustainability-Report.

[49] **Appendix C** of this EIR.

Threshold 4.3-2 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

These thresholds are from Appendix G of the State CEQA Guidelines.

4.3.5 Project Impacts

4.3.5.1 Impact 4.3-1

Summary Conclusion for Impact 4.3-1: The proposed Project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. As such, this would be a *less than significant impact* for construction and operations.

4.3.5.1.1 Construction

Electricity

Electricity would be consumed during Project construction in association with electric power tools/equipment and construction offices/trailers/parking area lighting. Electrically-powered construction equipment is not common and is typically limited to small devices and tools. Electricity consumption associated with Project construction would be relatively small. As required by state and local regulations and policies, electricity supplied to the proposed Project would comply with California's Renewable Portfolio Standard. Moreover, in accordance with LAWA's *Design and Construction Handbook*,[50] every effort would be made to use grid-based electric power at the construction sites, where feasible. Grid-based power would be from a direct hookup or a tie-in to electricity from power poles. The proposed Project would be constructed in accordance with state regulations for renewable energy and energy efficiency, including Title 24 Building Energy Efficiency Standards and CALGreen. Construction of the proposed Project would also proceed in compliance with local regulations that include requirements for renewable energy and energy efficiency, including the LAMC and the LAGBC. With adherence to these codes and with compliance with LAWA's *Design and Construction Handbook*, the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of electricity.

Natural Gas

Natural gas would be consumed during Project construction by liquefied or compressed natural gas in some vehicles and construction equipment. Use of natural gas during proposed Project construction would be relatively small. The proposed Project would be constructed in accordance with state regulations for renewable energy and energy efficiency, including Title 24 Building Energy Efficiency Standards and CALGreen. Construction of the proposed Project would also proceed in compliance with local regulations that include requirements for renewable energy and energy efficiency, including the LAMC, the LAGBC, LAWA's *Design and Construction Handbook*, and the *LAX Alternative Fuel Vehicle Requirement Program*. As a result, construction of the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of natural gas.

Mobile Source and Transportation-Related Fuels

Vehicle Trips and Construction Equipment Usage

Mobile source and transportation-related fuels would be consumed during Project construction by construction equipment and construction worker, vendor, and haul trips to and from construction sites. Vehicle and transportation-related fuels would primarily include diesel and gasoline. Although some of

50 City of Los Angeles, Los Angeles World Airports, *2020 Design and Construction Handbook (DCH), Version 1.0,* June 30, 2020. Available: https://www.lawa.org/en/lawa-businesses/lawa-documents-and-guidelines/lawa-design-and-construction-handbook.

the on-road haul trucks may use alternative fuels, all vehicles and construction equipment were assumed to be fueled by gasoline or diesel for the purposes of calculating fuel demand, as no methodology exists for estimating the percentage of alternative-fueled vehicles that would be associated with Project construction.[51]

The methodology for calculating fuel consumption during construction is detailed in Section 4.3.2.2.1. Total construction-related fuel consumption across all construction phases is presented in **Table 4.3-2**. Data regarding construction-related fuel consumption are provided in **Appendix C** of this EIR.

Table 4.3-2
Construction Period Fuel Consumption and Energy Use

Year	Diesel Fuel (gallons)[1]	Gasoline Fuel (gallons)[1]	Total Energy Use (MMBtu)[2]
2021	295,824	76,982	50,681
2022	672,478	295,409	130,222
2023	1,079,595	677,180	234,361
2024	862,413	720,452	209,596
2025	507,566	458,685	127,679
2026	189,243	164,933	46,845
2027	100,569	90,604	25,263
2028	139	284	55
Total[3]	**3,707,826**	**2,484,529**	**824,702**

Source: **Appendix C** of this EIR.

Notes:

1 Fuel estimates derived from the construction GHG emissions analysis using U.S. Environmental Protection Agency, *Emission Factors for Greenhouse Gas Inventories*, March 9, 2018.

2 Total energy use is the combined energy of the estimated diesel fuel use and gasoline fuel use converted to MMBtu for each year based on conversion factors published in the U.S. Energy Information Administration, *Monthly Energy Review*, Appendix A01, February 2020.

3 Numbers may not add due to rounding.

As shown in Table 4.3-2, diesel and gasoline fuel usage is estimated to increase during the first few years of construction, peak roughly four years into the construction period, and then decline toward the end of the construction period. Construction of the proposed Project would consume an estimated 3,707,826 gallons of diesel fuel and 2,484,529 gallons of gasoline across all construction phases, representing a total energy use of approximately 824,702 MMBtu. All construction activities were assumed to use diesel or gasoline fuels.

Construction activities for the proposed Project would comply with federal and state vehicle fuel efficiency standards. The proposed Project's construction activities would also comply with LAWA's *Sustainable Design and Construction Policy* and the *Los Angeles International Airport Sustainable Design and Construction Requirements*, as applicable. With compliance with federal and state standards and LAWA sustainability requirements, construction of the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of mobile source and transportation-related fuels.

Operational Fuel Demand During Construction

As described in Chapter 2, *Description of the Proposed Project*, construction of the airfield improvements would require the temporary closure of Runway 6L-24R for approximately 4.5 months in 2023. During this

51 This assumption also provides for a conservative approach for estimating air pollutant emissions.

time, aircraft operations at LAX would occur on three runways (i.e., one runway in the north airfield and two runways in the south airfield). The temporary closure of the runway would increase the distances that aircraft would taxi, as some aircraft activity that would normally occur on Runway 6L-24R (i.e., the outboard runway) would be shifted to Runway 6R-24L (i.e., the inboard runway). Moreover, three-runway operations would be less efficient, resulting in a temporary increase in aircraft taxi-idle times.

There would be a similar temporary closure of Runway 6R-24L in 2024 of the same duration (i.e., 4.5 months). This closure would shift some aircraft activity from Runway 6R-24L to Runway 6L-24R. Because Runway 6L-24R is closer to the terminals, some taxi distances would decrease as compared to normal operations. However, as noted above, three-runway operations would be less efficient, which would increase aircraft taxi-idle times.

During these interim periods of temporary runway closures, the increase in taxiing distance and increase in aircraft taxi-idle times would result in an increase in consumption of Jet A, equating to a temporary increase in energy usage. Because temporary runway closures would be necessary to complete the Project in a safe manner, the corresponding increase in energy usage would not be wasteful, inefficient, or unnecessary.

Summary

As described above, construction of the proposed Project would require the use of electricity, natural gas, and mobile source and transportation-related fuels. Electricity and natural gas consumption from construction activities would be relatively minor because neither electricity nor natural gas are common energy sources for powering construction equipment and vehicles. As required by state and local regulations and policies, electricity supplied to the proposed Project would comply with California's Renewable Portfolio Standard.

The majority of energy use during the construction period would consist of diesel and gasoline fuel used to power construction equipment and vehicles and a temporary increase in Jet A use during the temporary runway closures. The proposed Project's construction activities would comply with federal and state regulations pertaining to energy efficiency, including those related to fuel efficiency. In addition, construction activities would comply with LAWA's *Design and Construction Handbook, Sustainable Design and Construction Policy*, and *Sustainable Design and Construction Requirements*. Therefore, the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources during the construction period and the impact to energy resources would be ***less than significant***.

4.3.5.1.2 Operations

Electricity

Direct Impacts

The proposed Project would consume electricity during operations, primarily from powering the building systems for Concourse 0 and Terminal 9, providing electrified gates, and providing lighting the Terminal 9 parking facility, as well as hookups for plug-in hybrid and ZEV for in accordance with the Los Angeles Building Code. There would also be electricity consumption associated with illuminated taxiway signage and pathway markers for the new additional exits at Runway 6L-24R and the westerly extension of Taxiway D.

As discussed in Section 4.3.2, electricity demand associated with Concourse 0 and Terminal 9 was calculated based on historic electricity consumption data, LAX-specific electricity demand factors, and the square footage of the proposed new concourse and terminal buildings. Electricity demand for the Terminal 9 parking facility was estimated using CalEEMod factors. Electricity consumption related to the airfield improvements would be negligible and was not calculated. **Table 4.3-3** shows the Concourse 0 and Terminal 9 components, the estimated electricity demand for each component based on the demand factors, and the total operational electricity use for Concourse 0 and Terminal 9.

Table 4.3-3
Operational Electricity Consumption and Energy Use for Concourse 0 and Terminal 9

Component	Floor Area (square feet)[1]	Demand Factor (kWh per square foot per year)[2]	Estimated Electricity Demand (kWh per year)	Total Energy Use (MMBtu per year)[3]
Concourse 0	1,275,600	13.60	17,348,160	59,194
Terminal 9	1,413,600		19,224,960	65,598
Terminal 9 Parking Facility	700,000	6.74	4,718,000	16,098
Total			**41,291,120**	**140,890**

Source: CDM Smith, July 2020.

Notes:

1 Floor area estimate includes a 20 percent increase to the planned floor area to account for design refinement (discussed in Chapter 2, *Description of the Proposed Project*). In order to provide a conservative estimate of electricity consumption, the floor area for the Terminal 9 parking facility assumes that the facility would be a multi-level parking garage. If the facility is a surface parking lot, electricity consumption would be lower.

2 For Concourse 0 and Terminal 9, an LAX-specific demand factor was used based on historic total electricity consumption at the Tom Bradley International Terminal averaged over calendar years 2016 and 2018. For the Terminal 9 parking facility, the CalEEMod Appendix D demand factor for enclosed parking structure with elevator was used. Energy consumption associated with the airfield improvements and the Terminal 9 APM Station, which would only be a boarding/deboarding platform, would be negligible.

3 Total energy use is the energy of the estimated electricity use converted to MMBtu. The value of 3,412 Btu per kilowatt-hour (kWh) is a constant; it is used as the thermal conversion factor for electricity retail sales and electricity imports and exports.

As shown in Table 4.3-3, operation of Concourse 0 and Terminal 9, including the Terminal 9 parking facility, would consume approximately 41,291,120 kWh of electricity per year. This would represent an annual energy use of approximately 140,890 MMBtu per year.

As noted above, electricity demand associated with Concourse 0 and Terminal 9 was calculated using an LAX-specific demand factor. Although this methodology provides the most accurate estimate of future terminal electricity consumption available, the demand factor is based on historic consumption data from the Tom Bradley International Terminal, which was originally constructed in 1984 and upgraded over the years, including major improvements to Bradley West in 2016. As a result, the proposed Concourse 0 and Terminal 9 would likely be more energy efficient than reflected by the demand factor used in this analysis. Moreover, the energy demand identified in Table 4.3-3 does not account for reductions in electricity associated with the removal of buildings that would be required to be demolished as part of the proposed Project or for energy efficiency measures that may be required to obtain LEED® Silver certification. For these reasons, total energy demand associated with electricity consumption would likely be lower than estimated.

In accordance with LAWA's *Sustainable Design and Construction Policy*, Concourse 0 and Terminal 9 would be constructed with energy-efficiency measures required to meet LEED® Silver certification requirements or better. As part of this certification, the buildings would be required to undergo fundamental commissioning and verification, be designed to consume less energy than conventional buildings,[52] and

52 Conventional building energy consumption is calculated based on procedures identified in the LEED® rating system framework; a conventional building represents a typical building constructed without energy-efficient measures and serves as a baseline against which to measure energy-efficiency improvements.

be constructed with building-level energy metering.[53] In addition, as identified in Chapter 2, *Description of the Proposed Project*, Concourse 0 and Terminal 9 would be equipped with smart energy meters that are intended to better manage energy consumption. These requirements would ensure that the facilities would not result in wasteful, inefficient, or unnecessary consumption of electricity during operations.

Indirect Impacts

LAWA does not directly consume electricity to supply, treat, or distribute water, nor to convey or treat wastewater; however, the proposed Project would increase the water and wastewater treatment demand compared to baseline conditions, thereby indirectly increasing the electricity consumed for these activities. As noted in Section 4.3.2.1, electricity demand associated with water supply and wastewater treatment was calculated using energy intensity factors from CalEEMod. Resulting electricity demand associated with water supply and wastewater treatment is provided in **Table 4.3-4**.

Table 4.3-4
Electricity Consumption Associated with Operational Water Supply and Wastewater Treatment

Source	Estimated Project Demand (thousand gallons per year)	Supply Demand Factor (kWh per thousand gallons per year)[2]	Treatment Demand Factor (kWh per thousand gallons per year)[2]	Distribution Demand Factor (kWh per thousand gallons per year)[2]	Estimated Electricity Demand (kWh per year)	Total Energy Use (MMBtu per year)[3]
Water	30,955.8	5.922	0.111	1.272	226,132	772
Wastewater Treatment[1]	30,955.8	n/a	1.911	n/a	59,157	201
Total					**285,289**	**973**

Sources: **Appendix H** of this EIR; CDM Smith, July 2020.
Notes:
1 For the purposes of this analysis, the wastewater generation volume was assumed to equal the water demand volume.
2 Demand factors are derived from CalEEMod, July 2020.
3 Total energy use is the energy of the estimated electricity use converted to MMBtu. The value of 3,412 Btu per kWh is a constant; it is used as the thermal conversion factor for electricity retail sales and electricity imports and exports.

As discussed in Section 4.9, *Utilities*, the proposed Project is estimated to increase net water demand by 95 acre-feet or 30,955 thousand gallons per year in 2028 and increase wastewater generation by the same amount. The increase in estimated water and wastewater treatment demand associated with the proposed Project would result in indirect electricity consumption of approximately 285,289 kWh per year, equivalent to approximately 973 MMBtu per year. The water conservation measures described in Section 4.9, *Utilities*, would reduce the water supply and wastewater treatment demand, thereby reducing the accompanying indirect electricity demand. Moreover, as noted above, as required by state and local regulations and policies, electricity use related to water use and wastewater treatment would comply with California's Renewable Portfolio Standard. For these reasons, with respect to energy demand related to the supply, treatment, and distribution of water and treatment of wastewater, the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of electricity.

Natural Gas

The proposed Project would consume natural gas during operations, primarily related to water heaters, appliances, and natural gas-fueled boilers, which would provide heating and hot water to Concourse 0

53 U.S. Green Building Council, *LEED v4 for Building Design and Construction*, July 25, 2019. Available: https://www.usgbc.org/sites/default/files/LEED%20v4%20BDC_07.25.19_current.pdf.

and Terminal 9.[54] As discussed in Section 4.3.2, natural gas demand associated with Concourse 0 and Terminal 9 was calculated based on historic natural gas consumption data, LAX-specific natural gas demand factors, and the square footage of the proposed new concourse and terminal buildings. **Table 4.3-5** shows the Concourse 0 and Terminal 9 components, the estimated natural gas demand for each component based on the demand factors (in standard cubic feet [scf]), and the total operational natural gas use for Concourse 0 and Terminal 9.

Table 4.3-5
Operational Natural Gas Consumption and Energy Use for Concourse 0 and Terminal 9

Component	Floor Area (square feet)[1]	Demand Factor (scf per square foot per year)[2]	Estimated Natural Gas Demand (scf per year)	Total Energy Use (MMBtu per year)[3]
Concourse 0	1,275,600	3.4	4,337,040	4,493
Terminal 9	1,413,600		4,806,240	4,979
Total			**9,143,280**	**9,472**

Source: CDM Smith, July 2020.

Notes:

1 Floor area estimate includes a 20 percent increase to the planned floor area to account for design refinement (discussed in Chapter 2, *Description of the Proposed Project*).

2 An LAX-specific demand factor was used based on historic total natural gas consumption at the Tom Bradley International Terminal averaged over calendar years 2016 and 2018.

3 Total energy use is the combined energy of the estimated diesel use and gasoline use converted to MMBtu for each year based on *Carbon Dioxide Emissions Coefficients* published by the U.S. Energy Information Administration. Available: https://www.eia.gov/environment/emissions/co2_vol_mass.php.

As shown in Table 4.3-5, operation of Concourse 0 and Terminal 9 would consume approximately 9,143,280 scf of natural gas per year for operations. This would represent an annual energy use of approximately 9,472 MMBtu per year.

Similar to the estimation of electricity demand, the methodology used an LAX-specific demand factor from Tom Bradley International Terminal and did not account for reduction in natural gas use associated with the removal of buildings that would be required to be demolished as part of the proposed Project. Moreover, the natural gas demand estimated in Table 4.3-5 does not account for energy efficiency measures that may be required to obtain LEED® Silver certification. Therefore, total energy demand associated with natural gas consumption at Concourse 0 and Terminal 9 would likely be lower than estimated.

In accordance with LAWA's *Sustainable Design and Construction Policy*, Concourse 0 and Terminal 9 would be constructed with energy-efficiency measures required to meet LEED® Silver certification requirements or better. This requirement would ensure that the facilities would not result in wasteful, inefficient, or unnecessary consumption of natural gas during operations.

Mobile Source and Transportation-Related Fuels

The proposed Project would consume mobile source and transportation-related fuels during operations, primarily by aircraft, APUs, GSE, and automobiles and trucks. As discussed in Section 4.3.2, mobile source and transportation-related fuel usage was derived from the estimated operational GHG emissions discussed and analyzed in Section 4.4, *Greenhouse Gas Emissions*. **Table 4.3-6** shows the estimated operational fuel consumption for future year 2028, the change in fuel consumption compared to existing

54 The CUP does not have capacity to provide heating and cooling to Concourse 0 and Terminal 9. Heating and cooling would be provided by natural gas-fueled boilers.

conditions, and the total energy use for the proposed Project. The estimated fuel consumption was derived by applying USEPA carbon content factors to the estimated GHG emissions for each year for the corresponding source fuel type.[55] The total energy use was calculated based on the estimated gallons of fuel that would be consumed.

Table 4.3-6
Operational Vehicle and Transportation-Related Fuel Consumption and Energy Use

Year	Source	Fuel Type	Estimated Fuel Consumption (gallons per year)	Fuel Consumption Change Compared to Baseline (2018) Conditions (gallons per year)	Total Change in Energy Use (MMBtu per year)[2]
2028	Aircraft	Jet A	114,094,384	19,025,887	2,568,495
	APUs	Jet A	4,885,534	274,556	37,065
	GSE	Diesel	660,410	(348,318)	(47,852)
		Gasoline	964,874	(442,524)	(55,020)
	Motor Vehicles[1]	Diesel	7,647,825	(3,490,051)	(479,467)
		Gasoline	103,281,882	(7,955,903)	(989,184)

Source: CDM Smith, July 2020.

Notes:

1 Motor vehicles source includes all landside motor vehicle traffic, including LAX fleet vehicles, LAX employee vehicles, LAX passenger vehicles, shuttles, taxis, TNCs and all other on-road vehicles. Refer to Section 4.8, *Transportation,* for further analysis of vehicle traffic.

2 Total energy use is the combined energy of the estimated fuel use converted to MMBtu based on conversion factors published in the U.S. Energy Information Administration, *Monthly Energy Review*, Appendix A01, February 2020.

As shown in Table 4.3-6, in 2028, aircraft would consume an estimated 114,094,384 gallons of Jet A, APUs would consume an estimated 4,885,534 gallons of Jet A, GSE would consume an estimated 660,410 gallons of diesel fuel and 964,874 gallons of gasoline, and motor vehicles would consume an estimated 7,647,825 gallons of diesel fuel and 103,281,882 gallons of gasoline. Compared to baseline conditions in 2018, 2028 conditions would see reductions in diesel and gasoline consumption from both GSE and motor vehicles and an increase in Jet A consumption from both aircraft and APUs.

The reduction in estimated diesel and gasoline fuel consumption from motor vehicles between 2018 and 2028 is largely attributable to continued trends in fuel efficiency driven by market factors and regulations, overall improvements in engine efficiency, and increased reliance on electric power. In addition, the *LAX Alternative Fuel Vehicle Requirement Program* would reduce fossil fuel consumption from airport-related light/medium-duty vehicles and above, although these benefits are not reflected in the calculations. The reduction in diesel and gasoline fuel consumption from GSE is largely attributable to implementation of the enhanced GSE Emission Reduction Policy, which requires reductions in GSE-related emissions at LAX and is expected to reduce GSE-related fossil fuel consumption.

Table 4.3-6 shows an anticipated increase in the amount of Jet A that would be consumed in 2028. As described in Chapter 2, *Description of the Proposed Project,* passenger activity levels and aircraft operations in 2028 are projected to occur with or without the Project. Therefore, this increase is not attributable to the proposed Project; rather, the increase in Jet A consumption would occur in 2028 regardless of whether the proposed Project is constructed.

55 U.S. Environmental Protection Agency, *Emission Factors for Greenhouse Gas Inventories*, March 9, 2018. Available: https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf.

The estimate of future mobile source and transportation-related fuel consumption associated with the proposed Project is subject to a wide range of potential factors that may influence the actual fuel future consumption statistics. Nationwide, and particularly in California, vehicles are transitioning to electric and alternative fuel technologies; alternative fuel, plug-in electric, and fully electric vehicles are readily available to both the consumer retail and commercial and industrial fleet markets. As discussed in Section 4.3.3.1, the City of Los Angeles and LAWA have requirements and measures in place that are anticipated to reduce mobile source and transportation-related fuel consumption. Therefore, the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of mobile source and transportation-related fuels.

Summary

As described above, during operations, the proposed Project would require the use of electricity, natural gas, and mobile source and transportation-related fuels. Electricity and natural gas consumption would result primarily from the operation of Concourse 0 and Terminal 9. As required by state and local regulations and policies, electricity supplied to the proposed Project would comply with California's Renewable Portfolio Standard. Compliance with state and local building codes pertaining to energy efficiency, including Title 24, the California Building Energy Efficiency Standards, CALGreen, and the City of Los Angeles Green Building Code; adherence to LAWA policies, including the *Sustainable Design and Construction Policy*, which would require Concourse 0 and Terminal 9 to achieve LEED® Silver certification or better; and installation of smart energy meters would reduce the estimated overall electricity and natural gas demand.

Mobile source and transportation-related fuels consumption would result primarily from fuel used to power aircraft, APUs, GSE, and motor vehicles. Existing and anticipated fuel efficiency standards and LAWA policies, including the *LAX Alternative Fuel Vehicle Requirement Program*, and the enhanced GSE Emission Reduction Policy would reduce the demand for diesel and gasoline during Project operations. In addition, the proposed Project would include features that would encourage the use of alternative fuel vehicles by passengers, thereby reducing fuel consumption. Specifically, the proposed Terminal 9 parking facility would be constructed in compliance with the Los Angeles Building Code and the incorporated portions of CALGreen, which include specific requirements for the accommodation of electric and alternative fuel vehicles. Concourse 0 and Terminal 9 would be constructed to LEED® Silver or better certification standards, which may require additional parking accommodations.

Although the proposed Project would increase overall energy use, LAWA's existing sustainability policy and project features would reduce energy use in the form of building energy efficiency improvements and reductions in mobile source and transportation-based fuel consumption. The proposed Project's operational activities would comply with federal, state, and local regulations for energy efficiency. In addition, electricity supplied to the proposed Project would be required to comply with California's Renewable Portfolio Standard.

As discussed in Section 4.3.3.1, measures to improve air quality or reduce GHG emissions also often have an added benefit of reducing energy consumption. Several of the mitigation measures described in other sections of this EIR (Section 4.1.1, *Air Quality*, and Section 4.8, *Transportation)* would have supplemental benefits of reducing the proposed Project's energy consumption. Although the proposed Project would require energy use, it would not result in wasteful, inefficient, or unnecessary consumption of energy resources; therefore, the impact would be ***less than significant***.

4.3.5.1.3 Mitigation Measures

Because the proposed Project would result in a ***less than significant impact*** related to the potential for the Project to result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, no mitigation is required for construction or operations. However, it should be noted that mitigation measures that are recommended to reduce air pollutant emissions, GHG emissions, and transportation impacts would also reduce energy consumption. The following mitigation measures would have a positive effect on energy efficiency, or directly or indirectly reduce energy consumption.

As described in Section 4.1.1, *Air Quality,* and/or Section 4.4, *Greenhouse Gas Emissions*:

- MM-AQ/GHG (ATMP)-1. Rock Crushing Operations
- MM-AQ/GHG (ATMP)-2. Use of Renewable Diesel Fuel
- MM-AQ/GHG (ATMP)-3. Parking Cool Roof
- MM-AQ/GHG (ATMP)-4. EV Charging Infrastructure
- MM-AQ/GHG (ATMP)-5. Electric Vehicle Purchasing
- MM-AQ/GHG (ATMP)-6. Solar Energy Production

As described in Section 4.8, *Transportation*:

- MM-T (ATMP)-1. VMT Reduction Program

4.3.5.1.4 Significance of Impact After Mitigation

As indicated above, no mitigation is required to address the potential for the Project to result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. The proposed Project would result in a ***less than significant impact*** for construction and operations.

4.3.5.2 Impact 4.3-2

Summary Conclusion for Impact 4.3-2: The proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. As such, there would be *no impact* for construction and operations.

4.3.5.2.1 Construction and Operations

As described in Section 4.3.3.1, energy use is influenced by a wide range of plans, policies, and regulations associated specifically with energy use, but also associated with effects to other resource areas, such as GHG emissions, air quality, or water conservation. As a result, energy may be a component of plans, policies, or regulations with a narrow focus (such as those for land development, building standards, or appliances), or with a broad focus (such as those for vehicle emissions, climate change, or sustainability). As such, there are numerous adopted state and local plans that include policies, strategies, and other measures supportive of renewable energy and energy efficiency.

During construction and operations, the proposed Project would comply with state regulations for renewable energy or energy efficiency, including Title 24 Building Energy Efficiency Standards, CALGreen, and applicable regulations related to GHG emissions that also pertain to energy consumption. The proposed Project would also comply with local regulations for renewable energy and energy efficiency, including the LAMC and the LAGBC, and with LAWA's sustainability plans, including the *Sustainable Design and Construction Policy*, *Sustainable Design and Construction Requirements*, *Sustainability Action Plan*, and the *Alternative Fuel Vehicle Requirement Program*. Moreover, the Project would not interfere with LADWP's work toward meeting the Renewable Portfolio Standard targets.

Project operations would comply with requirements pertaining to energy efficiency in buildings, including the Title 24 Building Energy Efficiency Standards, CALGreen, and the City of Los Angeles Green Building Code. Project design would also comply with LAWA sustainability policies, including the *Sustainable Design and Construction Policy*. In accordance with these requirements, Concourse 0 and Terminal 9 would be required to achieve certification at LEED® Silver level or better, Project-related light/medium-duty vehicles used during construction would comply with the *LAX Alternative Fuel Vehicle Requirement Program*, and Project-related GSE would comply with the enhanced GSE Emission Reduction Policy. Energy efficiency and conservation measures implemented as part of the proposed Project would reduce energy use associated with the new construction and contribute to the ongoing efforts to increase energy efficiency at LAX.

The proposed Project includes components that would support regional energy efficiency objectives by providing an additional APM station and inter-terminal access way at the proposed Terminal 9 to encourage non-motor vehicle travel into and out of the CTA. The proposed Project would incorporate measures that would be supportive of state and local efforts to increase use of renewable energy and improve energy efficiency, including building core and shell energy efficiency, energy-efficient appliances, parking spaces for electric and alternative fuel vehicles, and additional mandatory and voluntary measures under the LAGBC and LEED®. The proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. As such, the proposed Project would have ***no impact*** from construction and operations.

4.3.5.2.2 Mitigation Measures

Because the proposed Project would result in ***no impact*** related to the potential for the Project to conflict with or obstruct a state or local plan for renewable energy or energy efficiency, no mitigation is required for construction or operations.

4.3.5.2.3 Significance of Impact After Mitigation

As indicated above, no mitigation is required to address the potential for the Project to conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The proposed Project would result in ***no impact*** for construction and operations.

4.3.6 Cumulative Impacts

Table 3-1 in Chapter 3, *Overview of Project Setting*, identifies projects at and immediately adjacent to LAX that could, in conjunction with the proposed Project, result in cumulative impacts. As with the proposed Project, these other projects would be required to comply with the energy conservation and renewable energy regulations and policies described in Section 4.3.3.1.

As discussed in Section 4.3.5, the proposed Project is not anticipated to individually result in wasteful, inefficient, or unnecessary consumption of energy resources, nor is the proposed Project anticipated to individually obstruct or conflict with state or local plans for renewable energy or energy efficiency. Although some of the cumulative projects at and adjacent to LAX would consume energy, as with the proposed Project, these projects would also not result in wasteful, inefficient, or unnecessary consumption of energy resources, nor obstruct or conflict with state or local plans for renewable energy or energy efficiency.[56, 57, 58, 59, 60, 61, 62] Therefore, cumulative impacts related to energy associated with the proposed Project, in combination with ongoing and future projects at LAX and in the immediate vicinity, would be ***less than significant***.

4.3.7 Summary of Impact Determinations

Table 4.3-7 summarizes the impact determinations of the proposed Project related to energy, as described above in Sections 4.3.5 and 4.3.6. Impact determinations are based on the significance criteria presented in Section 4.3.4, and the information and data sources cited throughout Section 4.3.

Table 4.3-7
Summary of Impacts and Mitigation Measures Associated with the Proposed Project Related to Energy

Environmental Impacts	Impact Determination	Mitigation Measures	Level of Significance After Mitigation
Impact 4.3-1: The proposed Project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operations. As such, this would be a ***less than significant impact*** for construction and operations.	Less than Significant	No mitigation is required	Less than Significant
Impact 4.3-2: The proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. As such, there would be ***no impact*** for construction and operations.	No Impact	No mitigation is required	No Impact

56 City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Northside Plan Update*, (SCH 2012041003), Section 4.15 – Utilities and Services, December 2014. Available: https://www.lawa.org/en/lawa-our-lax/environmental-documents/documents-certified/lax-northside-plan-update/environmental-documents.

57 City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Terminals 2 and 3 Modernization Project*, (SCH 2016081034), Section 6.5 – Energy Impacts and Conservation, June 2017. Available: https://www.lawa.org/en/lawa-our-lax/environmental-documents/documents-certified/lax-terminal-2-and-3-modernization.

58 City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Landside Access Modernization Program*, (SCH 2015021014), Section 4.13.2 – Energy/Appendix F, February 2017. Available: https://www.lawa.org/en/connectinglax/automated-people-mover/documents.

59 City of Los Angeles, Los Angeles World Airports, *Final Negative Declaration for the Los Angeles International Airport Terminal 4 Modernization Project,* Section 4.6 – Energy, July 2020. Available: https://www.lawa.org/en/lawa-our-lax/environmental-documents/current-projects/terminal-4-modernization-project.

60 City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Midfield Satellite Concourse*, (SCH 2013021020), Section 4.2 – Greenhouse Gas Emissions, and Section 6.0 – Other Environmental Considerations, June 2014. Available: https://www.lawa.org/en/lawa-msc-north/project-documents.

61 Los Angeles County Metropolitan Transportation Authority, *Airport Metro Connector 96th Street Transit Station Draft Environmental Impact Report*, (SCH 2015021009), Section 4.4.12 – Energy Resources, June 2016. Available: https://media.metro.net/projects_studies/crenshaw/images/AMC_96th_St_Station_Draft_EIR_2016-6.pdf.

62 City of Los Angeles, Los Angeles World Airports*, Draft Initial Study/Negative Declaration – Los Angeles International Airport (LAX) Terminal 6 Renovation Project,* Section VI – Energy, January 2020. Available: https://www.lawa.org/en/lawa-our-lax/environmental-documents/current-projects/terminal-6-renovation-project.