IV. Environmental Impact Analysis

M.4 Utilities and Service Systems—Energy

1. Introduction

This section of the Draft EIR analyzes the Project's potential impacts on energy resources, focusing on three energy resources: electricity, natural gas, and transportation-related energy (petroleum-based fuels). This analysis addresses both construction and operational impacts associated with the consumption of energy resources. This analysis was prepared pursuant to Appendix F of the CEQA Guidelines, which requires an EIR to consider potentially significant energy implications of a project, with particular emphasis on avoiding or reducing the wasteful, inefficient, and unnecessary consumption of energy. This section evaluates the demand for energy resources attributable to the Project and determines whether the current and planned electrical, natural gas, and petroleum-based fuel supplies and distribution systems are adequate to meet the Project's forecasted energy consumption. The information presented herein is based, in part, on the *Energy Calculations for ArtCenter Master Plan* and the *ArtCenter College of Design Master Plan—Utility Infrastructure Technical Report: Energy* (Energy Report) prepared by KPFF (September 26, 2017), included as Appendix O of this Draft EIR.

2. Environmental Setting

a. Regulatory Framework

(1) Federal

First established by the U.S. Congress in 1975, the Corporate Average Fuel Economy (CAFE) standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA) jointly administer the CAFE standards. The U.S. Congress has specified that CAFE standards must be set at the "maximum feasible level" with consideration given for: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.[1]

[1] *For more information on the CAFE standards, refer to www.nhtsa.gov/Laws-&-Regulations/CAFE-%E2%80%93-Fuel-Economy, accessed April 5, 2017.*

(2) State

(a) California Building Standards Code (Title 24)

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

The California Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were adopted to ensure that building construction and system design and installation achieve energy efficiency and preserve outdoor and indoor environmental quality. The current California Building Energy Efficiency Standards (Title 24 standards) are the 2016 Title 24 standards, which became effective on January 1, 2017.[2] The 2016 Title 24 standards include efficiency improvements to the residential standards for attics, walls, water heating, and lighting and efficiency improvements to the non-residential standards include alignment with the American Society of Heating and Air-Conditioning Engineers *(*ASHRAE) 90.1 2013 national standards.[3]

(ii) California Green Building Standards (Title 24, Part 11)

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, was most recently updated in 2016 with the updates becoming effective on January 1, 2017.[4] The 2016 CALGreen Code includes mandatory measures for non-residential development related to site development; water use; weather resistance and moisture management; construction waste reduction, disposal, and recycling; building maintenance and operation; pollutant control; indoor air quality; environmental comfort; and outdoor air quality.[5] Most mandatory measure changes, when compared to previously applicable 2013 CALGreen Code, were related to the definitions and to the clarification or addition of referenced manuals, handbooks, and standards. For example, several definitions related to energy that were added or revised affect electric vehicles (EV) chargers and charging and hot water recirculation systems. For new multi-family dwelling units, the residential mandatory measures were revised to

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[2] *CEC, 2016 Building Energy Efficiency Standards, www.energy.ca.gov/title24/2016standards/, accessed April 5, 2017.*

[3] *CEC, 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings, June 2015.*

[4] *CEC, 2016 Building Energy Efficiency Standards, www.energy.ca.gov/title24/2016standards/, accessed April 5, 2017.*

[5] *California Building Standards Commission, Guide to the 2016 California Green Building Standards Code Nonresidential, January 2017.*

provide additional EV charging space requirements, including quantity, location, size, single EV space, multiple EV spaces, and identification.[6]

(b) California's Renewable Portfolio Standard

First established in 2002 under Senate Bill 1078, California's Renewable Portfolio Standards (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020.[7] The California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) jointly implement the RPS program. The CPUC's responsibilities include: (1) determining annual procurement targets and enforcing compliance; (2) reviewing and approving each investor-owned utility's renewable energy procurement plan; (3) reviewing contracts for RPS-eligible energy; and (4) establishing the standard terms and conditions used in contracts for eligible renewable energy.[8]

(c) Senate Bill 350

Senate Bill (SB) 350, signed October 7, 2015, is the Clean Energy and Pollution Reduction Act of 2015. SB 350 is the implementation of some of the goals of Executive Order B-30-15, issued in April 2015, which established a new Statewide policy goal to reduce greenhouse gas (GHG) emissions 40 percent below their 1990 levels by 2030. The objectives of SB 350 are: (1) to increase the procurement of our electricity from renewable sources from 33 percent to 50 percent; and (2) to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.[9]

(d) Assembly Bill 32

As discussed in Section IV.F, Greenhouse Gas Emissions, of this Draft EIR, Assembly Bill 32 (Health and Safety Code Sections 38500–38599; AB 32), also known as the California Global Warming Solutions Act of 2006, commits the State to achieving year 2000 greenhouse gas (GHG) emission levels by 2010 and year 1990 levels by 2020. To

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[6] *California Building Standards Commission, 2016 California Green Building Standards Code, California Code of Regulations, Title 24, Part 11, Chapter 4—Residential Mandatory Measures, effective January 1, 2017.*

[7] *CPUC, California Renewables Portfolio Standard (RPS), www.cpuc.ca.gov/RPS_Homepage/, accessed September 14, 2016.*

[8] *CPUC, California Renewables Portfolio Standard (RPS), www.cpuc.ca.gov/RPS_Homepage/, accessed November 30, 2016.*

[9] *Senate Bill 350 (2015–2016 Reg, Session) Stats 2015, ch. 547.*

achieve these goals, AB 32 tasked the CPUC and the CEC with providing information, analysis, and recommendations to the California Air Resources Board (CARB) regarding ways to reduce GHG emissions in the electricity and natural gas utility sectors.

(e) Assembly Bill 1493 (AB 1493)/Pavley Regulations

AB 1493 (commonly referred to as CARB's Pavley regulations) was the first legislation to regulate GHG emissions from new passenger vehicles. Under this legislation, CARB adopted regulations to reduce GHG emissions from non-commercial passenger vehicles (cars and light-duty trucks) for model years 2009–2016.[10] The Pavley regulations are expected to reduce GHG emissions from California's passenger vehicles by about 30 percent in 2016, all while improving fuel efficiency and reducing motorists' costs.[11]

(f) Low Carbon Fuel Standard

The Low Carbon Fuel Standard (LCFS), established in 2007 through Executive Order S-1-07 and administered by CARB, requires producers of petroleum-based fuels to reduce the carbon intensity of their products, starting with 0.25 percent in 2011 and culminating in a 10-percent total reduction in 2020.[12] Petroleum importers, refiners and wholesalers can either develop their own low carbon fuel products, or buy LCFS credits from other companies that develop and sell low carbon alternative fuels, such as biofuels, electricity, natural gas, and hydrogen.[13]

(g) California Air Resources Board

(i) CARB's Advanced Clean Cars Regulation

Closely associated with the Pavley regulations, the Advanced Clean Car Standards emissions-control program was approved by CARB in 2012.[14] The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission

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[10] *CARB, Clean Car Standards—Pavley, Assembly Bill 1943, www.arb.ca.gov/cc/ccms/ccms.htm, accessed September 14, 2016.*

[11] *CARB, Clean Car Standards—Pavley, Assembly Bill 1943, www.arb.ca.gov/cc/ccms/ccms.htm, accessed September 14, 2016.*

[12] *CEC, Low Carbon Fuel Standard: Fuels and Transportation Division Emerging Fuels and Technologies Office, www.energy.ca.gov/low_carbon_fuel_standard/, accessed September 14, 2016.*

[13] *CEC, Low Carbon Fuel Standard: Fuels and Transportation Division Emerging Fuels and Technologies Office, www.energy.ca.gov/low_carbon_fuel_standard/, accessed September 14, 2016.*

[14] *CARB, California's Advanced Clean Cars Program, www.arb.ca.gov/msprog/acc/acc.htm, last reviewed by CARB January 18, 2017.*

vehicles for model years 2015–2025.[15] The components of the Advance Clean Car Standards include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.[16] In March 2017, CARB voted unanimously to continue with the vehicle greenhouse gas emission standards and the ZEV program for cars and light trucks sold in California through 2025.[17]

(ii) Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (Title 13, Division 3, Chapter 10, Section 2435) was adopted to reduce public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles. This section applies to diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds that are or must be licensed for operation on highways. Reducing idling of diesel-fueled commercial motor vehicles reduces the amount of petroleum-based fueled used by the vehicle.

(iii) Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles.

The Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles (Title 13, Division 3, Chapter 1, Section 2025) was adopted to reduce emissions of diesel particulate matter, oxides of nitrogen (NO_X) and other criteria pollutants from in-use diesel-fueled vehicles. This regulation is phased, with full implementation by 2023. The regulation aims to reduce emissions by requiring the installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. The newer emission-controlled models would use petroleum-based fuel in a more efficient manner.

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[15] *CARB, California's Advanced Clean Cars Program, www.arb.ca.gov/msprog/acc/acc.htm, last reviewed by CARB January 18, 2017.*

[16] *CARB, California's Advanced Clean Cars Program, www.arb.ca.gov/msprog/acc/acc.htm, last reviewed by CARB January 18, 2017.*

[17] *CARB, News Release: CARB finds vehicle standards are achievable and cost-effective, website: www.arb.ca.gov/newsrel/newsrelease.php?id=908, accessed April 5, 2017.*

(h) Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or Senate Bill 375 (SB 375), coordinates land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction mandates established in AB 32. SB 375 specifically requires the Metropolitan Planning Organization (MPO) to prepare a "sustainable communities strategy" (SCS) as a part of its Regional Transportation Plan (RTP) that will achieve GHG emission reduction targets set by CARB for the years 2020 and 2035 by reducing vehicle-miles traveled (VMT) from light-duty vehicles through the development of more compact, complete, and efficient communities.[18]

The Project Site is located within the planning jurisdiction of the Southern California Association of Governments (SCAG). SCAG's first-ever SCS is included in the 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (2012–2035 RTP/SCS), which was adopted by SCAG in April 2012. The goals and policies of the SCS that reduce VMT (and result in corresponding decreases in transportation-related fuel consumption) focus on transportation and land use planning that include building infill projects, locating residents closer to where they work and play, and designing communities so there is access to high quality transit service. SCAG adopted the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (2016–2040 RTP/SCS).[19] The goals and policies of the 2016–2040 RTP/SCS are the same as those in the 2012–2035 RTP/SCS. See further discussion below.

(i) Senate Bill 1389

Senate Bill 1389 (Public Resources Code Sections 25300–25323; SB 1389) requires the development of an integrated plan for electricity, natural gas, and transportation fuels. The CEC must adopt and transmit to the Governor and Legislature an Integrated Energy Policy Report every two years. The most recently completed report, the 2016 Integrated Energy Policy Report, addresses a variety of issues including the environmental performance of the electricity generation system, landscaped-scale planning, the response to the gas leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues, update on the Southern California electricity reliability, methane leakage, climate adaptation activities for the energy sector, climate and sea level rise scenarios and the *California Energy Demand Forecast*.[20]

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[18] *CARB, Sustainable Communities, www.arb.ca.gov/cc/sb375/sb375.htm, accessed September 14, 2016.*

[19] *SCAG, 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, dated April 2016.*

[20] *CEC, 2016 Integrated Energy Policy Report, docketed January 18, 2017.*

(j) California Environmental Quality Act

Public Resources Code 21100(b)(3) states that the EIR shall include mitigation measures proposed to minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy . Thus, in order to assure that energy implications are considered in project decisions, Appendix F, Energy Conservation, of the CEQA Guidelines, was adopted and requires that EIRs consider the potentially significant energy implications of proposed projects, with particular emphasis on avoiding or reducing the wasteful, inefficient, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides a list of energy-related items that may be included throughout the various chapters of an EIR. In addition, while not described as significance thresholds for determining the significance of impacts related to energy, Appendix F provides the following items that may be considered in the energy analysis:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project's life cycle including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed;
- The effects of the project on local and regional energy supplies and on requirements for additional capacity;
- The effects of the project on peak and base period demands for electricity and other forms of energy;
- The degree to which the project complies with existing energy standards;
- The effects of the project on energy resources; or
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

(3) Regional

As discussed in Section IV.I, Land Use, of this Draft EIR, SCAG's 2016–2040 RTP/SCS presents a long-term transportation vision through the year 2040 for the six-county region of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. On April 7, 2016, the SCAG Regional Council adopted the 2016–2040 RTP/SCS, the mission of which is "leadership, vision and progress which promote economic growth, personal well-being, and livable communities for all Southern

Californians."[21] The 2016–2040 RTP/SCS includes land use strategies that focus on urban infill growth and walkable, mixed-use communities in existing urbanized and opportunity areas. More mixed-use, walkable, and urban infill development would be expected to accommodate a higher proportion of growth in more energy-efficient housing types like townhomes, apartments, and smaller single-family homes, as well as more compact commercial buildings types. Furthermore, the 2016–2040 RTP/SCS includes transportation investments and land use strategies that encourage carpooling, increase transit use, active transportation opportunities, and promoting more walkable and mixed use communities which would potentially help to offset passenger VMT.

The 2016–2040 RTP/SCS also establishes High-Quality Transit Areas (HQTA), which are described as generally walkable transit villages or corridors that are within 0.5 mile of a well-serviced transit stop or a transit corridor with 15-minute or less service frequency during peak commute hours.[22] Local jurisdictions are encouraged to focus housing and employment growth within HQTAs to reduce VMT. The Project Site is located within a HQTA as designated by the 2016–2040 RTP/SCS.[23]

(4) Local

(a) City of Pasadena Green Building Standards

On December 12, 2016, the City Council approved Ordinance No. 7289, which amended Chapter 14 of the City of Pasadena Municipal Code by amending certain provisions to reflect local administrative changes and incorporating by reference portions of the 2016 CALGreen Code. Projects filed on or after January 1, 2017, must comply with various provisions of the 2016 CALGreen Code. The City's ordinance requires applicable projects to comply with specific provisions to reduce energy consumption.

(b) City of Pasadena Green City Action Plan

The City of Pasadena's *Green City Action Plan: A Green & Sustainable Community* (2006) (Green City Action Plan) is a City-adopted plan to guide the City in becoming more sustainable. The Green City Action Plan identified a wide range of goals and implementation actions to conserve energy and water, reduce solid waste, address global warming, tailor urban design, protect natural habitats, improve transportation options, and reduce risks to human health. Specific policies that would reduce GHG emissions, either

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[21] *SCAG, 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, April 2016.*

[22] *SCAG, 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, April 2016, p. 8.*

[23] *SCAG, 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, dated April 2016, Exhibit 5.1: High Quality Transit Areas in the SCAG Region for 2040 Plan, p. 77.*

directly or indirectly are listed below. The status of each action (achieved, likely, or undetermined) was reported in the 2010 Green Report and is indicated in parentheses after the action number. "Achieved" means the goal has been met, "likely" means it should be reached by the target year, and "undetermined" means there is data, reports, or parameters to make a determination.

- Action 1 (achieved)—Increase the use of renewable energy to meet 10 percent of the city's peak electric load within seven years.
- Action 2 (undetermined)—Reduce the city's peak electric load by 10 percent within seven years through energy efficiency, shifting the timing of energy demands, and conservation methods. Future cost-effective energy efficiency programs include:
  - Conducting a feasibility study for installing devices on municipal and private buildings that reduce the power required to operate equipment and for shifting the equipment usage to off-peak.
  - Creating a "time of use" billing rate that offers lower rates for electric usage during off-peak hours than during peak hours. Other possible rates to consider include tiered energy rates.
- Action 3 (likely)—Reduce GHG emissions by 25 percent by 2030, and include a system for accounting and auditing these emissions.
- Action 4 (likely)—Achieve zero waste to landfills and incinerators by 2040.
- Action 5 (likely)—Reduce the use of disposable, toxic, or non-renewable product category by at least 50 percent in seven years.
- Action 6 (achieved)—Implement "user-friendly" recycling and composting programs, with the goal of reducing by 25 percent per capita solid waste disposal to landfill and incineration in seven years.
- Action 8 (achieved)—Advance higher density, mixed use, walkable, bikeable and disabled accessible neighborhoods which coordinate land use and transportation with open space systems for recreation and ecological restoration.

b. Existing Conditions

(1) Electricity

Electricity, a consumptive utility, is a man-made resource. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into energy. The delivery of

electricity involves a number of system components, including substations and transformers that lower transmission line power (voltage) to a level appropriate for on-site distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands.

Energy capacity is generally measured in watts (W) while energy use is measured in watt-hours (Wh). For example, if a light bulb has a capacity rating of 100 W, the energy required to keep the bulb on for 1 hour would be 100 Wh. If ten 100 W bulbs were on for 1 hour, the energy required would be 1,000 Wh or 1 kilowatt-hour (kWh). On a utility scale, a generator's capacity is typically rated in megawatts (MW), which is one million watts, while energy usage is measured in megawatt-hours (MWh) or gigawatt-hours (GWh), which is one billion watt-hours.

Pasadena Water and Power (PWP) provides electrical service to the City of Pasadena. PWP generates electricity from a variety of sources, including hydropower, coal, gas, nuclear sources, and, more recently, renewable resources such as wind, solar, and geothermal sources. Approximately 29 percent of PWP's 2015 electricity purchases were from renewable sources, which is greater than the 22 percent Statewide percentage of electricity purchases from renewable sources.[24] During 2016, the most recent year for which data are available, PWP delivered 1,095,394 MWh of electricity to its customers.[25]

The Project Site and its existing development are currently being provided electrical service by PWP. Specifically, The Hillside Campus receives electric power from PWP via an existing underground conduit in MacMinn Drive and the South Campus receives electric power from PWP via existing underground conduits in Raymond Avenue and Arroyo Parkway. It is estimated that existing uses on the Project Site currently consume approximately 6,693,660 kWh of electricity per year.[26]

(2) Natural Gas

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs, mainly located outside the State, and delivered through

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[24] *California Energy Commission, Utility Annual Power Content Labels for 2015, www.energy.ca.gov/pcl/labels/.*

[25] *City of Pasadena, Pasadena Water & Power 2016 Annual Report, p. 46.*

[26] *Eyestone Environmental, Energy Calculations for ArtCenter Master Plan, See Appendix O of this Draft EIR.*

high-pressure transmission pipelines. The natural gas transportation system is a nationwide network and, therefore, resource availability is typically not an issue. Natural gas satisfies almost one-third of the State's total energy requirements and is used in electricity generation, space heating, cooking, water heating, and industrial processes and as a transportation fuel. Natural gas is measured in terms of cubic feet (cf).

SoCalGas receives gas supplies from several sedimentary basins in the western United States 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.[27] The traditional, southwestern United States sources of natural gas will continue to supply most of SoCalGas's natural gas demand. Gas supply available to SoCalGas from California sources averaged 122 million cf per day in 2015 (the most recent year for which data are available).[28]

The Project Site and its existing development are currently being provided natural gas service by SoCalGas. Based on available substructure maps provided by SoCalGas, the Hillside Campus receives natural gas service from SoCalGas via an existing underground distribution line from Carnarvon Drive, and the South Campus receives natural gas service from SoCalGas via existing underground distribution lines along Glenarm Street, Raymond Avenue, and Arroyo Parkway. It is estimated that existing uses on the Project Site currently consume approximately 12,789,030 cf of natural gas per year.[29]

(3) Transportation Energy

According to the CEC, transportation accounted for nearly 37 percent of California's total energy consumption in 2014.[30] In 2015, California consumed 15.1 billion gallons of gasoline and 2.82 billion gallons of diesel fuel.[31] Petroleum-based fuels currently account for 90 percent of California's transportation energy sources.[32] However, the State is now working on developing flexible strategies to reduce petroleum use. Over the last decade,

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[27] *California Gas and Electric Utilities, 2016 California Gas Report, pp. 79.*

[28] *California Gas and Electric Utilities, 2016 California Gas Report, pp. 79.*

[29] *Eyestone Environmental, Energy Calculations for ArtCenter Master Plan, See Appendix O of this Draft EIR.*

[30] *CEC, 2016 Integrated Energy Policy Report, docketed January 18, 2017, p. 4.*

[31] *California Board of Equalization, Net Taxable Gasoline Gallons 10-Year Report, and Net Taxable Diesel Gallons 10-Year Report.*

[32] *California Energy Commission. 2016–2017 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program, March 2016.*

California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHGs from the transportation sector, and reduce VMT. Accordingly, gasoline consumption in California has declined.[33] The CEC predicts that the demand for gasoline will continue to decline over the next ten years, and there will be an increase in the use of alternative fuels.[34] According to CARB's EMFAC Web Database, Los Angeles County on-road transportation sources consumed 3.99 billion gallons of gasoline and 0.68 billion gallons of diesel fuel in 2016.[35]

The existing on-site land uses currently generate a demand for transportation-related fuel use as a result of vehicle trips to and from the Project Site. The estimate of annual VMT associated with the existing Project Site uses is 10,735,047 VMT per year.[36] This translates to 317,504 gallons of gasoline and 103,722 gallons of diesel per year.[37] Persons traveling to and from the Project Site also have the option of using public transportation to reduce transportation-related fuel use. Specifically, three transit service providers operate lines within the Project Site area, including Pasadena Transit, Metro, and ArtCenter shuttles. As discussed in Section IV.L, Traffic, of this Draft EIR, the Metro Gold Line bisects the South Campus with the Fillmore Station located 300 feet north of the Project Site. For further discussion of public transit lines that serve the Project area, refer to Section IV.L, Traffic, of this Draft EIR.

3. Environmental Impacts

This analysis addresses the Project's potential energy usage, including electricity, natural gas, and petroleum-based fuel. Energy consumption during both construction and operation is assessed. The Project's estimated energy consumption was calculated using the California Emissions Estimator Model CalEEMod Version 2016.3.1. Specific analysis methodologies are discussed below.

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[33] *State Board of Equalization, Economic Perspective, Discussion of Recent Economic Developments, Publication 329, Volume XIX, Number 1, February 2013.*

[34] *California Energy Commission, 2015 Integrated Energy Policy Report.*

[35] *California Air Resources Board, EMFAC2014 Web Database, www.arb.ca.gov/emfac/2014/.*

[36] *Eyestone Environmental, Energy Calculations for ArtCenter Master Plan, See Appendix O of this Draft EIR.*

[37] *Eyestone Environmental, Energy Calculations for ArtCenter Master Plan, See Appendix O of this Draft EIR.*

a. Methodology

(1) Construction

Electricity usage associated with the supply and conveyance of water used for dust control during construction was calculated using the CalEEMod.[38] Electricity used to power lighting, electronic equipment, and other construction activities necessitating electrical power was assumed to be negligible. In terms of natural gas, construction activities typically do not involve the consumption of natural gas. Fuel consumption from on-site heavy-duty construction equipment was calculated based on the equipment mix and usage factors provided in the CalEEMod construction output files included in Appendix C of this Draft EIR. The total horsepower was then multiplied by fuel usage estimates per horsepower-hour included in Table A9-3-E of the South Coast Air Quality Management District's (SCAQMD) *CEQA Air Quality Handbook*. Fuel consumption from construction worker, vendor, and delivery/haul trucks was calculated using the trip rates and distances provided in the CalEEMod construction output files. Total VMT was then calculated for each type of construction-related trip and divided by the corresponding county-specific miles per gallon factor using CARB's EMFAC 2014 model. EMFAC provides the total annual VMT and fuel consumed for each vehicle type. Consistent with CalEEMod, construction worker trips were assumed to include 50 percent light duty gasoline auto and 50 percent light duty gasoline trucks. Construction vendor and delivery/haul trucks were assumed to be heavy-duty diesel trucks. Refer to Appendix C of this Draft EIR for detailed calculations.

(2) Operation

Annual consumption of electricity (including electricity usage associated with the supply and conveyance of water) and natural gas was calculated using demand factors provided in CalEEMod as part of the GHG analysis included in Section IV.F, Greenhouse Gas Emissions, of this Draft EIR. CalEEMod provides default factors based on the 2013 Title 24 standards. 2016 Title 24 standards will go into effect January 1, 2017. The 2016 Title 24 standards will be 28 percent more efficient than the 2013 Title 24 standards for residential construction and five percent more efficient for non-residential construction.[39]

Energy impacts associated with transportation during operation were also assessed. Daily trip generation used in this analysis was based on the Project's *Transportation Impact Analysis, CEQA Evaluation, Category 2* report prepared by Pasadena Department of

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[38] *California Air Pollution Control Officers Association, CalEEMod™ version 2016.3.1, www.caleemod.com.*

[39] *California Energy Commission, 2016 Building Energy Efficiency Standards Adoption Hearing presentation, June 10, 2015.*

Transportation, which is included in Appendix L of this Draft EIR. As discussed therein, the trip generation for the Project was determined based on the Institute of Transportation Engineers trip generation factors for the applicable land uses. The daily Project-related trips were then input into CalEEMod, which calculated the annual VMT. The resulting annual VMT was used as part of the GHG analysis included in Section IV.F, Greenhouse Gas Emissions, of this Draft EIR. Based on this annual VMT, gasoline and diesel consumption rates were calculated using the county-specific miles per gallon calculated using EMFAC2014. The vehicle fleet mix for vehicles anticipated to visit the Project Site was calculated consistent with the CalEEMod default for Los Angeles County. Supporting calculations are provided in Appendix C of this Draft EIR.

The Project's estimated energy demands were also analyzed relative to PWP and SoCalGas' existing and planned energy supplies in 2032 (i.e., the Project Build-out year) to determine if these two energy utility companies would be able to meet the Project's energy demands. Finally, the capacity of local infrastructure to accommodate the Project's estimated electricity and natural gas demand was assessed based on the Energy Report prepared by KPFF (September 26, 2017), included as Appendix O of this Draft EIR.

b. Thresholds of Significance

Appendix F of the CEQA Guidelines states the potentially significant energy implications of a project should be considered in an EIR and provides direction as to the types of information, analysis, and mitigation measures that may be considered in evaluating a project.

According to Appendix F, the environmental impact analysis may include:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project's life cycle including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed;
- The effects of the project on local and regional energy supplies and on requirements for additional capacity;
- The effects of the project on peak and base period demands for electricity and other forms of energy;
- The degree to which the project complies with existing energy standards;
- The effects of the project on energy resources;

- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

In the context of this guidance from the CEQA Guidelines, and based on the City's standard Environmental Checklist Form, the Project would have a significant impact on energy use if it would:

- Use non-renewable resources in a wasteful and inefficient manner.
- Result in an increase in demand for electricity or natural gas that exceeds available supply or distribution infrastructure capabilities that could result in the construction of new energy facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Conflict with adopted energy conservation plans; or
- Violate State or federal energy standards.

c. Project Design Features

The Project would include project design features designed to improve energy efficiency as set forth in Section IV.F, Greenhouse Gas Emissions. Those project design features are listed here as they would also apply to the energy analysis.

Project Design Feature F-1: The Project will not include the installation of natural gas fireplaces within the student housing units.

Project Design Feature F-2: The Project will include the installation of photovoltaic solar cells and canopies over the existing surface parking stalls in the Hillside Campus.

d. Project Impacts

Impact M.4-1: Project construction or operation would not use non-renewable resources, including electricity, natural gas, transportation-related energy resources, in a wasteful and inefficient manner.

(1) Construction

During Project construction, energy would be consumed in the form of electricity associated with the conveyance of water used for dust control and, on a limited basis, powering lights, electronic equipment, or other construction activities necessitating electrical power. As discussed below, construction activities, including the construction of

new buildings and facilities, typically do not involve the consumption of natural gas. Project construction would also consume energy in the form of petroleum-based fuels associated with the use of off-road construction vehicles and equipment on the Project Site, construction worker travel to and from the Project Site, and delivery and haul truck trips (e.g., hauling of demolition material to off-site reuse and disposal facilities).

As shown in Table IV.M.4-1 on page IV.M.4-17, a total of 15,453 kWh of electricity, 62,987 gallons of gasoline, and 242,057 gallons of diesel would be consumed during Project construction. Project construction is expected to be completed by 2032.

(a) Electricity

As shown in Table IV.M.4-1 a total of approximately 15,453 kWh of electricity is anticipated to be consumed during Project construction. The electricity demand at any given time would vary throughout the construction period, based on the construction activities being performed, and would cease upon completion of construction. When not in use, electric equipment would be powered off so as to avoid unnecessary energy consumption. Therefore, the Project would not use non-renewable resources in a wasteful and inefficient manner during construction.

(b) Natural Gas

Construction activities, including the construction of new buildings and facilities, typically do not involve the consumption of natural gas. Accordingly, natural gas would not be supplied to support Project construction activities; thus, there would be no demand generated by construction.

(c) Transportation Energy

The petroleum-based fuel use summary provided above in Table IV.M.4-1 represents the amount of transportation energy that could potentially be consumed during Project construction based on a conservative set of assumptions. As shown, on- and off-road vehicles would consume an estimated 62,987 gallons of gasoline and approximately 242,057 gallons of diesel fuel throughout the Project's construction duration. For comparison purposes, the fuel usage during Project construction would represent approximately 0.002 percent of the 2016 annual on-road gasoline-related energy consumption and 0.04 percent of the 2016 annual diesel fuel-related energy consumption in Los Angeles County, as shown in Appendix O, of this Draft EIR.

As discussed above, solid waste reduction programs help to reduce the number of trips to haul solid waste, as well as reducing energy used to process solid waste. The City

Table IV.M.4-1
Summary of Energy Use During Construction[a]

Source	Quantity
Electricity	
Water Consumption	15,453 kWh
Lighting, electronic equipment, and other construction activities necessitating electrical power	N/A[b]
Total Electricity	**15,453 kWh**
Gasoline	
On-Road Construction Equipment	62,987 gallons
Off-Road Construction Equipment	0 gallons
Total Gasoline	**62,987 gallons**
Diesel	
On-Road Construction Equipment	49,068 gallons
Off-Road Construction Equipment	192,989 gallons
Total Diesel	**242,057 gallons**

kWh = kilowatt-hours

[a] *Detailed calculations are provided in Appendix O of this Draft EIR.*

[b] *Electricity usage associated with this line item is not easily quantifiable. Such electricity demand would be temporary, limited, and would cease upon the completion of construction.*

Source: Eyestone Environmental, 2017.

has adopted several plans and regulations to promote the reduction, reuse, recycling, and conversion of solid waste going to disposal systems during construction. As discussed further in Section IV.M.3, Utilities and Service Systems—Solid Waste, of this Draft EIR, pursuant to the Construction and Demolition Waste Management Ordinance (PMC 8.62), much of the demolition material during construction would be reused or recycled, as feasible. The Project would be required to reduce landfill waste by diverting a minimum of 75 percent of the construction and demolition debris. These solid waste regulations help to reduce the number of trips to haul solid waste, thereby reducing the amount of petroleum-based fuel consumed. Furthermore, as previously stated, recycling efforts indirectly reduce the energy necessary to create new products made of raw material, which is an energy-intensive process. Thus, through compliance with the City's construction-related solid waste recycling programs, the Project would contribute to reduced energy consumption. Based on the above, Project would not use non-renewable resources in a wasteful and inefficient manner during construction.

(2) Operation

During operation of the Project, energy would be consumed for multiple purposes, including, but not limited to, heating, ventilating, and air conditioning (HVAC); refrigeration; lighting; and the use of electronics, equipment, and machinery. Energy would also be consumed during Project operations related to water usage, solid waste disposal, and vehicle trips. As shown in Table IV.M.4-2 on page IV.M.4-19, the Project's net new energy demand would be approximately 2,126 MWh of electricity per year, 8,334,650 cf of natural gas per year, 233,656 gallons of gasoline per year, and 76,330 gallons of diesel fuel per year.

(a) Electricity

As shown in Table IV.M.4-2, with compliance with applicable 2016 CALGreen requirements, buildout of the Project would result in a projected net increase in the on-site demand for electricity totaling approximately 2,126 MWh/year. In addition to complying with CALGreen requirements, the Project Applicant would also implement Project Design Feature F-2, which states that the Project will install photovoltaic solar cells and canopies over the existing surface parking stalls in the Hillside Campus. This would further offset electricity consumption. Furthermore, PWP is required to procure at least 33 percent of their energy portfolio from renewable sources by 2020. The current sources procured by PWP include wind, solar, and geothermal sources. These sources account for 29 percent of PWP's overall energy mix in 2015, which is greater than the 22 percent Statewide percentage of electricity purchases from renewable sources.[40] Furthermore, PWP's voluntary RPS goal in 2020 is 40 percent. In accordance with SB 350, the RPS goal has been increased to an RPS of 50 percent by the year 2030, which PWP would meet. This represents the available off-site renewable sources of energy that would meet the Project's energy demand. Therefore, the Project would not use non-renewable resources in a wasteful and inefficient manner during operation.

(b) Natural Gas

As shown in Table IV.M.4-2, with compliance with applicable 2016 CALGreen requirements, buildout of the Project is projected to generate a net increase in the on-site demand for natural gas totaling approximately 8,334,650 cf/year. As discussed above, in addition to complying with applicable regulatory requirements regarding energy conservation (e.g., California Building Energy Efficiency Standards and CALGreen), the Project would implement project design features to further reduce energy use. The

[40] *California Energy Commission, Utility Annual Power Content Labels for 2015, www.energy.ca.gov/pcl/labels/.*

Table IV.M.4-2
Summary of Annual Energy Use During Operation[a]

Source	Estimated Energy Demand[a]
Electricity	
Building	1,747 MWh
Water	379 MWh
Total Electricity	**2,126 MWh**
Natural Gas	
Building	8,334,650 cf
Transportation	
Gasoline	233,656 gallons
Diesel	76,330 gallons

MWh = megawatt-hours
cf = cubic feet
[a] *Detailed calculations are provided in Appendix O of this Draft EIR.*
Source: Eyestone Environmental, 2017.

Project Applicant would implement Project Design Feature F-1, which specifies that the Project will not install natural gas fireplaces within the student housing units. Therefore, the Project would not use non-renewable resources in a wasteful and inefficient manner during operation.

(c) Transportation Energy

During operation, Project-related traffic would result in the consumption of petroleum-based fuels related to vehicular travel to and from the Project Site. As discussed in Section IV.L, Traffic, of the Draft EIR, the Metro Gold Line bisects the South Campus with the Fillmore Street Station located 300 feet north of the Project Site. In addition, the Project area is currently served by Pasadena Transit, Metro, and ArtCenter shuttles, which will continue to run between the Hillside Campus and the South Campus. Furthermore, the Project would provide short- and long-term bicycle parking spaces, in addition to bicycle-serving amenities, that would further encourage biking. Additionally, the Project design would increase pedestrian accessibility, which would further encourage walkability. As discussed in Section IV.I, Land Use, the Project Site is also located in an HQTA designated by SCAG, which indicates that the Project Site is an appropriate site for increased density and employment opportunities from a "smart growth," regional planning perspective. As such, the Project's siting would minimize petroleum-based fuel consumption through the reduction of VMT, as described above.

As summarized in Table IV.M.4-2 on page IV.M.4-19, when accounting for the measures that would be implemented to reduce VMT, the Project's estimated petroleum-based fuel usage would be approximately 233,656 gallons of gasoline and 76,330 gallons of diesel per year, or a total of 309,986 gallons of petroleum-based fuels annually. Based on the above, the Project would not cause the use of non-renewable resources in a wasteful and inefficient manner during operation. Impacts associated with operational transportation-related energy use would be less than significant.

Impact M.4-2: The Project would not increase demand for electricity or natural gas in a manner that exceeds available supply or distribution infrastructure capabilities.

(1) Construction

(a) Electricity

Construction of the Project's electrical infrastructure would primarily occur within the Project Site, although some off-site construction activities to connect the Project's electrical infrastructure with primary electrical distribution lines could occur. ArtCenter would be required to coordinate electrical infrastructure removals or relocations with PWP and comply with site-specific requirements set forth by PWP, which would ensure that service disruptions and potential impacts associated with grading, construction, and development within PWP easements are minimized. As such, construction of the Project's electrical infrastructure is not anticipated to adversely affect the electrical infrastructure serving the surrounding uses or utility system capacity.

The estimated construction electricity usage represents approximately 0.73 percent of the estimated net operational demand, which, as discussed below, would be within the supply and infrastructure service capabilities of PWP. Therefore, construction of the Project would not result in an increase in demand for electricity that exceeds available supply or distribution infrastructure capabilities that could result in the construction of new energy facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Therefore, based on the above, construction-related impacts to electricity supply and infrastructure would be less than significant.

(b) Natural Gas

The Project would involve installation of new natural gas connections to serve the Project Site. Since the Project Site is located in an area already served by existing natural gas infrastructure, it is anticipated that the Project would not require extensive off-site infrastructure improvements to serve the Project Site. Construction impacts associated with the installation of natural gas connections are expected to be confined to trenching in order to place the lines below surface. However, if the Project requires the removal or

relocation of underground gas lines, then, prior to ground disturbance, Project contractors would notify and coordinate with SoCalGas to identify the locations and depth of all existing gas lines and avoid disruption of gas service to other properties. Therefore, construction of the Project would not result in an increase in demand for natural gas to affect available supply or distribution infrastructure capabilities and would not result in the construction of new energy facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Construction-related impacts to natural gas supply and infrastructure would be less than significant.

(2) Operation

(a) Electricity

The availability of electricity depends upon adequate generation capacity and fuel supplies. PWP estimates that electricity consumption within PWP's planning area will be approximately 1,320 GWh by 2030 (the latest available forecast year).[41] Based on the Project's estimated electrical consumption of 2,126 MWh per year, the Project would account for approximately 0.16 percent of the 2030 demand forecasted in PWP's planning area. As the proposed uses are consistent with the land use and zoning designations within the Project Site and given the low percentage of total demand the Project represents, the demand forecasts are anticipated to account for Project development. In addition, PWP has confirmed that the Project's electricity demand can be served by the facilities in the Project area.[42] Furthermore, as previously described, the Project would incorporate a variety of energy conservation measures to reduce energy usage. Additionally, the Project would implement any necessary connections and upgrades required by PWP to ensure that PWP would be able to adequately serve the Project. Therefore, it is anticipated that PWP's existing and planned electricity capacity and electricity supplies would be sufficient to support the Project's electricity demand. Accordingly, operation of the Project would not result in an increase in demand for electricity that exceeds available supply or distribution infrastructure capabilities that could result in the construction of new energy facilities or expansion of existing facilities and, thus, the construction of which could cause significant environmental effects.

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[41] *KPFF, ArtCenter College of Design Master Plan—Utility Infrastructure Technical Report: Energy, May 9, 2017. Refer to Appendix O of this Draft EIR.*

[42] *KPFF, ArtCenter College of Design Master Plan—Utility Infrastructure Technical Report: Energy, May 9, 2017. Refer to Appendix O of this Draft EIR.*

(b) Natural Gas

As identified above, the Project's estimated net increase in demand for natural gas is 8,334,650 cf/year, or approximately 22,835 cf/day. In addition, a compressed natural gas (CNG) fueling facility may potentially be constructed as part of the Project. However, the amount of natural gas usage/demand would be minimal in comparison to the overall Project's estimated net increase. Based on the 2016 California Gas Report, it is estimated that the natural gas consumption within SoCalGas' service area will be approximately 2.38 billion cf/day in 2032 (the Project's buildout year).[43] The Project would account for approximately 0.001 percent of the 2032 forecasted consumption in SoCalGas' service area. In addition, SoCalGas has confirmed that the Project's natural gas demand can be served by the facilities in the Project area.[44] Furthermore, as also previously described, the Project would incorporate a variety of energy conservation measures to reduce energy usage. Additionally, the Project would implement any necessary connections and upgrades required to ensure that SoCalGas would be able to adequate serve the Project. Therefore, it is anticipated that SoCalGas' existing and planned natural gas supplies would be sufficient to support the Project's net increase in demand for natural gas.

Based on the above, operation of the Project would not result in an increase in demand for natural gas that exceeds available supply or distribution infrastructure capabilities that could result in the construction of new energy facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Operational impacts to natural gas supply and infrastructure would be less than significant.

Impact M.4-3: The Project would not conflict with any plans or strategies that address energy conservation or violate State or federal energy standards.

The Project would comply with applicable regulatory requirements for the design of new buildings, including the provisions set forth in the 2016 CALGreen Code and California's Building Energy Efficiency Standards, and the City of Pasadena Green Building Standards.

Furthermore, the Project would be consistent with regional planning strategies that address energy conservation. As discussed above and in Section IV.I, Land Use, of this Draft EIR, SCAG's 2016–2040 RTP/SCS focuses on creating livable communities with an

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[43] *California Gas and Electric Utilities, 2016 California Gas Report, 2016, p. 96. Consumption interpolated from 2030 and 2035 estimates.*

[44] *KPFF, ArtCenter College of Design Master Plan—Utility Infrastructure Technical Report: Energy, May 9, 2017. Refer to Appendix O of this Draft EIR.*

emphasis on sustainability and integrated planning and identifies mobility, economy, and sustainability as the three principles most critical to the future of the region. As part of the approach, the 2016–2040 RTP/SCS focuses on reducing fossil fuel use by decreasing VMT, reducing building energy use, and increasing use of renewable sources. The Project would be consistent with the energy efficiency policies emphasized in the 2016–2040 RTP/SCS. Most notably, the Project includes the development and expansion of the existing ArtCenter and adding student housing on campus, which would reduce the number of vehicle trips necessary for students to make under existing conditions, as they would be able to access the campus by walking and utilizing shuttle services. The Project Site is also well-served by existing public transportation, including Pasadena Transit, Metro and ArtCenter shuttles, which will continue to run between the Hillside Campus and the South Campus. This is evidenced by the Project Site's location within a designated HQTA. The introduction of new job opportunities within a HQTA, as proposed by the Project, is consistent with numerous policies in the 2016–2040 RTP/SCS related to locating new jobs and housing near transit. All of these features would serve to reduce the consumption of electricity, natural gas, and petroleum-based fuel associated with VMT.

Based on the above, the Project would not conflict with adopted energy conservation plans or violate State or federal energy standards. Impacts associated with regulatory consistency would be less than significant.

4. Cumulative Impacts

The geographic context for the cumulative impact analysis on electricity is the service area of PWP, and the geographic context for the cumulative impact analysis on natural gas is the service area of SoCalGas. While the geographic context for transportation-related energy use is more difficult to define, it is meaningful to consider the Project in the context of county-wide consumption. The Project, in conjunction with forecasted 2032 growth in these geographies, would cumulatively increase the consumption of energy, thus potentially resulting in cumulative impacts with respect to energy use. Cumulative growth in the greater Project area through 2032 includes specific known development projects under the General Plan buildout, as well as general ambient growth projected to occur, as described in Section III, Environmental Setting, of this Draft EIR.

(1) Electricity

Buildout of the Project, development projects under the General Plan buildout, and additional growth forecasted to occur in the City within PWP's service area would increase electricity consumption during Project construction and operation and, thus, cumulatively increase the need for energy supplies and infrastructure capacity, such as new or

expanded energy facilities. PWP estimates that electricity consumption within PWP's planning area will be approximately 1,320 GWh by 2030 (the latest available forecast year). Based on the Project's estimated electrical consumption of 2,126 MWh per year, the Project would account for approximately 0.16 percent of the 2030 demand forecasted in PWP's planning area. Thus, although Project development would result in the use of renewable and non-renewable electricity resources during construction and operation, which could limit future availability, the use of such resources would be on a relatively small scale, would be reduced by measures rendering the Project more energy-efficient, and would be consistent with growth expectations for PWP's service area. Accordingly, the Project's cumulative impacts related to electricity consumption would be less than significant. Furthermore, during construction and operation, other future development projects would be expected to incorporate energy conservation features, comply with applicable regulations including CALGreen and State energy standards under Title 24, and incorporate mitigation measures, as necessary.

Electricity infrastructure is typically expanded in response to increasing demand, and system expansion and improvements by PWP are ongoing. As described in PWP's Integrated Resource Plan (IRP), PWP would continue to expand delivery capacity as needed to meet demand increases within its service area. The IRP takes into account future energy demand, advances in renewable energy resources and technology, energy efficiency, conservation, and forecast changes in regulatory requirements. Development projects within the PWP service area would also be anticipated to incorporate site-specific infrastructure improvements, as necessary. As such, cumulative impacts with respect to electricity infrastructure would be less than significant.

(2) Natural Gas

Buildout of the Project and development projects in SoCalGas's service area is expected to increase natural gas consumption during Project operation and, thus, cumulatively increase the need for natural gas supplies and infrastructure capacity. Based on the 2016 California Gas Report, it is estimated that the natural gas consumption within SoCalGas' service area would be approximately 2.38 billion cf/day in 2032 (the Project's buildout year).[45] The Project would account for approximately 0.001 percent of the 2032 forecasted consumption in SoCalGas' service area. SoCalGas' forecasts take into account projected population growth and development based on local and regional plans. Although Project development would result in the use of natural gas resources, which could limit future availability, the use of such resources would be on a relatively small scale, would be reduced by measures rendering the Project more energy-efficient, and would be consistent

[45] *California Gas and Electric Utilities, 2016 California Gas Report, 2016, p. 96. Consumption interpolated from 2030 and 2035 estimates.*

with regional and local growth expectations for SoCalGas' service area. Furthermore, future development projects would be expected to incorporate energy conservation features, comply with applicable regulations, including CALGreen and State energy standards under Title 24, and incorporate mitigation measures, as necessary. Accordingly, the Project's cumulative impacts related to natural gas consumption would be less than significant.

Natural gas infrastructure is typically expanded in response to increasing demand and system expansion and improvements by SoCalGas occur, as needed. It is expected that SoCalGas would continue to expand delivery capacity, if necessary, to meet demand increases within its service area. Development projects within its service area would also be anticipated to incorporate site-specific infrastructure improvements, as appropriate. As such, the Project's cumulative impacts with respect to natural gas infrastructure would be less than significant.

(3) Transportation Energy

Buildout of the Project, development projects under the General Plan buildout, and additional forecasted growth would cumulatively increase the demand for transportation-related fuel in the State and region. At buildout, the Project's estimated petroleum-based fuel usage would be approximately 233,656 gallons of gasoline and 76,330 gallons of diesel per year, or a total of 309,986 gallons of petroleum-based fuels annually. For comparison purposes, the transportation-related fuel usage for the Project would represent approximately 0.006 percent of the 2016 annual on-road gasoline-related energy consumption and 0.011 of the diesel-related energy consumption in Los Angeles County, as shown in Appendix O, of this Draft EIR.

Additionally, as described above, petroleum currently accounts for 90 percent of California's transportation energy sources; however, over the last decade the State has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHGs from the transportation sector, and reduce vehicle miles traveled, which would reduce reliance on petroleum fuels. According to the CEC, gasoline consumption has declined by 6 percent since 2008, and the CEC predicts that the demand for gasoline will continue to decline over the next 10 years and that there will be an increase in the use of alternative fuels, such as natural gas, biofuels, and electricity. As with the Project, other future development projects would be expected to reduce VMT by encouraging the use of alternative modes of transportation and other design features that promote VMT reductions.

Furthermore, as described above under Impact M.4-3, the Project would be consistent with the energy efficiency policies emphasized by the 2016–2040 RTP/SCS.

Most notably, the Project includes the development and expansion of the existing ArtCenter and adding student housing on campus, which would reduce the number of vehicle trips necessary for students to make under existing conditions, as they would be able to access the campus by walking and utilizing shuttle services. The Project Site is also well-served by existing public transportation, including Pasadena Transit, Metro, and ArtCenter shuttles. This is evidenced by the Project Site's location within a designated HQTA. Although there are no per-capita GHG emission reduction targets for passenger vehicles set by CARB for 2040, the 2016–2040 RTP/SCS GHG emission reduction trajectory shows that more aggressive GHG emission reductions are projected for 2040.[46] The 2016–2040 RTP/SCS would result in an estimated 8-percent decrease in per-capita GHG emissions by 2020, 18-percent decrease in per-capita GHG emissions by 2035, and 21-percent decrease in per-capita GHG emissions by 2040. By meeting and exceeding the SB 375 targets for 2020 and 2035, as well as achieving an approximately 21-percent decrease in per-capita GHG emissions by 2040 (an additional 3-percent reduction in the five years between 2035 [18 percent] and 2040 [21 percent]), the 2016–2040 RTP/SCS is expected to fulfill and exceed its portion of SB 375 compliance with respect to meeting the State's GHG emission reduction goals. As discussed in Section IV.F, Greenhouse Gas Emissions, of this Draft EIR, the Project results in a VMT reduction of approximately 33 percent, which would be consistent with the reduction in transportation emission per capita provided in the 2016–2040 RTP/SCS. By its very nature, the 2016–2040 RTP/SCS is a regional planning tool that addresses cumulative growth and resulting environmental effects. Since the Project is consistent with the 2016–2040 RTP/SCS, its contribution to cumulative transportation energy use is not cumulatively considerable and is, therefore, less than significant.

(4) Conclusion

Based on the analysis provided above, the Project's contribution to cumulative impacts related to energy consumption (i.e., electricity, natural gas, and petroleum-based fuel) would not be a cumulatively considerable effect related to: (1) the use of non-renewable resources in a wasteful and inefficient manner during construction, operation, and/or maintenance; (2) an increase in demand for electricity or natural gas that exceeds available supply or distribution infrastructure capabilities that could result in the construction of new energy facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; (3) a conflict with adopted energy conservation plans; or (4) a violation of State or federal energy standards. As such, the Project's cumulative impacts related to energy are concluded to be less than significant.

[46] *Southern California Association of Governments, Final 2016–2040, RTP/SCS, April 2016, p. 153.*

5. Mitigation Measures

Project-level and cumulative impacts with regard to energy use would be less than significant. Therefore, no mitigation measures are required.

6. Level of Significance after Mitigation

Project-level and cumulative impacts related to energy would be less than significant without mitigation.