ENERGY INFORMATION

Regulatory Framework

Federal Regulations

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]

State Building Energy Efficiency Standards

The Building Energy Efficiency Standards (Title 24 Part 6) were first adopted in 1976 and have been updated periodically since then as directed by statute. The Standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. Public Resources Code Sections 25402 subdivisions (a)-(b) and 25402.1 emphasize the importance of building design and construction flexibility by requiring the Energy Commission to establish performance standards, in the form of an "energy budget" in terms of the energy consumption per square foot of floor space. For this reason, the Standards include both a prescriptive option, allowing builders to comply by using methods known to be efficient, and a performance option, allowing builders complete freedom in their designs provided the building achieves the same overall efficiency as an equivalent building using the prescriptive option. Reference Appendices are adopted along with the Standards that contain data and other information that helps builders comply with the Standards.

The 2016 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The most significant efficiency improvements to the residential Standards include improvements for attics, walls, water heating, and lighting. The most significant efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) 90.1 2013 national standards. New efficiency requirements for elevators and direct digital controls are included in the nonresidential Standards. The 2016 Standards also include changes made throughout all of its sections to improve the clarity, consistency, and readability of the regulatory language. The

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[1] *CAFE standards: www.nhtsa.gov/fuel-economy.*

building efficiency standards are enforced through the local building or individual agency permit and approval processes.[2]

California Green Building Code

Part 11 of the Title 24 California Building Standards Code is referred to as the California Green Building Standards Code, or CalGreen. The purpose of the California Green Building Standards Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality." As of January 1, 2011, the California Green Building Standards Code is mandatory for all new buildings constructed in the state. The California Green Building Standards Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality. The California Green Building Standards Code was most recently updated in 2016 to include new mandatory measures for residential as well as nonresidential uses; the new measures took effect on January 1, 2017.

California Renewable Energy Resources Act

LADWP is subject to the California Renewable Energy Resources act and thus is required to commit to the use of renewable energy sources, as defined in its 2013 Renewables Portfolio Standard Policy and Enforcement Program. LADWP has committed to meeting the requirement to procure at least 33 percent of their energy portfolio from renewable sources by 2020 as fiscal constraints, renewable energy pricing, system integration limits, and transmission constraints permit. Eligible renewable resources are defined in the 2013 Renewable Portfolio Standard to include biodiesel; biomass; hydroelectric and small hydroelectric power (30 mw or less); Los Angeles Aqueduct hydro power plants; digester gas; fuel cells; geothermal; landfill gas; municipal solid waste; ocean thermal, ocean wave, and tidal current technologies; renewable derived biogas; multi-fuel facilities using renewable fuels; solar photovoltaic; solar thermal electric; wind; and "other renewables that may be defined later".[3]

LADWP's target procurement of energy from renewable resources in 2014 was 20 percent. As of 2011, the most recent year for which data is available, its existing renewable energy resources included small hydro, wind, solar, and biogas, which accounted for 20 percent of its overall energy mix. This represents the available off-site renewable sources of energy that would meet Project demand. With respect to on-site renewable energy sources, because of the Project's location, there are no local sources of energy from the following sources: biodiesel, biomass hydroelectric

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[2] *CalGreen: http://www.bsc.ca.gov/*

[3] *City of Los Angeles, Department of Water and Power, Renewables Portfolio Standard Policy and Enforcement Program, amended December 2013.*

and small hydro, digester gas, fuel cells, landfill gas, municipal solid waste, ocean thermal, ocean wave, and tidal current technologies, or multi-fuel facilities using renewable fuels. Geothermal energy, the use of heat naturally present in shallow soil or in groundwater or rock to provide building heating/cooling and to heat water, requires the installation of a heat exchanger consisting of a network of below-ground pipes to convey heated or cooled air to a building. Although methane is a renewable derived biogas, it is not available on the Project Site in commercially viable quantities or form (i.e., a form that could be used without further treatment), and its extraction and treatment for energy purposes would result in secondary impacts; it is currently regulated as a hazardous material by the City.

The use of energy provided by alternative (i.e., renewable) resources, off-site and on-site, to meet the Project's operational demands is constrained by the energy portfolio mix managed by LADPW, the service provider for the Project Site, and limitations on the availability or feasibility of on-site energy generation.

Assembly Bill 32

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 GHG emission levels by 2010 and year 1990 levels by 2020. To achieve these goals, AB 32 tasked the California Public Utilities Commission and the California Energy Commission 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.

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. 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. [4]

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. Petroleum importers, refiners and wholesalers can either develop their own

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[4] *Clean Car Standards—Pavley, Assembly Bill 1943, www.energy.ca.gov/low_carbon_fuel_standard/,*

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.[5]

CARB's Advanced Clean Cars Regulation

Closely associated with the Pavley regulations, the Advanced Clean Car Standards emissions-control program (ACC program) was approved by CARB in 2012. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles for model years 2017–2025. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions. Additionally, environmentally superior cars will be available across the range of models (compacts, sport utility vehicles [SUVs], pickups, and minivans) and consumer savings on fuel costs will average $6,000 over the life of the car.[6]

Airborne Toxic Control Measure

The California Air Resources Board (CARB) has adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. This measure prohibits diesel-fueled commercial vehicles greater than 10,000 pounds from idling for more than five minutes at any given time. CARB has also approved the Truck and Bus regulation (CARB Rules Division 3, Chapter 1, Section 2025, subsection (h))[7] to reduce NO_X, PM_{10}, and $PM_{2.5}$ emissions from existing diesel vehicles operating in California; this regulation will be phased in with full implementation by 2023. In addition to limiting exhaust from idling trucks, CARB recently promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower. 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. Implementation began January 1, 2014 and the compliance schedule requires that best available control technology turnovers or retrofits be fully implemented by 2023 for large and medium equipment fleets and by 2028 for small fleets. Construction workers working on the Site would be required to demonstrate compliance with applicable California Air Resources Board (CARB) regulations governing the accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment.

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[5] *Low Carbon Fuel Standard: Fuels and Transportation Division Emerging Fuels and Technologies Office, www.energy.ca.gov/low_carbon_fuel_standard/*

[6] *California Renewables Portfolio Standard (RPS), http://www.cpuc.ca.gov/RPS_Homepage/*

[7] *California Air Resources Board, Final Regulation Order, Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use On-Road Diesel-Fueled Vehicles, http://www.arb.ca.gov/msprog/onrdiesel/documents/tbfinalreg.pdf, accessed May 12, 2017.*

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.[8]

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. Recently, SCAG adopted the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS).[9] The goals and policies of the 2016-2040 RTP/SCS are the same as those in the 2012–2035 RTP/SCS.

The RTP/SCS also establishes High-Quality Transit Areas (HQTA), which are described as generally walkable transit villages or corridors that are within 0.5 miles of a well-serviced transit stop or a transit corridor with 15-minute or less service frequency during peak commute hours. 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 2016-2040 RTP/SCS.[10]

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 California Energy Commission must adopt and transmit to the Governor and Legislature an Integrated Energy Policy Report every two years. The most recently completed report, the 2015 Integrated Energy Policy Report, addresses a variety of issues related to energy efficiency, benchmarking under the Assembly Bill 758 Action Plan, strategies related to data for improved

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[8] *Sustainable Communities, www.arb.ca.gov/cc/sb375/sb375.htm*

[9] *SCAG, 2016 RTP/SCS, dated April 2016.*

[10] *http://scagrtpscs.net/SiteAssets/ExecutiveSummary/assets/resources/Exhibit5-1_HighQualityTransitAreaInTheSCAGregionFor2040Plan.pdf*

decisions in the Existing Buildings Energy Efficiency Action Plan, building energy efficiency standards, achieving 50 percent renewable by 2030, among other issues.[11]

2016 Final Power Integrated Resource Plan[12]

The LADWP released the 2016 Final Power Integrated Resource Plan (IRP) in December 2016, which provides a 20-year framework to ensure LADWP can meet the future energy needs of its ratepayers by forecasting demand for energy and determining how that demand will be met. The IRP is an update of the 2015 IRP, and reflects evolving environmental, regulatory, and economic developments. The 2015 IRP included a newly created and redesigned energy efficiency (EE) program to achieve at least 10 percent less customer usage of electricity by 2020; development of a new Power System Reliability Program (PSRP) to incorporate not only distribution, but also generation, transmission, and substations with a new prioritization model to improve system reliability; and plans for an agreement between Intermountain Power Agency and the Intermountain Power Project (IPP) participants to replace IPP coal-fired generation with new highly efficient gas-fired generators by no later than July 1, 2025, two years earlier than recommended in 2012's IRP.

The 2016 IRP incorporates updates to reflect the latest load forecast, fuel price and projected renewable price forecasts, and other modeling assumptions. Major renewable projects approved or implemented include the approval of 460 mw of large scale solar, approval of the 250 mw Beacon Solar Project, implementation of Pine Tree and Adelanto Solar, and implementation of two geothermal projects. An innovative Solar Feed-in-Tariff (FiT) Program was implemented by the Department of Energy, which consists of a FiT 100 – Set Pricing Program and a FiT 50 – Competitive Pricing Program, which bundles Beacon Solar and Local Solar. The Fit 50 - Competitive Pricing Program is an innovative program that combines both a FiT local solar agreement committing to a large block of approximately 10mw, together with a commitment to a large utility scale project of approximately 50 mw to be built by the same vendor at LADWP's Beacon Solar site. This IRP considers a 20-year planning horizon to guide LADWP as it executes major new and replacement projects and programs. The overriding purpose is to provide a framework to assure the future energy needs of LADWP customers are met in a manner that balances the following key objectives: superior reliability and supply of electric service; competitive electric rates consistent with sound business principles; and responsible environmental stewardship exceeding all regulatory obligations.[13]

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

[12] *2016 Final Power IRP: https://www.ladwp.com/ladwp/faces/wcnav_externalId/a-p-doc?_adf.ctrl-state=12do6zwhm2_33&_afrLoop=86387266209556.*

[13] *Ibid.*

LADWP Rules Governing Water and Electric Service

Electrical service would be provided in accordance with the LADWP's Rules Governing Water and Electric Service.[14] LADWP will provide a dependable supply of potable water, from available sources, in quantities adequate to meet the reasonable needs of its customers. The delivery of such supply will be at the Service Connection. Generally, the LADWP will maintain operating pressures at the Service Connection of not less than 25 pounds per square inch. Pressures may be lower at times of Maximum Demand or because of unusual elevations or other special conditions.

City of Los Angeles Green Building Code

The 2020 LA Green Building Code is based on the 2 California Green Building Standards Code and commonly known as *CAL*Green as discussed above, that was developed and mandated by the State to attain consistency among the various jurisdictions within the State with the specific goals to reduce a building's energy and water use, reduce waste, and reduce the carbon footprint. The following types of projects are subject to the LA Green Building Code:

- All new buildings (residential and non-residential)
- All additions (residential and non-residential)
- Alterations with building valuations over $200,000 (residential and non-residential)

Specific measures to be incorporated into the Project to the extent feasible could include, but are not limited to:

- Recycling of asphalt, concrete, metal, wood and cardboard waste generated during demolition and construction;
- Installation of a "cool roof" that reflects the sun's heat and reduces urban heat island effect;
- Use of recycled construction materials, including recycled steel framing, crushed concrete sub-base in parking lots, fly ash-based concrete and recycled content in joists and joist girders when feasible;
- Use of locally (within 500 miles) manufactured construction materials, where possible;
- Use of energy efficient lighting;
- Use of high energy efficiency rooftop heating and conditioning systems;

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[14] *LADWP Rules Governing Water and Electric Service: https://www.lacity.org/your-government/government-information/city-charter-rules-and-codes*

- 15% of the roof area set aside for future solar panels;
- Use of ultra-low-flow toilets and low-flow metered hand-wash faucets in public facilities;
- Use of smart irrigation systems to avoid over-watering of landscape;
- Use of indigenous and/or water-appropriate plants in landscaping;
- Use of low-impact development measures using innovative design to filter and infiltrate stormwater runoff and reduce water sent to storm drain systems; and
- Provision of electric vehicle charging stations in the parking structure.

Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power (LADWP) provides electricity to the Project Site. LADWP provides its 1.4 million customers with more than 26 million megawatt hours (mw-h) of electricity a year.[15] LADWP serves a 465-square-mile area and is the largest municipal utility in the nation. In total, LADWP operates 20 receiving stations and 174 distribution stations and plans to acquire additional facilities as their load increases. The LADWP electricity portfolio is made up of coal (39 percent), natural gas (22 percent), renewables[16] (20 percent), nuclear (11 percent), unspecified sources (5 percent), and large hydroelectric (3 percent).[17]

Table 1, LADWP Electricity Capacity, shows the LADWP electricity system capacity and Table 2, LADWP Energy Usage, shows the LADWP power usage.

Table 3, Energy Sales and Peak Demand, provides the estimated sales (consumption) by sector (residential, commercial, industrial, etc.) and peak demand over the next 10 years.

Table 1
LADWP Electricity Capacity

	Amount (megawatts)
Net Maximum Plant Capacity	7,300
Los Angeles Peak Demand	6,177
Source: LADWP: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-factandfigures?_adf.ctrl-state=15ti2xgei0_4&_afrLoop=1119458526572567	

[15] *LADWP, website: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-pastandpresent?_adf.ctrl-state=na2o8wvza_4&_afrLoop=81976737428000, June 10, 2017.*

[16] *Renewables include small hydroelectric, solar, wind, geothermal, biomass and waste.*

[17] *LADWP, Power Facts and Figures website: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-factandfigures?_adf.ctrl-state=scgxlug8o_21&_afrLoop=82063279159000&_afrWindowMode=0&_afrWindowId=na2o8wvza_1#%40%3F_afrWindowId%3Dna2o8wvza_1%26_afrLoop%3D82063279159000%26_afrWindowMode%3D0%26_adf.ctrl-state%3Dna2o8wvza_33, June 10, 2017.*

Table 2
LADWP Energy Usage

	Amount (megawatt-hours)
Residential	8.4
Commercial	12.8
Industrial	1.9
Other	0.4
Total	**23.14**

Fiscal Year 2013. Source: LADWP: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-factandfigures?_adf.ctrl-state=15ti2xgei0_4&_afrLoop=1119458526572567.

Table 3
Energy Sales and Peak Demand

Year	Sector Sales (gw-h)						Peak Demand (mw)
	Residential	Commercial	Industrial	Misc.	PHEV	Total	
2018-19	8,184	12,731	1,837	306	205	23,264	5,739
2019-20	8,166	12,506	1,829	309	288	23,098	5,707
2020-21	8,173	23,480	1,832	311	368	23,163	5,718
2021-22	8,288	12,714	1,843	314	451	23,609	5,782
2022-23	8,430	13,037	1,852	316	531	24,165	5,908
2023-24	8,568	13,306	1,850	319	610	24,653	6,006
2024-25	8,686	13,568	1,849	321	673	25,097	6,098

gw-h – gigawatt-hours; mw – megawatts
Misc. includes streetlighting, Owens Valley, and intra-departmental
LADWP, 2016 IRP, Table A-1, page A-5: https://www.ladwp.com/ladwp/faces/wcnav_externalId/a-p-doc?_adf.ctrl-state=12do6zwhm2_33&_afrLoop=86387266209556

Power and Energy

When discussing electricity, the appropriate unit of measurement depends on whether one is referring to power or energy. Power is the rate at which energy is consumed (in watts, kilowatts, or megawatts). Energy is the amount of power consumed (in watt-hours). Customers are charged based on their energy use (typically kilowatt-hours). The relationship between power and energy:

- Energy (watt-hours) = power (watts) X time (hours)

For example, a 60-watt light bulb refers to the amount of power the light consumes. If the 60-watt light bulb was on for 12 hours, it would consume 720 watt-hours (or 0.72 kilowatt-hours) of energy.

Load Factor

Load factor represents how consistent the rate of energy usage throughout a given day. A 100 percent load factor means that the same amount of power is used off peak as on peak, so the system is getting full use of its generating resources. A low load factor results in generators being started more often to serve load for a few hours a day, which is not optimum. From the 1990s through 2005, annual system load factors were trending slowly upward, which is a positive movement. Since 2006, system load factors are trending down. Some of this decline in load factor is due to the fact that much of the historic energy efficiency effort is directed at lighting, which has a higher impact on sales when compared to peak. In the forecast for the future, this downward trend is sustained.[18]

Load factor can be expressed as the ratio of the average load in kilowatts (kw) supplied at a designated period compared to the peak or maximum load in kilowatts occurring in the period. Load factor, in percent, is derived by multiplying the kilowatt-hours (kw-h) in the period by 100 and dividing by the product of the maximum demand in kilowatts and the number of hours in the period:[19]

- Load Factor (%) = (kw-h / hours / kw) X 100%
- Example: Assume a 30-day billing period or 30 days X 24 hours for a total of 720 hours. Assume a customer used 10,000 kw-h and had a maximum demand of 21 kw. The customer's load factor would be 66 percent [(10,000 kw-h / 720 hours / 21 kw)*100].

Natural Gas Supply and Demand

The Southern California Gas Company (SCG), a subsidiary of Sempra Energy and the nation's largest natural gas supplier, distributes natural gas to 19.5 million residential, commercial, and industrial customers throughout southern California, including the Project Site. SCG owns and operates 95,000 miles of gas distribution mains and service lines, gas transmission compressor stations, underground storage facilities, as well as nearly 3,000 miles of transmission and storage pipeline. The total 136.1 billion cubic feet (Bcf) of natural gas storage capacity is divided as follows: 82 Bcf is for core customers, small industrial, and commercial customers; 4 Bcf is for system balancing; and the remaining 49.1 Bcf is available to other customers.[20] Natural gas

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[18] *LADWP, 2014 IRP, pg 47: https://www.ladwp.com/ladwp/faces/wcnav_externalId/a-p-doc?_adf.ctrl-state=q463ohn9x_17&_afrLoop=1251830725757441, April 14, 2015.*

[19] *Madison Gas and Electric, Glossary for Load Factor: http://www.mge.com/about/electric/glossary.htm#f, November 19, 2016.*

[20] *2016 CA Gas Report: https://www.socalgas.com/regulatory/documents/cgr/2016-cgr.pdf, November 19, 2016.*

service is provided in accordance with SCG's policies and extension rules on file with the California Public Utilities Commission (PUC) at the time contractual agreements are made.

The State produces about 15 percent of the natural gas it uses. The remaining 85 percent is obtained from sources outside of the State, 62 percent from the Southwest and Rocky Mountain area, and 23 percent from Canada. In the last ten years, three new interstate gas pipelines were built to serve California, expanding the over one million miles of existing pipelines. However, the availability of natural gas is based upon present conditions of gas supply and regulatory policies. As a public utility, SCG is under the jurisdiction of the PUC, but can be affected by the actions of federal regulatory agencies. Should these agencies take any action affecting natural gas supply or the conditions under which service is available, natural gas service would be provided in accordance with those revised conditions.

The 2016 California Gas Report includes projections regarding future demand for natural gas in the Southern California region. SCG projects total gas demand to decline at an annual rate of 0.6% from 2016 to 2035. The decline in throughput demand is due to modest economic growth, CPUC-mandated energy efficiency (EE) standards and programs, renewable electricity goals, the decline in commercial and industrial demand, and conservation savings linked to Advanced Metering Infrastructure (AMI). From 2016 to 2035, residential demand is expected to decline from 239 Bcf to 218 Bcf. The decline is due to declining use per meter offsetting new meter growth. The core, non-residential markets are expected to grow from 113 Bcf in 2016 to 105 Bcf by 2035. The change reflects an annual growth rate of 0.5% over the forecast period. The noncore, non-EG markets are expected to decline from 170 Bcf in 2016 to 153 Bcf by 2035. The annual rate of decline is approximately 0.5% due to very aggressive energy efficiency goals and associated programs. On the other hand, utility gas demand for enhanced oil recovery (EOR) steaming operations, which had declined since the FERC-regulated Kern/Mojave interstate pipeline began offering direct service to California customers in 1992, has shown some growth in recent years because of continuing high oil prices and is expected to show further growth in the early years of the forecast period. EOR demand is expected to remain at about its 2015 level through 2035 as gains are offset by the depletion of older oil fields.[21]

In 2016 gas demand for California is projected to average 6,072 million cubic feet per day (cf/day) and is projected to decrease to 4,626 million cf/day by 2035, a decline of 1.35 percent per year.[22] Table 4, Statewide Total Supplies and Requirements, shows the anticipated statewide total supplies and requirements for natural gas for 2014 to 2030. In 2015 (the latest data available from the 2016 California Gas Report), SCG's highest winter sendout was 4,036 million cf/day and highest summer sendout was 3,601 million cf/day.[23]

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[21] *2016 CA Gas Report: https://www.socalgas.com/regulatory/documents/cgr/2016-cgr.pdf, April 17, 2018.*

[22] *Ibid.*

[23] *Ibid.*

Table 4
Statewide Total Supplies and Requirements

	2018	2019	2020	2022	2025
Utility Supply Source					
California Sources	165	165	165	165	165
Out-of-State	4,758	4,711	4,668	4,618	4,599
Non-Utility Served Load	985	910	813	691	547
Statewide Supply Source Total	**5,909**	**5,787**	**5,645**	**5,474**	**5,312**
Utility Requirements					
Residential	1,185	1,167	1,155	1,148	1,114
Commercial	481	478	473	470	454
Natural Gas Vehicles	50	52	54	57	66
Industrial	943	937	932	931	930
Electric Generation	1,623	1,590	1,566	1,529	1,548
Enhanced Oil Recovery Steaming	46	46	46	46	46
Wholesale/International Exchange	246	246	247	247	247
Company Use and Unaccounted-For	74	73	73	71	72
Non-Utility Served Load	985	910	813	781	547
Statewide Requirements Total	**5,623**	**5,501**	**5,360**	**5,281**	**5,026**

All measurements in million cf per day. Numbers in the table may not add up exactly due to rounding. Average temperature and normal hydro year.
2016 California Gas Report: https://www.socalgas.com/regulatory/documents/cgr/2016-cgr.pdf, November 19, 2016.
Table: CAJA Environmental Services

The SCG demands for 2015 and 2035 are shown in Table 5. Demand is expected to be relatively flat (commercial) or exhibit annual declines (residential, industrial) due to modest economic growth, PUC-mandated demand-side management goals and renewable electricity goals, decline in commercial and industrial demand, and continued increased use of non-utility pipeline systems by EOR customers and savings linked to advanced metering modules.[24]

[24] *2016 CA Gas Report: https://www.socalgas.com/regulatory/documents/cgr/2016-cgr.pdf, November 19, 2016.*

Table 5
SCG Natural Gas Demands

	2015	2035	Difference
Residential	239	218	-21
Core Commercial	81	65	-16
Non-Core Commercial	16.4	14.7	-1.7
Industrial	21.6	15.3	-6.3

All measurements in billion cf
2016 CA Gas Report: https://www.socalgas.com/regulatory/documents/cgr/2016-cgr.pdf, August 31, 2016.