Appendix EGY-1

Energy Assessment

Energy Assessment

Sacramento County WattEV Innovative Freight Terminal (SWIFT) Project

Sacramento County, California

Kimley»Horn

Expect More. Experience Better.

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1 INTRODUCTION

This report documents the results on the Energy Assessment to evaluate potential short- and long-term energy consumption impacts of the Sacramento County WattEV Innovative Freight Terminal (SWIFT) Project (project). The assessment evaluates the potential construction and operational energy consumption associated with the project and determine the level of impact the project would have on the environment.

1.1 Project Location

The project site is located within the Sacramento International Airport Master Plan area in the northwest portion of Sacramento County, approximately 7.5 miles from downtown Sacramento; refer to **Figure 1: Regional Map**. Specifically, the project is located south of Interstate 5 (I-5) and immediately south of Sacramento International Airport; see **Figure 2: Local Vicinity Map**. The project site generally covers APNs 225-0010-003, 225-0010-035, 225-0010-036, and 225-0010-006 and encompasses approximately 118 acres.

1.2 Project Description

The Sacramento County Department of Airports has formed a public/private partnership with WattEV to construct, own, operate, and cost share the project. The project would provide a publicly accessible Electric Vehicle (EV) charging facility that would be built along a major freight corridor. Facility development would include the installation of Direct Current Fast Chargers (DCFC) and Megawatt Chargers powered by a new solar array that would support charging for shippers and transporters as well as public transportation and passenger vehicles. In addition, the project would include accessory structures which are discussed further below.

Project Facilities

The proposed project includes deployment of advanced high-powered public charging stations and associated facilities powered by a 12.5 megawatt alternating current (MWac) solar generation field, with nameplate power of 31.2 megawatts of direct current (MWdc), to support zero-electric freight movement in Sacramento. The charging areas and associated support facilities would occupy approximately 24 acres of land on the northern portion of the project site while the remaining 94 acres of the site would be occupied by solar fields; see **Figure 3: Overall Site Plan.**

The project site would be configured with two truck charging areas separated by a publicly accessible central plaza. The truck charging areas would include six 3,600-kilowatt (kW) charger configurations. Each configuration would consist of three Megawatt Charging Standard (MCS) 1,200 kW chargers and fifteen 240 kW Combined Charging Standard (CCS) chargers, for a total of 18 MCS chargers and 90 CCS chargers designed for heavy and medium duty (MHD) trucks. The truck charging pads are expected to cover 7.8 acres. In addition to the charging pads, a parking lot for trailers would be provided with an average of 53 parking stalls spread over 2.8 acres of land. The proposed project would also include the installation of 30 CCS chargers dedicated for passenger vehicles, which would be located at the central plaza.

Three buildings would be included within the public plaza. The first building would include offices for operations staff, a trucker refreshment area, trucker restrooms, and a resting lounge. It would consist of a single story and have a footprint of approximately 2,700 square feet. The second building would include a convenience store, food outlets, restrooms, and a resting lounge for the public. It would also consist of a single story and have a footprint of approximately 7,000 square feet. The third building would contain

two stories and be designated as a public visitor center, providing information about California's progress and milestones towards clean air initiatives and emission reduction. The footprint of the public plaza would be approximately 5.25 acres.

Site Access

Access to the project site would be provided along Bayou Way, which borders the site to the north and is parallel to I-5, via Airport Boulevard and its nearby interchange with I-5. Direct access to the project site would be provided by three sets of ingress and egress points (six total access points) along Bayou Way. Two sets of ingress and egress points would serve the truck charging areas while the third set of ingress and egress points would serve the public plaza.

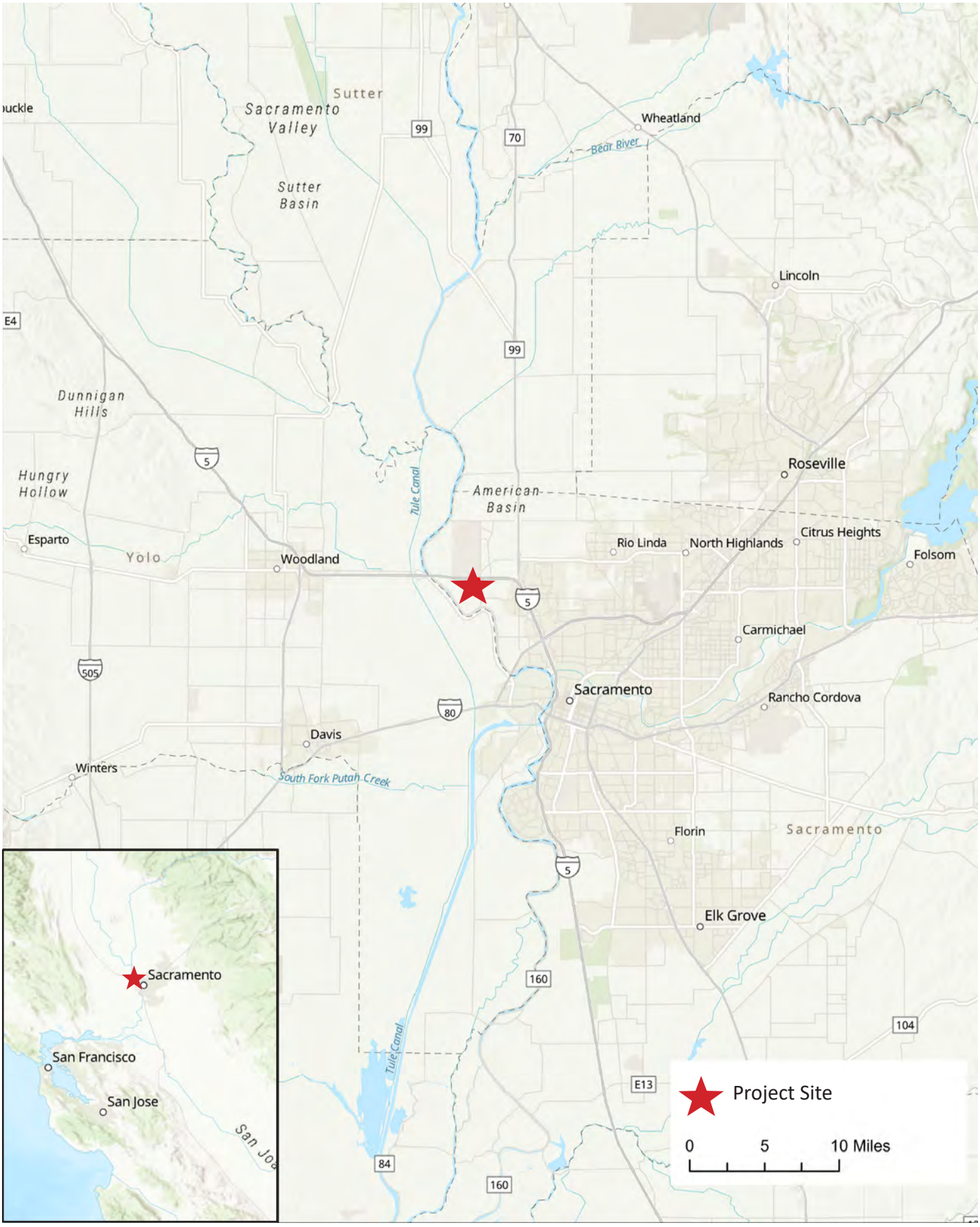
Offsite Improvements

Development of the project would include improvements to portions of Bayou Way to facilitate increased volumes of truck and passenger car traffic. This could include widening of the roadbed and shoulders in some locations. Furthermore, improvements to the interchange of Airport Boulevard and I-5 may be required. The extent of these improvements is still under development.

Construction

The proposed project would be constructed in two phases. Phase 1 would consist of installation of the truck charging areas and public plaza as described above, as well as a 12.5 MWac solar photovoltaic (PV) system with nameplate power of 15.6 MW (50 percent of the final solar array power). Phase 2 would consist of the installation of the remaining 15.6 MW of solar power for a total nameplate of 31.2 MW.

The proposed project would include construction of a customer-owned substation in coordination with SMUD. The provision of the substation would allow the proposed project to export excess generation during peak generation and import power during peak charging sessions. The substation would include medium voltage transformers, switchgears, surge protection, metering equipment, communication equipment, equipment pads, grounding equipment, steel structures, all enclosed by fencing. Outside the substation, sub-transmission poles would provide support for wire entrances, distribution voltage would leave the substation in either overhead or underground configurations and connect to an existing SMUD 69kV overhead transmission line that runs parallel to Power Line Road, about 600 feet east of the project site. Phase 1 of the substation would be sized for 21.6 MW of charging and 12.5 MWac. The substation and switchgear would provide physical space for additional transformer and breakers respectively for Phase 2.



Source: ESRI, 2023

Figure 1: Regional Map

WattEV Innovative Freight Terminal (SWIFT) Project

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Source: ESRI, 2023

Figure 2: Local Vicinity Map

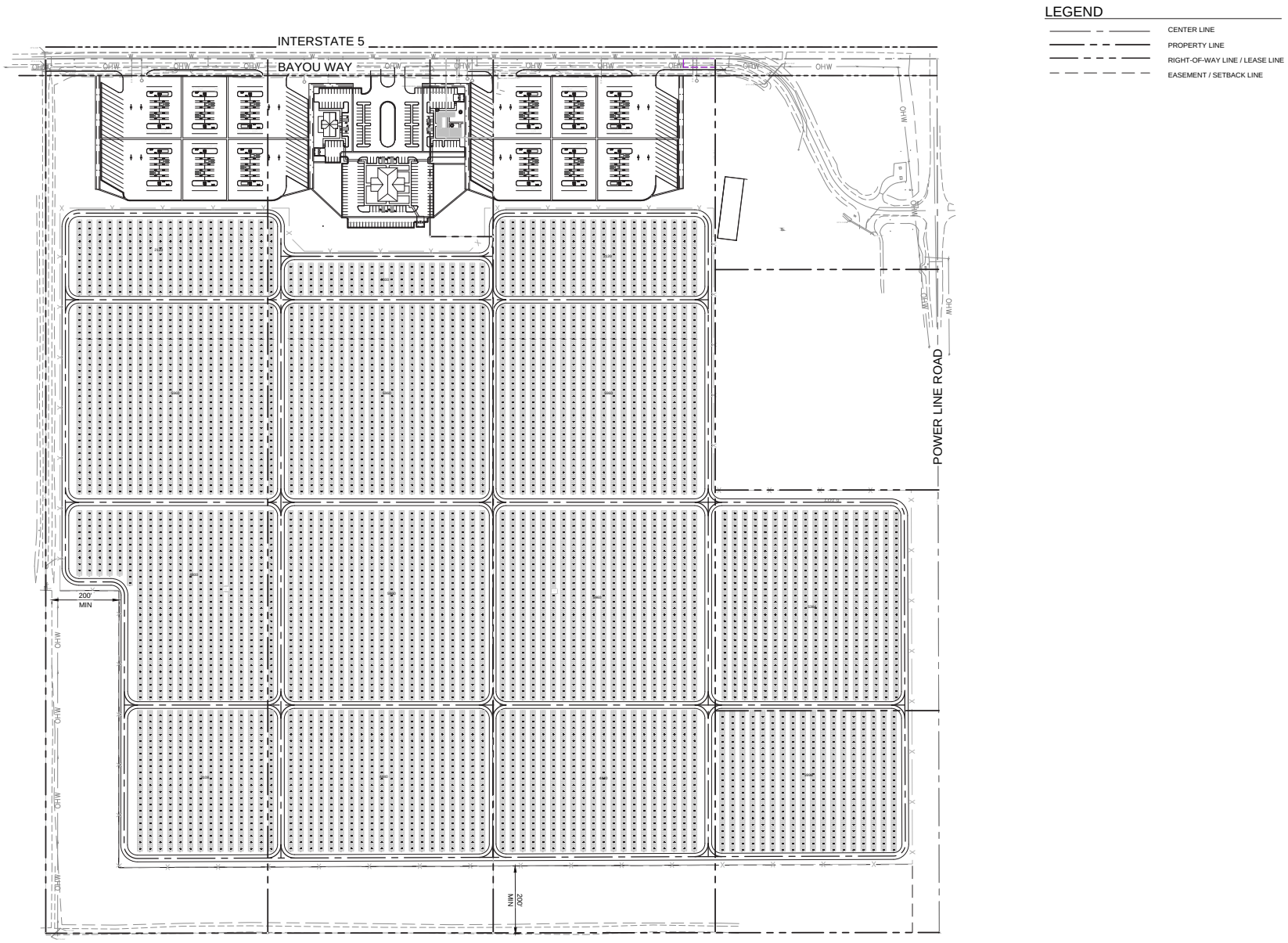

Figure 3: Overall Site Plan

WattEV Innovative Freight Terminal (SWIFT) Project

Not to scale

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2 ENVIRONMENTAL SETTING

2.1 Energy Conservation

In 1975, largely in response to the oil crisis of the 1970s, the California State Legislature adopted Assembly Bill 1575 (AB 1575), which created the California Energy Commission (CEC). The statutory mission of the CEC is to forecast future energy needs, license thermal power plants of 50 megawatts or larger, develop energy technologies and renewable energy resources, plan for and direct State responses to energy emergencies, and, perhaps most importantly, promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards. AB 1575 also amended Public Resources Code Section 21100(b)(3) to require Environmental Impact Reports (EIRs) to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Thereafter, the State Resources Agency created Appendix F, *Energy Conservation*, in the California Environmental Quality Act Guidelines (CEQA Guidelines). CEQA Guidelines Appendix F is an advisory document that assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy.

In addition, the California Natural Resources Agency finalized updates to the CEQA Guidelines in December 2018. CEQA Guidelines Section 15126.2(b) treats "wasteful, inefficient, or unnecessary" energy consumption as a significant environmental impact. As a result, energy thresholds have been incorporated into Appendix G of the CEQA Guidelines. This report has been prepared to assess energy impacts in accordance with Appendix G of the CEQA Guidelines.

2.2 Energy Consumption

Energy consumption is analyzed in this report due to the potential direct and indirect environmental impacts associated with the project. Such impacts include the depletion of nonrenewable resources and emissions of pollutants during both construction and long-term operational phases.

Electrical Service. Pacific Gas and Electric (PG&E) provides electrical services to the Sacramento County (County) through State-regulated public utility contracts. Over the past 15 years, electricity generation in California has undergone a transition. Historically, California has relied heavily on oil- and gas-fired plants to generate electricity. Spurred by regulatory measures and tax incentives, California's electrical system has become more reliant on renewable energy sources; including cogeneration, wind energy, solar energy, geothermal energy, biomass conversion, transformation plants, and small hydroelectric plants. Unlike petroleum production, electricity generation is not usually tied to the location of the fuel source and can be delivered great distances via the electrical grid. The generating capacity of a unit of electricity is expressed in megawatts (MW). Net generation refers to the gross amount of energy produced by a unit, minus the amount of energy the unit consumes. Generation is typically measured in megawatt-hours (MWh), kilowatt-hours (kWh), or gigawatt-hours (GWh).

Natural Gas Services. PG&E provides natural gas services Sacramento County (County). Natural gas is a hydrocarbon fuel found in reservoirs beneath the Earth's surface and is composed primarily of methane (CH_4). It is used for space and water heating, process heating and electricity generation, and as transportation fuel. Use of natural gas to generate electricity is expected to increase in coming years because it is a relatively clean alternative to other fossil fuels (e.g., oil and coal). In California and throughout the western United States, many new electrical generation plants fired by natural gas are being brought online. Thus, there is great interest in importing liquefied natural gas from other parts of the world. California's natural gas-fired electric generation decreased by 3 percent in 2022, accounting for 48 percent of in-state generation.[1]

[1] California Energy Commission, *2022 Total System Electric Generation*, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2022-total-system-electric-generation, accessed October 19, 2023.

Energy Usage. Energy usage is typically quantified using the British Thermal Unit (BTU). Total energy usage in California was 7,202 trillion BTUs in 2021 (the most recent year for which this specific data is available).[2] Of California's total energy usage, the breakdown by sector is 37.8 percent transportation, 23.2 percent industrial, 19.0 percent commercial, and 20.0 percent residential.[3] Electricity and natural gas in California are generally consumed by stationary users such as residences, commercial, and industrial facilities, whereas petroleum consumption is generally accounted for by transportation-related energy use. In 2023, taxable gasoline sales (including aviation gasoline) in California accounted for 13,584,697,639 gallons of gasoline.[4]

The electricity consumption attributable to the County from 2011 to 2021 is shown in **Table 1: Electricity Consumption in Sacramento County from 2011-2021**. As indicated in **Table 1**, energy consumption in the County fluctuated with increases and decreases occurring in some years.

Table 1: Electricity Consumption in Sacramento County 2012-2022

Year	Electricity Consumption (in millions of kilowatt hours)
2011	10,720
2012	10,782
2013	10,790
2014	10,962
2015	10,896
2016	10,814
2017	11,384
2018	10,916
2019	10,912
2020	11,048
2021	11,259

Source: California Energy Commission, *Electricity Consumption by County*, http://www.ecdms.energy.ca.gov/, accessed October 2023.

The natural gas consumption attributable to the County from 2011 to 2021 is shown in **Table 2: Natural Gas Consumption in Sacramento County 2011-2021**. Natural gas consumption in the County fluctuated with increases and decreases occurring annually.

Table 2: Natural Gas Consumption in Sacramento County 2012-2022

Year	Natural Gas Consumption (in millions of therms)
2011	329
2012	309
2013	317

[2] U.S. Energy Information Administration, *Table F33: Total energy consumption, price, and expenditure estimates, 2020,* https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_te.html&sid=CA, accessed October 19, 2023.

[3] U.S. Energy Information Administration, *California State Profile and Energy Estimates*, *California Energy Consumption by End-Use Sector, 2020*, https://www.eia.gov/state/?sid=CA#tabs-2, accessed October 19, 2023.

[4] California Department of Tax and Fee Administration, *January 2023 – Motor Vehicle Fuel 10 Year Reports*, https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm, accessed October 19, 2023.

Table 2: Natural Gas Consumption in Sacramento County 2012-2022	
Year	**Natural Gas Consumption (in millions of therms)**
2014	274
2015	279
2016	288
2017	309
2018	305
2019	312
2020	298
2021	301
Source: California Energy Commission, *Natural Gas Consumption by County*, http://www. ecdms.energy.ca.gov/, accessed October 2023.	

Automotive fuel consumption in the County from 2012 to 2022 is shown in **Table 3: Automotive Fuel Consumption in Sacramento County 2012-2022**. As shown in **Table 3**, on-road automotive fuel consumption in the County increased between 2012 and 2019 and fluctuated from 2020 to 2022. Heavy-duty vehicle fuel consumption steadily increased between 2012 and 2022 and fluctuated from 2020 to 2022.

Table 3: Automotive Fuel Consumption in Sacramento County 2012-2022		
Year	**On-Road Automotive Fuel Consumption (gallons)**	**Heavy-Duty Vehicle/Diesel Fuel Consumption (gallons)**
2012	611,415,073	610,059,991
2013	616,341,439	615,108,932
2014	624,353,859	623,549,124
2015	641,111,059	640,908,588
2016	664,111,457	664,018,041
2017	676,919,973	676,792,690
2018	677,036,959	676,961,011
2019	679,877,773	679,783,452
2020	591,775,033	591,721,345
2021	661,443,989	661,408,372
2022	660,515,529	660,489,615
Source: California Air Resources Board, EMFAC2021.		

3 REGULATORY SETTING

3.1 Federal

Corporate Average Fuel Standards

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.[5] 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.

Fuel efficiency standards for medium- and heavy-duty trucks have been jointly developed by USEPA and NHTSA. The Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018, and result in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline, depending on the vehicle type. USEPA and NHTSA have also adopted the Phase 2 heavy-duty truck standards, which cover model years 2018 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over the 2017 baseline depending on the compliance year and vehicle type.[6]

Energy Independence and Security Act of 2007

Signed into law in December 2007, the Energy Independence and Security Act was passed to increase the production of clean renewable fuels; increase the efficiency of products, buildings, and vehicles; improve the energy performance of the federal government; and increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy. The Energy Independence and Security Act included the first increase in fuel economy standards for passenger cars since 1975, and also included a new energy grant program for use by local governments in implemented energy-efficiency initiatives, as well as a variety of green building incentives and programs.

3.2 State of California

California's Energy Efficiency Standards for Residential and Non-Residential Buildings (Title 24)

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the California Energy Commission) in June 1977 and are updated every three years (Title 24, Part 6, of the California Code of Regulations). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods.

On August 11, 2021, the CEC adopted the 2022 Energy Code. In December, it was approved by the California Building Standards Commission for inclusion into the California Building Standards Code. Among

[5] National Highway Traffic Safety Administration (NHTSA). *Corporate Average Fuel Economy*, https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy, 2022, accessed August 10, 2022.

[6] United States Environmental Protection Agency (USEPA) and National Highway Traffic Safety Administration (NHTSA), *Federal Register / Vol. 81, No. 206 / Tuesday, October 25, 2016 / Rules and Regulations. Final Rule for Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and heavy-Duty Engines and Vehicles – Phase 2*, 2016, https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf, accessed August 10, 2022.

other updates like strengthened ventilation standards for gas cooking appliances, the 2022 Energy Code includes updated standards in three major areas:

- New electric heat pump requirements for residential uses, schools, offices, banks, libraries, retail, and grocery stores.
- The promotion of electric-ready requirements for new homes including the addition of circuitry for electric appliances, battery storage panels, and dedicated infrastructure to allow for the conversion from natural gas to electricity.
- The expansion of solar photovoltaic and battery storage standards to additional land uses including high-rise multifamily residences, hotels and motels, tenant spaces, offices, (including medical offices and clinics), retail and grocery stores, restaurants, schools, and civic uses (including theaters auditoriums, and convention centers).

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary measures (CALGreen Tier 1 and Tier 2) that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2022 and went into effect January 1, 2023. Projects whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.[7]

California Public Utilities Commission Energy Efficiency Strategic Plan

The California Public Utilities Commission (CPUC) prepared an Energy Efficiency Strategic Plan in 2011 with the goal of promoting energy efficiency and a reduction in greenhouse gases. AB 1109, adopted in 2007, also serves as a framework for lighting efficiency. This bill requires the State Energy Resources Conservation and Development Commission to adopt minimum energy efficiency standards as a means to reduce average Statewide electrical energy consumption by not less than 50 percent from the 2007 levels for indoor residential lighting and not less than 25 percent from the 2007 levels for indoor commercial and outdoor lighting by 2018. According to the Energy Efficiency Strategic Plan, lighting comprises approximately one-fourth of California's electricity use while non-residential sector exterior lighting (parking lot, area, walkway, and security lighting) usage comprises 1.4 percent of California's total electricity use, much of which occurs during limited occupancy periods.

California Energy Commission Integrated Energy Policy Report

In 2002, the State legislature adopted SB 1389, which requires the CEC to develop an Integrated Energy Policy Report (IEPR) every two years. SB 1389 requires the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices, and use these assessments and forecasts to develop energy policies that conserve resources,

[7] California Energy Commission, *2022 Building Energy Efficiency Standards*, https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency, accessed June 2023.

protect the environment, ensure energy reliability, enhance the State's economy, and protect public health and safety.

The CEC adopted the *2022 Integrated Energy Policy Report Update* (2022 IEPR Update) in February 2023. The 2022 IEPR Update provides an update to the forecast developed in the *2021 Integrated Energy Policy Report*, specifically the results of the CEC's assessments of a variety of energy issues facing California, many of which will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining reliability and controlling costs. The year of 2022 saw an increase in electricity consumption, fueled in part by California's efforts to decarbonize the transportation and building sectors by switching from fossil fuels to electricity. The year of 2022 was also unprecedented as the State continues to face the impacts and repercussions of challenging events, including the continued effects of extreme summer weather and drought conditions. In addition to these events, the 2022 IEPR Update covers a broad range of topics, including equity and environmental justice, the California Energy Planning Library, the California Energy Demand Forecast, energy reliability, western electricity integration, the role of hydrogen in California's clean energy future, high gasoline prices, and transitioning from fossil gas and advancing distributed energy resources. Overall, the 2022 IEPR Update identifies actions the State and others that would strengthen energy resiliency, reduce GHG emissions that cause climate change, improve air quality, and contribute to a more equitable future.

Renewable Portfolio Standard

In 2002, California established its Renewable Portfolio Standard program with the goal of increasing the annual percentage of renewable energy in the State's electricity mix by the equivalent of at least 1 percent of sales, with an aggregate total of 20 percent by 2017. The California Public Utilities Commission subsequently accelerated that goal to 2010 for retail sellers of electricity (Public Utilities Code Section 399.15(b)(1)). Then-Governor Schwarzenegger signed Executive Order S-14-08 in 2008, increasing the target to 33 percent renewable energy by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the California Air Resources Board under its AB 32 authority to enact regulations to help the State meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. In September 2010, the California Air Resources Board adopted its Renewable Electricity Standard regulations, which require all of the State's load-serving entities to meet this target. In October 2015, then-Governor Brown signed into legislation Senate Bill 350, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Signed in 2018, SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

California Health and Safety Code (HSC), Division 25.5/California Global Warming Solutions Act of 2006

In 2006, the California State Legislature adopted AB 32 (codified in the California HSC, Division 25.5 – California Global Warming Solutions Act of 2006), which focuses on reducing GHG emissions in California to 1990 levels by 2020. Under HSC Division 25.5, CARB has the primary responsibility for reducing the State's GHG emissions; however, AB 32 also tasked the CEC and the CPUC with providing information, analysis, and recommendations to CARB regarding strategies to reduce GHG emissions in the energy sector.

In 2016, SB 32 and its companion bill AB 197 amended HSC Division 25.5, established a new climate pollution reduction target of 40 percent below 1990 levels by 2030, and included provisions to ensure that the benefits of State climate policies reach into disadvantaged communities.

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 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.

California Air Resources Board (CARB)

CARB's Advanced Clean Car Program

The Advanced Clean Cars emissions-control program was approved by CARB in 2012. The program requires a greater number of zero-emission vehicle models for years 2015 through 2025 to control smog, soot, and GHG emissions. This program includes the Low-Emissions Vehicle (LEV) regulations to reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles; and the Zero-Emissions Vehicle (ZEV) regulations to require manufactures to produce an increasing number of pure ZEV's (meaning battery and fuel cell electric vehicles) with the provision to produce plug-in hybrid electric vehicles (PHEV) between 2018 and 2025.

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

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

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

In addition to limiting exhaust from idling trucks, in 2008, CARB approved the Truck and Bus regulation to reduce nitrous oxides (NO_X) and particulate matter (PM) with diameters of 10 and 2.5 micrometers or less (PM_{10} and $PM_{2.5}$, respectively) emissions from existing diesel vehicles operating in California (13 CCR Section 2025). The phased regulation aims to reduce emissions by requiring installation of diesel soot filters and encouraging the retirement, replacement, or retrofit of older engines with newer emission-controlled models. The phasing of this regulation has full implementation by 2023.

CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower (hp) such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The In-Use Off-Road Diesel-Fueled Fleets regulation adopted by CARB on July 26,

2007 aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models (13 CCR Section 2449). The compliance schedule requires full implementation by 2023 in all equipment for large and medium fleets and by 2028 for small fleets.

While the goals of these measures are primarily to reduce public health impacts from diesel emissions, compliance with the regulation has shown an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines.

3.3 Local

County of Sacramento Climate Action Plan

Sacramento County is currently in the process of developing the CAP. The Final Draft CAP was presented to the Board of Supervisors on March 23, 2022, and the Final Draft CAP was released in September 2022. The Final Draft CAP details specific measures that will be implemented in the County by 2030 to reduce GHG emissions from communitywide activities and government operations (County of Sacramento 2022). It also includes an adaptation plan that recommends actions to reduce the community's vulnerability to the anticipated impacts of climate change. The Final Draft CAP has been developed in response to mitigation measures contained in the County's General Plan, the County's adoption of a Climate Emergency Resolution in December 2020, and State legislation including Assembly Bill 32, SB 32, and SB 743 as well as Executive Orders S-3-05 and B-55-18. The strategies and measures contained in the Final Draft CAP complement a wide range of policies, plans, and programs that have been adopted by the County, State, and regional agencies to protect communities from hazards and activities contributing to GHG emissions. The Final Draft CAP includes the following strategies and elements related to renewable energy production:

Policy EN-19: Support the development and use of renewable sources of energy, including but not limited to biomass, solar, wind, and geothermal.

Policy PF-79: New solar and other renewable energy facilities should be designed and developed so as to minimize impacts to sensitive biological resources such as oak woodlands and vernal pools, cultural resources (including designated historic landscapes), or farmlands as defined by the California Department of Conservation. Nearby farm operations shall not be negatively affected by renewable energy facilities, per the policies of the Right-to-Farm Ordinance and the Agricultural Element.

Policy PF-80: Locate solar facilities, and design and orient solar panels in a manner that addresses potential problems of glare consistent with optimum energy and capacity production.

Policy PF-81: The County supports renewable energy facilities that convert and mitigate problem waste streams and residues that adversely impact environmental quality.

Sacramento County General Plan

The Energy Element of the County of Sacramento General Plan includes the goal of Sacramento to reverse the historical trend of increasing per capita consumption of energy; shift toward using a greater share of renewable sources of energy; and shift seasonal and daily peak energy demands to increase the load factor of electrical generating facilities, while maintaining or enhancing the general standard of living, the level of employment, and the quality of the environment. The Energy Element includes the following objectives and policies that may be applicable to the project:

Objective II: Improve air quality to promote the public health, safety, welfare, and environmental quality of the community. Reduce the reliance on non-renewable energy sources with emphasis on those in shortest supply.

To increase the contribution of solar water and space heating and space cooling, it is the policy of Sacramento County to:

Policy EN-18: Develop and implement standards for the protection of the solar rights of property owners.

To increase the amount of energy from wind, falling water, and geothermal sources, it is the policy of Sacramento County to:

Policy EN-19: Support the development and use of renewable sources of energy, including but not limited to biomass, solar, wind, and geothermal.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

In accordance with State CEQA Guidelines, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. This assessment focuses on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project. According to State CEQA Guidelines Appendix G, the proposed project would have a significant impact related to energy, if it would:

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

The impact analysis focuses on the three sources of energy that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with the project as well as the fuel necessary for project construction. The analysis of the project's electricity and natural gas use is based on the California Emissions Estimator Model (CalEEMod), which quantifies energy use for occupancy. The results of CalEEMod are included in the project's Air Quality Assessment, prepared by Kimley-Horn (October 2023). Modeling related to project energy use was based primarily on the default settings in CalEEMod. The amount of operational fuel use was estimated using CalEEMod outputs for the project and CARB Emissions Factor (EMFAC) 2021 computer program for typical daily fuel use in Sacramento County. Construction fuel was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry.

5 POTENTIAL IMPACTS AND MITIGATION

Threshold 5.1 Would the project result in wasteful, inefficient, or unnecessary consumption of energy resources?

Threshold 5.2 Would the project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Construction

Construction activity is anticipated to occur over a duration of approximately 12 months, beginning in March 2024. The energy associated with project construction includes electricity use associated with water utilized for dust control, diesel fuel from on-road hauling trips, vendor trips, and off-road construction diesel equipment, as well as gasoline fuel from on-road worker commute trips. Because construction activities typically do not require natural gas, it is not included in the following discussion. The methodology for each category is discussed below. Quantifications of construction energy are provided by the project below; see **Table 4: Energy Use During Construction**.

Table 4: Energy Use During Construction

Project Source	Total Construction Energy	Sacramento County Annual Energy	Percentage Increase Countywide
Electricity Use		**GWh**	
Water Use[1]	0.29	11,410	0.003%
Diesel Use		**Gallons**	
On-Road Construction Trips[2]	40,424	93,939,584	0.04%
Off-Road Construction Equipment[3]	25,363		0.03%
Construction Diesel Total	65,787		0.07%
Gasoline		**Gallons**	
On-Road Construction Trips	1,542	509,702,218	0.0003%

Notes:
1. Construction water use based on acres disturbed per day per construction sequencing and estimated water use per acre.
2. On-road mobile fuel source based on vehicle miles traveled (VMT) from CalEEMod and fleet-average fuel consumption in gallons per mile from EMFAC2021 in Sacramento for 2024.
3. Construction fuel use was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry.

Source: Refer to energy calculations in Appendix A: Energy Data.

Electricity

Water for Construction Dust Control. Electricity use associated with water use for construction dust control is calculated based on total water use and the energy intensity for supply, distribution, and treatment of water. The total number of gallons of water used is calculated based on acreage disturbed during grading and site preparation, as well as the daily watering rate per acre disturbed. As summarized in **Table 4**, the total electricity demand associated with water use for the project construction dust control would be approximately 0.30 GWh over the duration of construction.

Petroleum Fuel

On-Road Diesel Construction Trips. The diesel fuel associated with on-road construction mobile trips is calculated based on vehicle miles traveled (VMT) from vehicle trips (i.e., worker, vendor, and hauling), the

CalEEMod default diesel fleet percentage, and vehicle fuel efficiency in miles per gallon (MPG). VMT for the entire construction period is calculated based on the number of trips multiplied by the trip lengths for each phase shown in CalEEMod. Construction fuel was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry. Total diesel fuel consumption associated with on-road construction trips for the project would be approximately 25,363 gallons (see **Table 4**).

Off-Road Diesel Construction Equipment. Similarly, the construction diesel fuel associated with the off-road construction equipment that is calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry. The total diesel fuel associated with the project off-road construction equipment is approximately 40,424 gallons (see **Table 4**). Combined diesel usage from on-road and off-road construction sources is 65,787 gallons.

On-Road Gasoline Construction Trips. The gasoline fuel associated with on-road construction mobile trips is calculated based on VMT from vehicle trips (i.e., worker, vendor, and hauling), the CalEEMod default gasoline fleet percentage, and vehicle fuel efficiency in MPG using the same methodology as the construction on-road trip diesel fuel calculation discussed above. The total gasoline fuel associated with project on-road construction trips would be approximately 1,542 gallons (see **Table 4**).

Construction Energy Use Analysis

As indicated in **Table 4**, project construction electricity would represent approximately 0.003 percent of the current electricity use in Sacramento County. In 2024, Californians are anticipated to use approximately 17,373,343,963 gallons of gasoline and approximately 17,386,344,005 gallons of diesel fuel.[8] Total project construction gasoline and diesel fuel would also represent less than one percent (0.000008 percent and 0.0004 percent, respectively) of the State's fuel use. Sacramento County annual gasoline fuel use in 2024 is anticipated to be 509,702,218 gallons and diesel use would be approximately 93,939,584 gallons. Total project construction gasoline fuel would represent approximately 0.0003 percent of annual gasoline used in the County, and total project construction diesel fuel would also represent 0.07 percent of annual diesel fuel used in the County. Based on the total project's relatively low construction fuel use proportional to annual County use, the project would not substantially affect existing energy fuel supplies or resources. New capacity or additional sources of construction fuel are not anticipated to be required.

PG&E's total energy sales are projected to be 90,373 GWh of electricity in 2024 (the first year of project construction).[9] The project's construction-related net annual electricity consumption of 0.30 GWh would represent less than one percent of P&GE's projected sales. Therefore, it is anticipated that P&GE's existing and planned electricity capacity and electricity supplies would be sufficient to serve the project's temporary construction electricity demand. Transportation fuels (gasoline and diesel) are produced from crude oil, which can be domestic or imported from various regions around the world. Based on current proven reserves, current crude oil production would be sufficient to meet demand until 2050.[10] As such,

[8] California Air Resources Board, *EMFAC 2021 Emissions Inventory*. Retrieved from CARB Website: https://arb.ca.gov/emfac/emissions-inventory/748e5796dc340df3b3588a590da4a2be2e56aa60. Accessed October 19, 2023.

[9] California Energy Commission, *CED 2022 LSE and BA planning Forecast Tables,* https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2022-integrated-energy-policy-report-update-2. Accessed October 19, 2023.

[10] US Energy Information Administration. *California Energy Consumption Estimates*. Retrieved from EIA Website: https://www.eia.gov/state/print.php?sid=CA. Accessed October 19, 2023.

it is expected that existing and planned transportation fuel supplies would be sufficient to serve the project's temporary construction demand.

Furthermore, there are no unusual characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. In addition, some energy conservation would occur during construction through compliance with State requirements that equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest Environmental Protection Agency's and California Air Resources Board's engine emissions standards. These engines use highly efficient combustion engines to minimize unnecessary fuel use.

The project would have construction activities that would use energy, primarily in the form of diesel fuel (e.g., mobile construction equipment) and electricity (e.g., power tools). Contractors would be required to monitor air quality emissions of construction activities using applicable regulatory guidance such as from SCAQMD CEQA Guidelines. Additionally, construction is subject to and would comply with California regulations (e.g., California Code of Regulations, Title 13, Sections 2485 and 2449), which reduce diesel particulate matter and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. This requirement indirectly relates to construction energy conservation because when air pollutant emissions are reduced from the monitoring and the efficient use of equipment and materials, energy use is reduced. There are no aspects of the project that would foreseeably result in the inefficient, wasteful, or unnecessary use of energy during construction activities.

Due to increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary use of energy during construction. There is growing recognition among developers and retailers that sustainable construction is not prohibitively expensive and that there is a significant cost-savings potential in green building practices. Substantial reduction in energy inputs for construction materials can be achieved by selecting building materials composed of recycled materials that require substantially less energy to produce than non-recycled materials. The Project-related incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes, and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest in minimizing the costs of business.

As described above, the project's fuel consumption and energy usage from the entire construction period would increase fuel use in the County by less than one percent. It should be noted that the State CEQA Guideline Appendix G and Appendix F criteria require the project's effects on local and regional energy supplies and on the requirements for additional capacity to be addressed. A less than one percent increase in temporary demand is not anticipated to trigger the need for additional capacity. Project construction would have a nominal effect on the local and regional energy supplies. Additionally, use of construction fuel would be temporary and would cease once the project is fully developed. As such, project construction would have a nominal effect on the local and regional energy supplies. Therefore, potential impacts are considered less than significant.

Operations

The energy consumption associated with project operations would occur from building energy (electricity and natural gas) use, water use, and transportation-related fuel use. Annual energy use during project operations is shown in **Table 5: Project Annual Energy Use During Operations**.

Table 5: Project Annual Energy Use During Operations

Source	Annual Operational Energy[3]	Sacramento County Annual Energy	Percentage Increase Countywide
Electricity Use	**GWh**		
Total Electricity (Electricity Demand + Water Conveyance)	1.37	11,410	0.012%
Natural Gas Use	**Therms**		
Area[1]	3,404	303,719,417	0.001%
Diesel Use	**Gallons**		
Mobile[2]	1,712	93,286,176	0.002%
Gasoline Use	**Gallons**		
Mobile[2]	13,897	498,678,443	0.003%

Notes:
1. The electricity, natural gas, and water usage are based on project-specific estimates and CalEEMod defaults.
2. Calculated based on the mobile source fuel based on vehicle miles traveled (VMT) and fleet-average fuel consumption (in gallons per mile) from EMFAC2021 for operational year 2025. Trips associated with EV charging are assumed to be all EV with no diesel or gasoline use.
3. Annual Operational Energy represents the unmitigated operational from CalEEMod.

Source: Refer to energy calculations in Appendix A.

Petroleum Fuel

The gasoline and diesel fuel associated with on-road vehicular trips is calculated based on total VMT calculated for the analyses within the project's Air Quality Assessment and average fuel efficiency from the EMFAC model. The EMFAC fuel efficiency data incorporates the Pavley Clean Car Standards and the Advanced Clean Cars Program.[11] As summarized in **Table 5**, the total gasoline and diesel fuel associated with on-road trips would be approximately 13,897 gallons per year and 1,712 gallons per year, respectively.

Electricity

The electricity use during the project is based on CalEEMod defaults. The project would use approximately 1.37 GWh of electricity per year (see **Table 5**). The electricity associated with operational water use is estimated based on the annual water use and the energy intensity factor is the CalEEMod default energy intensity per gallon of water for Sacramento County. Project area water use is based on the CalEEMod default rates. Project electricity consumption would only increase countywide electricity use by 0.01 percent; see **Table 5**.

[11] The CARB EMFAC 2017 Technical Documentation from March 2018 notes that emissions are estimated with all current controls active, except Low Carbon Fuel Standards (LCFS). The reason for excluding LCFS is that most of the emissions benefits due to the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe). As a result, LCFS is assumed to not have a significant impact on CO2 emissions from EMFAC's tailpipe emission estimates.

Natural Gas

The methodology used to calculate the natural gas use associated with the project is based on CalEEMod default rates. As shown in **Table 5**, natural gas consumption from the project would represent only 0.001 percent increase over Countywide natural gas usage.

Operational Energy Use Analysis

Californians used 280,738.4 GWh of electricity in 2021, of which Sacramento County used 11,258.6 GWh.[12] The project's operational electricity use would represent a nominal portion of electricity used in the State and Sacramento County. Regarding natural gas, Californians used 11.9 billion therms of natural gas and 300.7 million terms of natural gas in Sacramento County in 2021. The project's operational natural gas use would contribute to approximately 0.001 percent of natural gas use in the State and 0.012 percent in the County.

Sacramento County's annual gasoline fuel use in 2025 is anticipated to be 498,678,443 gallons and diesel fuel is anticipated to be 93,286,176 gallons. Expected project operational gasoline and diesel consumption would represent approximately 0.003 percent of gasoline use and 0.002 percent of diesel use in the County, respectively.

Transportation fuels (gasoline and diesel) are produced from crude oil, which can be domestic or imported from various regions around the world. Based on current proven reserves, the global supply of crude oil, other liquid hydrocarbons, and biofuels is expected to be adequate to meet the world's demand for liquid fuels through 2050.[13]

The project's operational energy consumption represents less than one percent of energy consumption within the County. Project energy is self-sufficient with the demand of the project anticipated to be offset by existing energy supply and energy generation. Remaining required project energy will be exported. Therefore, project operations would not substantially affect existing energy or fuel supplies or resources. The project would comply with applicable energy standards and new capacity would not be required. Impacts would be less than significant.

Compliance with Energy Efficient Measures

As discussed above, California's Energy Efficiency Standards for Residential and Non-Residential Buildings create uniform building codes to reduce California's energy use and provide energy efficiency standards for residential and non-residential buildings. These standards are incorporated within the California Building Code and are expected to substantially reduce the growth in electricity and natural gas use. The 2022 Title 24 standards for new residential and nonresidential buildings will focus on encouraging electric heat pump technology and use, promote electric-ready buildings to get owners to use cleaner electric heating, cooking, and vehicle charging, expanding solar photovoltaic systems and battery storage systems to reduce reliance on fossil fuel power plants.

Water-efficient irrigation controls would also be used in landscaped areas. Comprehensive water conservation strategies would be developed to each respective land use as part of the project plan

[12] California Energy Commission, *California Energy Consumption Database.* http://www.ecdms.energy.ca.gov/Default.aspx. Accessed October 19, 2023.

[13] U.S. Energy Information Administration, *International Energy Outlook 2021* IEO2021: Schedule, Focus, and Publication https://www.eia.gov/outlooks/ieo/pdf/IEO2021_Narrative.pdf. Accessed October 19, 2023.

development. Buildings would incorporate water-efficient fixtures and appliances, to comply with Title 24.

It should also be noted that PG&E is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase total procurement from eligible renewable energy resources to 33 percent by 2020 and 50 percent by 2030. SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. Renewable energy is generally defined as energy that comes from resources which are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat.

As discussed above, California's Energy Efficiency Standards create uniform building codes to reduce California's energy use and provide energy efficient standards for residential and non-residential buildings. These standards are incorporated within the California Building Code and are expected to substantially reduce growth in electricity and natural gas use.

The project's energy consumption would exceed less than one percent of the corresponding energy sources within the County. Project operations would not substantially affect existing energy or fuel supplies or resources. All project buildings will comply with energy and fuel efficiency laws and regulations; thus, the project would not be wasteful or inefficient. Therefore, the project would result in a less than significant impact in this regard.

Mitigation Measure: No mitigation is required.

Level of Significance: Less than significant impact.

Cumulative Impacts

Potential cumulative impacts to energy would result if the proposed project, in combination with past, present, and future projects, would result in the wasteful or inefficient use of energy. This could result from development that would not incorporate sufficient building energy efficiency features, would not achieve building energy efficiency standards, or would result in the unnecessary use of energy during construction and/or operation.

The cumulative projects within the areas serviced by the energy service providers would be applicable to this analysis. Projects that include development of large buildings or other structures that would have the potential to consume energy in an inefficient manner would have the potential to contribute to a cumulative impact.

Construction and operations associated with implementation of the project would result in the use of energy, but not in an inefficient or wasteful manner. The use of energy would not be substantial in comparison to statewide electricity, natural gas, gasoline, and diesel demand; refer to **Table 4** and **Table 5**. As discussed above, the electricity used for construction would be less than that required during operation of the project, would be temporary, and would have a minimal contribution to the project's overall energy consumption. The project's construction electricity consumption would be negligible relative to PG&E's generated electricity and electricity supplies would be sufficient to serve the project's temporary construction electricity demand.

PG&E will review the project's estimated electricity consumption in order to ensure that the estimated power requirement would be part of the total load growth forecast for their service area and accounted for in the planned growth of the power system if the electricity demand was to increase past what the PV panels can provide. It should be noted that PG&E considers planned development for their service areas and are in and of themselves providing for cumulative growth. Therefore, it is likely that cumulative growth associated with the related projects is already accounted for in the planning of future supplies to cover projected demand.

PG&E has policies, programs, and projects in place to provide continued, adequate energy to their users, including the proposed project. Substantial reductions to the cumulative demand for energy can result from an increased reliance on renewable energy systems (as required by the State's Renewable Portfolio Standards) and the construction of energy-efficient buildings. Cumulative projects would be subject to applicable Title 24 and CALGreen requirements similar to the project, which includes energy efficiency standards to minimize the wasteful and inefficient use of energy.

Furthermore, transportation fuels (gasoline and diesel) are produced from crude oil, which can be domestic or imported from various regions around the world. Based on current proven reserves, current crude oil production would be sufficient to meet worldwide consumption demand until 2050. As such, it is expected that existing and planned transportation fuel supplies would be sufficient to serve the project's construction and operational demand. New capacity or supplies of energy resources would not be required. Additionally, the project would be subject to compliance with all federal, State, and local requirements for energy efficiency. State regulations, including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and Low Emission Vehicle Program, would serve to reduce the transportation fuel demand of cumulative projects.

In consideration of cumulative energy use, the project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Additionally, as discussed above, the project would increase overall electricity and natural gas demand, but would not require additional facilities other than local connections to, or undergrounding of, existing facilities in the project vicinity. Therefore, the proposed project's incremental demand for electricity and natural gas facilities would not be cumulatively considerable. Thus, the project would not contribute to a cumulative impact to the wasteful or inefficient use of energy. A less than significant cumulative impact would occur.

The project would also be required to comply with all the same applicable federal, State, and local measures aimed at reducing fossil fuel consumption and the conservation of energy. The anticipated project impacts, in conjunction with cumulative development in the vicinity, would increase urbanization and result in increased energy use. Potential land use impacts are site-specific and require evaluation on a case-by-case basis. As noted above, the project would not result in significant impacts to State or local plans for renewable energy or energy efficiency. Therefore, the project and identified cumulative projects are not anticipated to result in a significant cumulative impact. Therefore, potential impacts are considered less than significant.

6 REFERENCES

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Appendix A

Energy Data

Construction Fuel Consumption

On-Site Diesel[1] (off-road construction Equipment)	$MTCO_2e$	Gallons of Fuel[4]	County Fuel in 2024 (Start of Construction)	Percent
Demolition	0	0		
Site Preparation/Grading	243	23,841		
Building Construction	141	13,818		
Paving	26	2,527		
Architectural Coating	2	238		
Total	413	40,424	93,939,584	0.0430%

Off-Site Diesel[1] (on-road construction trips)				
Demolition	0	0		
Site Preparation/Grading	246	24,077		
Building Construction	13	1,286		
Paving	0	0		
Architectural Coating	0	0		
Total	259	25,363	93,939,584	0.0270%

Off-Site Gasoline[2]				
Demolition	0	0		
Site Preparation/Grading	8	912		
Building Construction	3	302		
Paving	3	310		
Architectural Coating	0	18		
Total	14	1,542	509,702,218	0.0003%

Total Diesel Fuel		65,787	93,939,584	0.0700%
Total Gasoline Fuel		1,542	509,702,218	0.0003%
Total Construction Fuel	685	67,330		

Construction Phase[3]	Demolition			Site Preparation			Grading/Infrastructure Improvements		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2024	0	0	0	48	0	2	195	246	6
2025	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**48**	**0**	**2**	**195**	**246**	**6**

Construction Phase[3]	Building Construction			Paving			Architectural Coating		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2024	116	11	2	26	0	3	0	0	0
2025	25	2	1	0	0	0	2	0	0
Total	**141**	**13**	**3**	**26**	**0**	**3**	**2**	**0**	**0**

Notes:

[1] Fuel used for off-road, hauling, and vendor trips assumed to be diesel.

[2] Fuel used for worker trips assumed to be gasoline.

[3] $MTCO_2e$ rates from CalEEMod (3.0 Construction Emission Details).

[4] For CO2e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2022.

Construction Water Energy

Daily Soil Disturbance[1]	225.0	acres
Days of Soil Disturbance[2]	85	days
Water Concentration[3]	3,020	gallons/acre
Water Energy Intensity[4]	4,934	kWh/MG
Total Construction Water	57.76	million gallons
Construction Water Energy	284,976	kWh
	0.2850	GWh
Sacramento County Annual Electricity	11,410	GWh
Percentage Increase	0.00250%	
	284.98	MWh
	11,410,080.63	MWh

Notes:

[1] Total daily acres disturbed from offroad equipment per CalEEMod (3.0 Construction Emissions Detail) and maximum SCAQMD LST values for soil-disturbing equipment.

[2] Number of days of construction with soil-disturbing equipment per CalEEMod (5.1 Construction Schedule).

[3] Water application rate per Air and Waste Management Association's Air Pollution Engineering Manual.

[4] Water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32.

MITIGATED							
Vehicle Type	**Percent**	**Annual VMT[1]**	**MPG[2]**	**Annual Fuel (Gallons)**	**Fuel Type**	**Sacramento County Gallons[3]**	**RS Percent**
Passenger Cars	0.928	300,182	21.6	13,897	Gas	498,678,443	0.0028%
Light/Medium Trucks	0.062	20,111	17.2	1,169	Diesel	93,286,176	0.0013%
Heavy Trucks/Other	0.010	3,309	6.1	542	Diesel	93,286,176	0.0006%
Total	1.00	323,602		1,712			0.0018%

Land Use[5]	**LDA**	**LDT1**	**LDT2**	**MCY**	**MDV**	**LHD1**	**LHD2**	**MHD**	**OBUS**	**UBUS**	**SBUS**	**MH**	**HHD**
General Office Building	49.073	4.5195	22.2355	2.4541	14.5282	3.2536	0.7662	1.5900	0.1051	0.0503	0.1037	0.3489	0.9722
Convenience Market	49.073	4.5195	22.2355	2.4541	14.5282	3.2536	0.7662	1.5900	0.1051	0.0503	0.1037	0.3489	0.9722
Solar Panel Washing	0	0	0	0	0	0	0	0	0	0	0	0	100

Notes:

[1] Total annual operational VMT based on annual VMT from CalEEMod (5.9 Operational Mobile Sources).

[2] Average fuel economy derived from Department of Transportation.

[3] Total annual county fuel per EMFAC 2021 model of projected operational fuel usage.

Operational Water Energy

UNMITIGATED		
Unmitigated Indoor	1.6	million gallons
Indoor Energy Intensity Factor[1]	6,476	kWh/MG
Unmitigated Outdoor	5	million gallons
Outdoor Energy Intensity Factor[2]	4,934	kWh/MG
Operational Water Energy	35,134	kWh
Operational Water Energy	0.0351	GWh
Sacramento County Annual Electricity	11,410	GWh
Percentage Increase	0.0003%	
MITIGATED		
Mitigated Indoor	1.6	million gallons
Indoor Energy Intensity Factor[1]	6,476	kWh/MG
Mitigated Outdoor	5	million gallons
Outdoor Energy Intensity Factor[2]	4,934	kWh/MG
Operational Water Energy	35,134	kWh
Operational Water Energy	0.0351	GWh
Sacramento County Annual Electricity	11,410	GWh
Percentage Increase	0.0003%	

Land Use[3]	**Unmitigated (gal/year)**		**Mitigated (gal/year)**	
	Indoor	**Outdoor**	**Indoor**	**Outdoor**
General Office Building	533201.244	0	533201.244	0
Government Office Building	595979.0577	0	595979.0577	0
Convenience Market (24 hour)	518507.6504	0	518507.6504	0
User Defined Industrial	0	0	0	0
Parking Lot	0	4958233.658	0	4958233.658
Total Operational Water (MG/year)	**1.648**	**5**	**1.648**	**5**

Notes:

[1] Indoor water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32. Factor includes supply, treatment, distribution, and wastewater.

[2] Outdoor water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32. Factor includes supply, treatment, and distribution.

[3] Operational water use values per CalEEMod (5.12 Operational Water and Wastewater Consumption).

Elecricity/Natural Gas Energy

UNMITIGATED			
	Unmitigated Project Annual Energy	**Sacramento County Annual Energy[3]**	**Percentage Increase**
Electricity (kWh/yr)	1,374,655	11,410,080,625	0.0120%
Electricity (GWh/yr)	1.3747	11,410	0.0120%
Natural Gas (kBTU/yr)	340,446	30,371,941,700	0.0011%
Natural Gas (therms/yr)	3,404	303,719,417	0.0011%
MITIGATED			
	Mitigated Project Annual Energy	**Sacramento County Annual Energy[3]**	**Percentage Increase**
Electricity (kWh/yr)	1,374,655	11,410,080,625	0.0120%
Electricity (GWh/yr)	1.3747	11,410	0.0120%
Natural Gas (kBTU/yr)	340,446	30,371,941,700	0.0011%
Natural Gas (therms/yr)	3,404	303,719,417	0.0011%

Land Use	**Electricity[1] (kWh/yr)**		**Natural Gas[2] (kBTU/yr)**	
	Unmitigated	**Mitigated**	**Unmitigated**	**Mitigated**
General Office Building	69,073	69,073	99,809	99,809
Government Office Building	69,073	69,073	99,809	99,809
Convenience Market (24 hour)	332,091	332,091	140,829	140,829
User Defined Industrial	0	0	0	0
Parking Lot	904,417	904,417	0	0
Total Energy	**1,374,655**	**1,374,655**	**340,446**	**340,446**

Notes:

[1] Electricity use per CalEEMod (5.11 Operational Energy Consumption).

[2] Natural Gas use per CalEEMod (5.11 Operational Energy Consumption).

[3] County total energy values from California Energy Commission energy reports available through ecdms.energy.ca.gov. (year 2022)