4.6 Energy Conservation

4.6.1 Introduction

This section establishes the existing conditions and identifies and evaluates potential impacts related to energy resources that could result from construction and operation of the Project. This section considers energy consumption and conservation at the Rodeo Refinery, including the Carbon Plant, Santa Maria Site, and the Pipeline Sites.

4.6.2 Environmental Setting

4.6.2.1 Regional Setting

With a relatively mild Mediterranean climate and strict energy efficiency and conservation requirements, California has lower energy consumption rates on a per person basis than most other parts of the country.

Total energy usage in California in 2018 (the most recent year for which this specific data is available) was 7,967 trillion British Thermal Units (Btu), which equates to an average of 202 million Btu per capita (USEIA 2020). These figures place California second among the nation's 50 states in total energy use and 48th in per capita consumption. Of California's total energy usage, the breakdown by sector is roughly 40 percent transportation, 23 percent industrial, 19 percent commercial, and 18 percent residential.

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 72 percent of the electrical power needed to meet California's demand is produced in the state; the balance, approximately 28 percent, is imported from the Pacific Northwest and the Southwest. In 2019, California's in-state electricity use was derived from natural gas (43 percent), coal (0.1 percent), large hydroelectric resources (17 percent), nuclear sources (8 percent), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (32 percent) (California Energy Commission [CEC] 2020a).

Electricity and natural gas in California are generally consumed by stationary users such as residences and commercial and industrial facilities, whereas petroleum-based fuel is generally consumed by transportation-related uses (USEIA 2020).

California accounted for 7 percent of total electricity consumption in the US (US Department of Energy 2020); and in 2019 represented approximately 6.9 percent of total US natural gas consumption (USEIA 2020).

Transportation Fuels Supply

The energy consumed by the transportation sector accounts for roughly 86 percent of California's petroleum products demand (USEIA 2020). According to the CEC, the state relies on petroleum-based fuels for 98 percent of its transportation needs (USEIA 2020), where the remainder 2 percent is other types of energy, such as electric power. In 2019, taxable gasoline sales (including aviation gasoline) in California accounted for approximately 15.4 billion gallons of gasoline (California Board of Equalization [CBE] 2020a), and taxable diesel fuel sales accounted for approximately 3.1 billion gallons of diesel fuel (CBE 2020b), although the CARB (2020) estimates total usage of diesel in 2019 to be 4.5 billion gallons. The differences in diesel fuel consumption could be attributable to differences in accounting methods.

The CEC forecasts that demand for gasoline in California will range from 12.1 billion to 12.6 billion gallons in 2030, with most of the demand generated by light-duty vehicles. This is lower than the 2019 estimate provided by CBE (2020a). While the models show an increase in light-duty vehicles along with population and income growth over the forecast horizon, total gasoline consumption is expected to decline, primarily due to increasing fuel economy (stemming from federal and state regulations) and gasoline displacement from the increasing market penetration of zero emission vehicles (ZEVs). For diesel, demand is forecast to increase modestly by 2030, following the growth of California's economy, but would be tempered by an

increase in fleet fuel economy and market penetration of alternative fuels, most prominently by natural gas in the medium- and heavy-duty vehicle sectors (CEC 2018).

In 2019, California consumed approximately 3.8 billion gallons of diesel fuel (the average of the above CBE and CARB estimates), and of that, about 830 million gallons were low-carbon diesel, 618 million gallons of renewable diesel, and 212 million gallons of biodiesel (CEC 2021). With the LCFS program and proposed expansions and conversions for increased renewable diesel production, including the Rodeo Renewed Project, renewable diesel production in California is expected to increase to 1.2 billion gallons per year within 4 years (CEC 2021).

Other transportation fuel sources used in California include alternative fuels, such as methanol and denatured ethanol (alcohol mixtures that contain no less than 70 percent alcohol), natural gas (compressed or liquefied), liquefied petroleum gas, hydrogen, and fuels derived from biological materials (i.e., biomass).

According to the CEC (2019), sales of gasoline and diesel fuel in Contra Costa County were 427 million gallons and 27 million gallons, respectively (CEC 2020b), and for San Luis Obispo County, 138 million and 22 million gallons, respectively. Note that the CEC only tracks fuel sales at the retail level, which allows for data to be collected on a county-by-county basis, whereas the California Board of Equalization (CBE) tracks all fuel sales, retail and non-retail, but only at the statewide level. Thus, the impact calculations presented in Section 4.6.5, *CEQA Baseline*, rely on separate data sets for comparison to Contra Costa County and statewide transportation fuel consumption figures.

Electricity

In 2019, total system electric generation for California was 277,704 gigawatt-hours (GWh), down 2.7 percent from 2018's total generation of 285,488 GWh (USEIA 2020). Electricity from non-CO_2 emitting electric generation categories (i.e., nuclear, large hydroelectric, and renewable generation) accounted for 57 percent of total in-state generation.

Total system electric generation in California is predicted to increase in coming years. Factors contributing to the projected increase include greater numbers of light duty electric vehicles, increased manufacturing electricity consumption, and decreases in savings from energy efficiency programs as population increases. With regard to total consumption of electricity across all sectors, California consumed 250,379 GWh of electricity in 2019 (USEIA 2020). Pacific Gas and Electric (PG&E) provides electrical services to most residential, commercial, industrial, and agricultural consumers in much of northern California, including the Bay Area. In 2019, PG&E generated and/or procured a total of 35,956 GWh of electricity (PG&E 2019). PG&E has established contracts and commitments to ensure there is adequate electricity generation and natural gas capacity to meet its current and future energy loads (PG&E 2020c). Table 4.6-1 shows the mix of sources for PG&E's electrical supply (PG&E 2020a). In Contra Costa County, electricity consumption in 2019 was 9,639 GWh (CEC 2020c).

California law requires load-serving entities, such as PG&E, to gradually increase the amount of renewable energy they deliver to their customers to at least 33 percent of their total annual retail sales by 2020, 44 percent by 2024, 52 percent by 2027, 60 percent by 2030, and 100 percent by 2045. This program, known as the Renewables Portfolio Standard (RPS), became effective in December 2011, and has since been enhanced with the passage of Senate Bill (SB) 350 and SB 100. Renewable generation resources, for purposes of the RPS program, include bioenergy, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. In 2019 PG&E obtained almost 30 percent of its electricity from renewable sources (PG&E 2020b).

Table 4.6-1. PG&E 2019 Power Content Label

Energy Resources	PG&E 2019 Power Mix			(For Comparison) 2019 CA Power Mix
	Base Plan	50% Solar Choice	100% Solar Choice	
Eligible Renewable[a]	29%	64%	100%	32%
• Biomass & Biowaste	3%	2%	0%	2%
• Geothermal	2%	1%	0%	5%
• Eligible Hydroelectric	2%	1%	0%	2%
• Solar	12%	56%	100%	12%
• Wind	9%	5%	0%	10%
Coal	0%	0%	0%	3%
Large Hydroelectric	27%	14%	0%	15%
Natural Gas	0%	0%	0%	34%
Nuclear	44%	22%	0%	9%
Other	0%	0%	0%	0%
Unspecified Sources of Power[b]	0%	0%	0%	7%
Total	100%	100%	100%	100%

Notes:

[a] The eligible renewable percentage above does not reflect Renewables Portfolio Standard (RPS) compliance, which is determined using a different methodology.

[b] Unspecified power is electricity that has been purchased through open market transactions and is not traceable to a specific generation source.

Natural Gas

One-third of the energy consumed in California is natural gas, which is largely imported from other regions (CEC 2019). Californians consumed 13,158 million therms of natural gas in 2019, which is equal to approximately 1,315,800,000 million British thermal units (MMBtu) (CEC 2020d). Nearly 45 percent of the natural gas burned in California is used for electricity generation, and most of the remainder is consumed in the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors.

PG&E provides natural gas service to industrial, large commercial, and natural-gas-fired electric generation facilities, as well as residential users that are connected to the gas system in much of northern California, including the Bay Area. In 2019, the total consumption of natural gas in Contra Costa County was 1,205 million therms, or 120,504,522 MMBtu (CEC 2020d), which was approximately 9 percent of California's total gas consumption.

4.6.2.2 Project Setting

Rodeo Refinery

Under baseline conditions, the Rodeo Refinery (consisting of the Rodeo Site and Carbon Plant Site) produces and consumes energy. Energy is primarily consumed as refinery fuel gas (RFG, a hydrocarbon gas by-product of refining and coking operations), electricity, and natural gas. The Rodeo Site purchases natural gas from PG&E to supplement the energy provided by RFG. In addition to PG&E purchases, the Rodeo Site also receives electricity from the third-party plant operator Air Liquide, which supplies hydrogen for the refinery operations. The main source of electricity at the Rodeo Site is the Cogeneration Steam Power Plant, which uses three units equipped with simple-cycle gas turbines fueled by RFG and

purchased natural gas to generate electricity for refinery operations. Waste heat from the gas turbines is used to generate steam. The Carbon Plant Site also produces electricity for its operational use and exports the surplus to PG&E. The calcining process burns off residual volatile combustible matter from petroleum coke and uses a small amount of supplemental natural gas. The hot flue gas is used to produce steam, which then drives a steam turbine to generate electricity.

In 2019, the Rodeo Refinery used 520,000 megawatt-hours (MWh) of electricity, with 502,300 MWh used at the Rodeo Site and 17,700 MWh used at the Carbon Plant Site. The majority of the electricity consumed at the Rodeo Site (406,800 MWh) was generated onsite by the Steam Power Plant fueled by RFG and natural gas, with the remainder of electric power needs provided by Air Liquide (25,800 MWh) or PG&E (69,800 MWh).

Table 4.6-2a shows the amount of natural gas purchased at the Rodeo and Carbon Plant Sites in 2019. The Refinery Site produced 17,126,500 MMBtu of RFG in 2019. All of the RFG produced onsite is consumed onsite. The natural gas is purchased to provide the additional fuel necessary for the process.

Table 4.6-2a. Rodeo Refinery 2019 Purchased Natural Gas

Utility Natural Gas Purchased (MMBtu/yr)	CEQA Baseline (2019)
Rodeo Site	8,404,700
Carbon Plant Site	302,300

The Rodeo Refinery generated 510,000 MWh of electricity in 2019. The electricity balance is shown in Table 4.6-2b. Due largely to the excess electricity produced at the Carbon Plant Site, the Rodeo Refinery had a net export of electricity to PG&E of 15,600 MWh in 2019.

Table 4.6-2b. Rodeo Refinery 2019 Electricity Production, Consumption and Export (Rounded to the Nearest 100 MWh)

Energy Type	CEQA Baseline (2019)
Electricity Produced (MWh)	
Rodeo Site	406,800
Carbon Plant Site	103,200
Electricity Used (MWh)	
Rodeo Site	502,300
Carbon Plant Site	17,700
Electricity Imported from Air Liquide (MWh)	
Import from Air Liquide to Rodeo Site	25,800
Electricity Imported/Exported from PG&E (MWh)	
Import from PG&E to Rodeo Site	69,800
Export from Carbon Plant Site to PG&E	85,400

Santa Maria Site and Pipeline Sites

The Santa Maria Site purchased 825,400 million Btu of natural gas and 37,500 MWh of electricity in 2019, while the Pipeline Sites consumed a total of 337,200 million Btu of natural gas and 20,200 MWh of electricity (Table 4.6-3). This consumption would permanently cease with implementation of the Project because these sites would be taken out of service.

Table 4.6-3. Santa Maria Site and Pipeline Sites 2019 Energy Usage

Energy Type	CEQA Baseline (2019)
Net Electricity Imports (MWh/yr)	
Santa Maria Refinery	37,500
Pipeline/Midstream Pumping	20,200
Natural Gas Purchases (MMBtu/yr)	
Santa Maria Site	825,400
Pipeline Sites	337,200

4.6.3 Regulatory Setting

Federal and state agencies regulate energy use and consumption through various programs. On the federal level, the US Department of Transportation (USDOT), US Department of Energy, and USEPA are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy related research and development projects, and through funding for transportation infrastructure projects. On the state level, the California Public Utilities Commission (CPUC) and CEC are the agencies with authority over different aspects of energy.

4.6.3.1 Federal Authority

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act requires vehicles sold in the US to meet certain fuel economy goals, known as the Corporate Average Fuel Economy (CAFE) standards, to reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) of the USDOT administers the CAFE program, and the USEPA provides the fuel economy data. The US Congress 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.

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Energy Policy Act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products. Businesses are eligible for tax credits for buying hybrid vehicles, building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are given for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment. The Energy Policy Act of 2005 also established the first renewable fuel volume mandate in the US. The original Renewable Fuel Standard program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012.

Under the Energy Independence and Security Act of 2007, the Renewable Fuel Standard program was expanded to include diesel and to increase the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.

USEPA and NHTSA Joint Rulemaking for Vehicle Standards (2011)

In April 2010, the USEPA and NHTSA issued a final rulemaking establishing new federal GHG and fuel economy standards for model years 2012 to 2016 passenger cars, light-duty trucks, and medium-duty passenger vehicles. In addition, on August 9, 2011, the USEPA and NHTSA finalized regulations to reduce GHG emissions and improve fuel efficiency of medium- and heavy-duty vehicles, including large pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses. For model year 2012, the fuel economy standards for passenger cars, light trucks, and combined cars and trucks were 33.3 miles per gallon (mpg), 25.4 mpg, and 29.7 mpg, respectively (USEPA and USDOT 2010). These standards increase progressively up to 37.8 mpg, 28.8 mpg, and 34.1, respectively, for model year 2016. In subsequent rulemakings the agencies extended the national program of fuel economy standards to passenger vehicles and light-duty trucks of model years 2017-2025, culminating in fuel economy of 54.5 mpg by model year 2025 (USEPA and USDOT 2014), as well as to medium- and heavy-duty vehicles of model years 2014-2018, including large pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses (USEPA and USDOT 2011).

USEPA and NHTSA Joint Rulemaking for Vehicle Standards (2020)

The NHTSA and the USEPA updated the CAFE and GHG emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026 under the Safer Affordable Fuel Efficient (SAFE) vehicles final rule. This rule rolled back some of the fuel efficiency mandates that had been in effect. The rule was judicially challenged, but the litigation has been placed in abeyance while undergoing review by the Biden Administration.

4.6.3.2 State Authority

California continues to be the national leader in energy efficiency. While energy use per person in the rest of the nation has increased by 45 percent over the last 30 years, California's per capita use has remained relatively flat as a result of the State of California's energy efficiency measures.

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures.

Integrated Energy Policy

In 2002, the Legislature passed SB 1389, which required the CEC to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce the vehicle miles traveled and accommodate pedestrian and bicycle access.

The latest update is the 2020 Update to the Integrated Energy Policy Report (CEC 2021). The 2020 Update identifies actions the state and others can take to ensure a clean, affordable, and reliable energy system. California's innovative energy policies strengthen energy resiliency, reduce GHG emissions that cause climate change, improve air quality, and contribute to a more equitable future.

Senate Bill 1037

In 2004, the CPUC established aggressive energy savings goals and authorized a significant increase in energy efficiency funding. Meeting these goals would reduce the utilities' need for additional electricity supplies between 2004 and 2013 by more than half. The passage of SB 1037 (Kehoe), Chapter 366, Statutes of 2005, further reinforced the state's energy efficiency policies by requiring all utilities to meet their unmet resource needs first with energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible.

Assembly Bill 1007 (Pavley)-Alternative Fuel Standards

AB 1007 (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a state plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the State Alternative Fuels Plan in partnership with CARB and in consultation with other state, federal, and local agencies. The final State Alternative Fuels Plan, published in December 2007, attempts to achieve an 80 percent reduction in GHG emissions associated with personal modes of transportation, even as California's population increases.

Low Carbon Fuel Standard

The LCFS, established in 2007 through EO S-1-07 and administered by CARB, requires producers of petroleum-based fuels to reduce the CI of their products that started with a 0.25 percent reduction in 2011 and culminated in a 10 percent total reduction in 2020. In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the Program including a doubling of the CI reduction to 20 percent by 2030.

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.

Renewables Portfolio Standard

The State of California adopted standards to increase the percentage of energy from renewable resources that retail sellers of electricity, including investor-owned utilities (IOUs), publicly-owned utilities (POUs), and community choice aggregators, must provide in their portfolio. The RPS was established in 2002 under SB 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2. Qualifying renewables under the RPS include bioenergy such as biogas and biomass, small hydroelectric facilities (30 MW or less), wind, solar, and geothermal energy. The CPUC and the CEC jointly implement the RPS program. The CPUC's responsibilities include (1) determining annual procurement targets and enforcing compliance, (2) reviewing and approving each investor-owned utility's renewable energy procurement plan, (3) reviewing contracts for RPS-eligible energy, and (4) establishing the standard terms and conditions used in contracts for eligible renewable energy (CPUC 2019).

In November 2008, then-Governor Schwarzenegger signed EO S-14-08, which expanded the state's RPS to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the RPS by signing EO S-21-09, which directed the CARB under its AB 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020.

Assembly Bill 1613 (Waste Heat and Carbon Emissions Reduction Act)

AB 1613 directed the CEC, CPUC, and CARB to implement the Waste Heat and Carbon Emissions Reduction Act. The Act is designed to encourage the development of new combined heat and power systems in California with a generating capacity of not more than 20 MW. In June 2010, the CEC published modified final guidelines establishing technical criteria for eligibility of combined heat and power systems for programs to be developed by the CPUC and publicly-owned utilities (CEC 2010). Section 2843 of the Act provides that the CEC's guidelines require that combined heat and power systems:

- Be designed to reduce waste energy.
- Have a minimum efficiency of 60 percent.
- Have nitrogen oxide (NOx) emissions of no more than 0.07 pound per MWh.
- Be sized to meet the eligible customer generation thermal load.
- Operate continuously in a manner that meets the expected thermal load and optimizes the efficient use of waste heat.
- Be cost effective, technologically feasible, and environmentally beneficial.

As directed by AB 1613, the CPUC also established (1) a standard tariff for the sale of electricity to corporations for delivery to the electrical grid; and (2) a “pay as you save” pilot program requiring electricity corporations to finance the installation of qualifying combined heat and power systems by non-profit and government entities. A January 2011 decision by an administrative law judge determined that the pilot program would not be established due to lack of customer interest and difficulties in instituting a program that meets California Department of Corporations requirements.

Executive Order B-16-12, 2025 Goal for Zero Emission Vehicles

In March 2012, then-Governor Brown issued an EO establishing a goal of 1.5 million ZEVs on California roads by 2025. In addition to the ZEV goal, EO B-16-12 stipulated that by 2015 all major cities in California will have adequate infrastructure and be “zero-emission vehicle ready”; that by 2020 the state will have established adequate infrastructure to support 1 million ZEVs; and that by 2050, virtually all personal transportation in the state will be based on ZEVs, and GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels.

Senate Bill 350, Clean Energy and Pollution Reduction Act of 2015

SB 350, also known as the Clean Energy and Pollution Reduction Act of 2015, was enacted on October 7, 2015, and provides a new set of objectives in clean energy, clean air, and pollution reduction by 2030. The objectives include the following:

1. To increase from 33 percent to 50 percent by December 31, 2030, the procurement of California’s electricity from renewable sources.
2. To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

Senate Bill 100

On September 10, 2018, then-Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both IOUs and POUs from 50 percent to 60 percent by 2030. Incrementally, these energy providers are also required to

have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

On the same day that SB 100 was signed, then-Governor Brown signed EO B-55-18 with a new statewide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045 and to maintain net negative emissions thereafter.

Integrated Energy Policy Report Strategy: Decarbonizing the Electricity Sector

Decarbonizing the electricity sector is part of an integrated approach to reducing emissions from energy use. In 2019, about 36 percent of the electricity used to serve California was produced from renewable resources such as solar and wind (CEC 2020e). Although the AB 32 and SB 32 GHG reduction goals are economy-wide, in 2017, the electricity sector surpassed AB 32's 2020 goal and met SB 32's 2030 goal. Over the last 10 years, GHG emissions from imported electricity have declined by more than 60 percent, and emissions from in-state generation have declined by nearly 30 percent (CEC 2020e). These gains are largely attributable to advancements in energy efficiency, increased use of renewable energy resources, and reduced use of coal-fired electricity. To further reduce GHG emissions, California is increasingly using renewable resources to produce electricity while planning for increased demand from transportation electrification and other opportunities for electrification.

In 2019, solar accounted for 42 percent of the state's renewable generation (CEC 2020e). The increase in solar and other renewables is a California success story in reducing GHG emissions, but also creates operational challenges. Grid operators must manage the ramp-up of solar generation as it peaks midday and then ramps down at sunset while electricity demand remains high.

The 2020 Integrated Energy Policy Report emphasizes the current challenge the state faces in increasing the state's ability to integrate more renewable energy into the grid (CEC 2021). There is an increasing need for energy storage that can balance supply and demand by absorbing excess energy and reinjecting it into the grid when demand increases. There is also a need for transmission investments to link our extensive renewable resources to load centers throughout the grid. The challenges are compounded by increasing numbers of Californians who are generating, and in some cases, storing their own electricity or purchasing electricity from local providers called community choice aggregators.

Integrated Energy Policy Report Strategy: Transportation Electrification

California is working to transform the transportation sector away from petroleum to near-ZEVs operating with low-carbon fuels and ZEVs that run on electricity from batteries or hydrogen fuel cells. Including emissions from refineries, the transportation sector accounted for more than 50 percent of the state's GHG emissions as of 2016. The state is advancing goals, policies, and plans to support the proliferation of ZEVs and near-zero-emission vehicles. As described in more detail below, Governor Brown's EOs have set goals of reaching 1.5 million ZEVs on California's roadways by 2025 and 5 million by 2030, while Governor Newsom's September 2020 EO increased this target to include 100 percent ZEV sales for new light- and medium-duty automobiles by 2035 and increased penetration of heavy-duty and off-road ZEVs. As usage grows, ZEVs will have an increasing role in grid management and the integration of renewables in particular.

Advance Clean Cars Program

The Advanced Clean Cars emissions-control program was approved by CARB in 2012 and is closely associated with the Pavley regulations (CARB 2017a). The program requires a greater number of ZEV models for years 2015 through 2025 to control smog, soot, and GHG emissions. This program includes the Low-Emissions Vehicle regulations to reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles; and the 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 between 2018 and 2025.

Due to the federal adoption of the Final SAFE Rule, new cars of model years 2021 through 2026 are not currently required to achieve the fuel economy targets set by the Advanced Clean Cars program. The rule was judicially challenged, but the litigation has been placed in abeyance while undergoing review by the Biden Administration.

CARB's Mobile Source Strategy

The Mobile Source Strategy (2016) includes an expansion of the Advanced Clean Cars program and further increases the stringency of GHG emissions for all light-duty vehicles, and 4.2 million ZEVs and plug-in hybrid light-duty vehicles by 2030. It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025 as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for classes 3 through 7 "last mile" delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels. CARB's Mobile Source Strategy includes measures to reduce the total light-duty vehicle miles traveled by 15 percent compared to business as usual in 2050.

In 2004, the CARB adopted an Airborne Toxics Control Measure to limit diesel-fueled commercial motor vehicle idling to reduce public exposure to diesel particulate matter emissions (Title 13 California Code of Regulations 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 5 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.

In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower 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 California Code of Regulations Section 2449). The compliance schedule requires full implementation by 2023 in all equipment for large and medium fleets and by 2028 for small fleets.

Executive Order B-48-18

On January 26, 2018, then-Governor Brown issued an EO establishing a goal of 5 million ZEVs on California roads by 2030 and spur the installation and construction of 250,000 plug-in electric vehicle chargers, including 10,000 direct current fast chargers, and 200 hydrogen refueling stations by 2025.

Executive Order N-79-20

In September 2020, Governor Newsom signed EO N-79-20, which sets a new State goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035; that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 for all operations where feasible; and by 2035 for drayage trucks; and that 100 percent of off-road vehicles and equipment will be zero emission by 2035 where feasible. This order calls upon state agencies including the CARB, CEC, CPUC, the Department of Finance, and others to develop and propose regulations and strategies to achieve these goals.

4.6.3.3 Local Authority

Contra Costa County General Plan

The Contra Costa County General Plan contains goals and policies that apply to development projects, such as the Project, in the unincorporated County (Contra Costa County 2010). The goals and policies relating to energy and renewable energy resources are summarized as follows:

- Reduce energy use in the County to avoid risks of air pollution and energy shortages which prevent orderly development.
- Achieve utilization of oil and gas resources in a manner beneficial to all County residents.
- Encourage use of renewable resources where they are compatible with the environment.

4.6.4 Significance Criteria

Based on CEQA Guidelines Sections 15064.4 and 15064.7(c), as well as Appendix G, a project would cause adverse impacts associated with GHG emissions if it would:

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

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

4.6.5 CEQA Baseline

Baseline conditions reflect the 2019 operation and maintenance of the Rodeo Refinery and Santa Maria Site as petroleum refineries, including operation and maintenance activities. The baseline setting also includes the applicable regulatory framework to protect environmental resources, which are described above. The CEQA baseline for analysis of marine transportation is an average of the years 2017–2019.

4.6.6 Approach to Analysis

This impact analysis evaluates the potential for the Project to result in the wasteful use of energy or energy resources, or conflict with renewable energy or energy efficiency plans during Project construction and operation, consistent with Public Resources Code 21100(b)(3) and Section 15126.2(b), and Appendices F and G of the State CEQA Guidelines. The analysis provides construction and operational energy use estimates for the Project and the CEQA baseline. The analysis then uses this information to evaluate whether this energy use would be considered wasteful, inefficient, or unnecessary, taking into account available energy supplies and existing use patterns, the Project's energy efficiency features, and compliance with applicable standards and policies aimed to reduce energy consumption, including the Contra Costa County CAP.

This energy analysis includes quantification of electricity, natural gas, gasoline, and diesel fuel that would be required to construct and operate the Project as compared to the CEQA Baseline (year 2019). Construction energy use includes off-road equipment and on-road mobile sources. Sources of operational energy use include: stationary sources at the Rodeo Site, Carbon Plant Site, and Santa Maria and Pipeline Sites; on-road mobile sources, marine traffic at the Rodeo Site; rail activity at Project sites; and electricity related to operations and water distribution and treatment.

The energy analysis is based on default values in latest versions of CalEEMod and CARB's EMFAC2021, which have not been updated for the most recent EOs, specifically EO N-79-20 which bans the sale of gasoline-powered cars in California by 2035, and EO B-55-18, which set as a goal carbon neutrality in California by 2045. Both of these EOs, if implemented, will change the energy mix in California for the Project, decreasing substantially fossil fuel usage and increasing electricity usage. However, there is insufficient information to incorporate these EOs into this analysis; to do so would be speculative.

Accordingly, this energy analysis has been conducted with the most recent available tools prepared and accepted by the regulatory agencies.

4.6.6.1 Construction Energy Estimates

Construction of the Project would include the repurposing of the existing refinery equipment, adding new equipment to the Rodeo Site, demolition of the Santa Maria facility, decommissioning of Pipeline Sites and demolition of the Carbon Plant. Construction of the Project would occur over a period of twenty-one months.

Rodeo Refinery Construction and Demolition

The Project would involve construction and demolition activities at the Rodeo Refinery as described in Chapter 3, *Project Description*, Section 3.10, *Overall Project Construction/Demolition Phase*, that would occur in phases over a period of approximately 21 months and, for analysis purposes, was assumed to begin as early as the first quarter of 2022. All demolition and construction associated with the Rodeo Refinery would occur within its boundaries (except for one laydown area). All demolition and construction would be conducted in accordance with established procedures and BMPs and with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate.

Construction and demolition activities would involve diesel-powered off-road construction equipment such as loaders, earthmovers, cranes, and concrete trucks, and lighter-duty equipment such as welders and compressors, some of which would also be diesel-powered. The use of diesel-powered off-road construction equipment and on-road trucks would result in energy use during the construction period. Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of private gasoline passenger vehicles; the construction workforce is expected to be drawn from the greater East Bay region, within a one-hour commute distance. Hauling trucks trips would range from a daily minimum of 10 round trips to a daily maximum of 165 round trips during the construction period. During construction, a period of increased marine vessel traffic would occur, and therefore, concurrent energy use from incremental marine vessel traffic are counted towards the Rodeo Site construction total.

Santa Maria Site and Pipeline Sites

Demolition activities at the Santa Maria site would involve use of off-road construction equipment and on-road vehicles. Fuel consumption estimates from these activities were calculated using data from CalEEMod and activity estimates from Phillips 66. Demolition at the Santa Maria Site was assumed, for purposes of calculations only, to occur over a 1-year period.

Off-Road Equipment

Off-road equipment is the most significant source of construction fuel usage. Diesel fuel consumption associated with onsite off-road construction equipment has been estimated based on the construction schedule, equipment list, and CARB estimated diesel consumption rate for off-road equipment. Further details on the construction schedule and equipment are provided in Attachment A of the Air Quality Technical Report (Ramboll 2021). For the purposes of the energy analysis, all equipment was assumed to be diesel-fueled; electricity- or gasoline-fueled equipment would not be expected to substantially affect energy resource demands. Fuel consumption rates in gallons per horsepower-hour (gal/hp-hr) were calculated from CARB's "OFFROAD2017 Orion" database (CARB 2017b).

On-Road Vehicles

On-road construction vehicles such as light-duty automobiles and trucks that would be used by workers for commuting to and from the construction site are assumed to be fueled by gasoline; and on-road trucks, such as vendor and haul trucks for demolition debris, soil, and other material hauling, are assumed to be fueled by diesel fuel. The fuel quantities that would be required for on-road vehicles during construction have been calculated based on fuel consumption estimated for each vehicle type using CARB's EMFAC2021. Fuel consumption factors and energy use calculations are shown in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*.

Summaries of the total estimated Project construction energy use requirements for diesel fuel and gasoline are presented in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*, as well as below in Table 4.6-5a under the Impact 4.6-1 discussion.

Operational Energy Estimates

Operational energy usage from the Project would occur at the Rodeo Site and the Marine Terminal and along rail lines, roadways, and ship traffic lanes leading to and from the Project. Existing operations at the Carbon Plant and the Santa Maria Site would permanently cease, and upon completion of demolition activities, energy consumption at the Carbon Plant, Santa Maria Site, and along the Pipeline Sites would be eliminated. In addition, operations of the adjacent third-party plant operator Air Liquide, which supplies hydrogen for the refinery operations, may indirectly increase due to the Project.

Stationary Source Energy Usage

Stationary sources at the Project would consume less electricity and natural gas than under baseline conditions (see Table 4.6-5b).

On-Road Vehicle Fuel Usage

On-road vehicles coming to the Rodeo Site consist of heavy-duty diesel trucks and light-duty worker vehicles. Fuel usage from truck traffic is summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. All trucks were assumed to be diesel fueled. Diesel use rates were calculated based on expected truck traffic related to refinery deliveries and waste by-products, expected trip lengths within California, and fuel efficiency rates as discussed above.

The Carbon Plant and Santa Maria Site had truck traffic related to their operations during the baseline. Because these facilities would be removed as a result of the Project, the fuel consumption related to these activities would permanently cease.

Passenger vehicles are not expected to change as a result of the Project because the number of workers would not change at the Rodeo Site. Therefore, there is no change energy use from passenger vehicles as a result of the Project.

Marine Vessel Fuel Usage

Marine sources at the Rodeo Site consist of tugs, barges, ATBs, and tanker vessels moving feedstock and product through the Marine Terminal. Fuel usage from shipping traffic at Rodeo Site is summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. All fuel is assumed to be diesel fueled (most vessel traffic actually uses heavier distillates such as marine diesel oil, rather than on-road diesel, but the assumption of diesel simplifies calculations and does not affect conclusions with respect to energy). Diesel use rates were calculated based on expected shipping calls, trip lengths within the San Francisco Bay, and fuel efficiency rates based on CARB guidance for ocean going vessels and harbor craft (CARB 2011). Vessel traffic is forecasted to increase during the Project, as

noted in Chapter 3, *Project Description*, and Section 3.7, *Project Operation*; therefore, fuel consumption related to marine vessel traffic is expected to increase.[38]

Rail Fuel Usage

Rail sources at the Rodeo Site consist of linehaul locomotive moving butane railcars at the Rodeo Site during the baseline, and linehaul locomotives moving feedstock rail cars during the Project. For the baseline, fuel consumption estimates are based on 2019 actual destination and counts of railcars to/from the Rodeo Site across California. For the Project, although the number of linehaul movements is expected to remain the same, an increase in rail cars is expected, from 4.7 railcars per day in 2019 to 16 railcars per day during the Project. In addition, the Project fuel consumption calculations conservatively assume that all railcars would move along the longest route from the Rodeo Site (California southern route) as future railcar origin information is not available at this time.

The Carbon Plant and Santa Maria Site had rail operations during the baseline. Because the Project would remove these facilities, the fuel consumption related to these activities would permanently cease.

Fuel usage from rail is summarized in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*. All fuel from rail operations is assumed to be diesel fueled. Diesel use rates were calculated based on yearly linehaul movements at each site, expected trip lengths, and gallons per ton-mile efficiency rates.

Summaries of the total estimated CEQA Baseline and Project operational energy use requirements for electricity, natural gas, diesel fuel, and gasoline are presented in Attachments A and B of Appendix B, *Air Quality and Greenhouse Gas Emissions Technical Data*, as well as in Table 4.6-5a under the Impact 4.6-1 discussion.

4.6.7 Direct and Indirect Impacts of the Proposed Project

Table 4.6-4 presents a summary of the potential energy impacts, as well as significance determinations for each impact.

Table 4.6-4. Summary of Impacts

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.6-1. Construction and operation of the Project would not result in potentially significant environmental impact due to the wasteful, inefficient, and/or unnecessary use of energy.			
Rodeo Refinery			
All Phases	✓		
Santa Maria and Pipeline Sites			
Construction/Demolition	✓		
Operation and Maintenance	✓		

[38] The increase in Project vessel traffic, which will all occur at the Marine Terminal, would be partially offset by a decrease in vessel traffic related to petroleum coke shipments from the Port of Richmond, California. To be conservative, this decrease is not taken into consideration in the calculations. These latter-described vessel trips would no longer occur because petroleum coke would no longer be produced at the Rodeo Site; therefore, petroleum coke shipments would permanently cease.

Impact	Significance Determination		
	LTS	LTSM	SU
Impact 4.6-2. Construction and operation of the Project would not conflict with or obstruct adopted energy conservation plans or violate energy efficiency standards.			
Rodeo Refinery			
All Phases	✓		
Santa Maria and Pipeline Sites			
Construction/Demolition	✓		
Operation and Maintenance	✓		

NOTES: LTS = Less than Significant, no mitigation proposed
LTSM = Less than Significant impact with mitigation
SU = Significant and Unavoidable

IMPACT 4.6-1

a. Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Construction of the Project would consume fuels (primarily gasoline and diesel) for the operation of construction equipment and vehicles to perform a variety of activities, including demolition, excavation, hauling, paving, and vendor and construction worker travel (Table 4.6-5a).

Energy consumption would occur over two years and would fluctuate depending on the type of construction activity underway during any particular time period. Construction is expected to take place over a 21-month period. Gasoline and diesel fuel would be the primary energy source for vehicles driven by construction crews and to power the large trucks used to deliver and retrieve construction equipment, materials, and debris. During construction, a period of increased marine vessel traffic related to the shutdown of the Pipeline Sites is expected; therefore, incremental additional fuel use from concurrent Marine Terminal traffic is counted toward the Rodeo Site construction total.

Project Construction/Demolition Energy Consumption

The Project's construction/demolition energy consumption is summarized in Table 4.6-5a.

Table 4.6-5a. Project Construction Energy Resource Use

Source Category	Rodeo Site Construction	Carbon Plant Demo	Santa Maria Site Demolition and Pipeline Site Decommissioning	Project Total
Total Construction Period (months)	21	3	9	n/a
Diesel Fuel (gallon/yr)				
Concurrent marine traffic increase	261,656	0	0	261,656
Off Road	206,661	11,654	77,764	296,079
On-road	709,365	5,011	2,618	716,994
Gasoline Fuel (gallon/yr)				
On-road	202,183	356	3,878	206,417
Total Diesel Consumption	**1,177,683**	**16,665**	**80,382**	**1,274,729**
Total Gasoline	**202,183**	**356**	**3,878**	**206,417**

Rodeo Refinery

The Project would involve construction and demolition activities at the Rodeo Site and Carbon Plant as described in Chapter 3, *Project Description*, Section 3.10, *Overall Project Construction/Demolition Phase*, that would occur in phases over a period of approximately 21 months and are assumed to begin as early as the first quarter of 2022. A later start date would result in lower energy usage because statistically newer, more fuel-efficient equipment and vehicles would be used. All demolition and construction associated with the Rodeo Site and Carbon Plant would occur within facility boundaries (except for one laydown area) and would be conducted in accordance with established procedures and BMPs and with applicable regulations and permits. Soil and construction debris generated by construction activities would be either re-used onsite or transported offsite for recycling or disposal as appropriate. Scrap metal would be hauled away to an offsite recycling facility.

Construction and demolition activities would involve diesel-powered heavy equipment such as loaders, excavators, cranes, and concrete trucks, and lighter-duty equipment such as welders and air compressors, some of which would also be diesel-powered. Construction would employ up to 500 workers at a time who would commute daily to and from the construction site mostly by means of gasoline-powered private passenger vehicles and light trucks; the construction workforce is expected to be drawn from the greater East Bay region, within a one-hour commute distance. Hauling trucks will travel a minimum daily of 10 round trips and a maximum daily of 165 round trips during the construction and site preparation phase, tentatively from mid-2022 through mid-2023.

Transitional Phase

The Construction/Demolition Phase includes a 7-month period within the overall schedule, during which there would be an increase in deliveries and processing of crude oil and gas oil feedstocks by marine vessels, resulting in increased vessel traffic at the Marine Terminal compared to baseline conditions. During the Project Transitional Phase, marine vessel calls would be more frequent than under baseline conditions, approximately 96 tankers and 92 ATB barges; however, this condition would be temporary.

Santa Maria Site

Decommissioning and demolition activities at the Santa Maria site (collectively, “construction activities”) would involve use of off-road construction equipment and on-road vehicles that consume diesel and gasoline fuel. Demolition and materials removal would occur over an estimated one-year period. Following decommissioning and demolition of the Santa Maria site, energy consumption would permanently cease. There are no future plans for this site.

Pipeline Sites

Decommissioning (as construction) activities at the Pipeline Sites in San Luis Obispo County, Santa Barbara County, and the San Joaquin Valley would involve use of some off-road construction equipment and on-road vehicles that that consume diesel and gasoline fuel. The Pipeline Sites would involve only cleaning-out and decommissioning activities without extensive use of heavy equipment. Construction would occur over an estimated one-year period and energy usage would be essentially de minimis compared to statewide energy usage as described below. Following decommissioning of the pipeline sites, emissions would permanently cease. There are no future plans for these sites.

Construction/Demolition Significance Discussion

Appendix F of the CEQA Guidelines provides guidance for evaluating whether a project would result in the wasteful, inefficient, or unnecessary consumption of fuel or energy. The Appendix F factors guide the following evaluation of the energy impacts of the Project relative to this significance criterion.

Total gasoline and diesel fuel usage by the transportation sector in California was expected to be 14.8 billion gallons and 4.5 billion gallons, respectively, in 2019 (CARB 2020). Project construction

fuel usage would, therefore, represent 0.041 percent of the state's transportation sector diesel fuel usage and 0.001 percent of the state's transportation sector gasoline usage, which would be considered de minimis.

Grid-sourced electric power usage associated with Project demolition and construction activities would be intermittent and likely negligible, given construction equipment are largely diesel-powered.

The energy estimates in this evaluation include fuels used for construction of the Project, including that related to increased marine traffic during the Transitional Phase. As shown in Table 4.6-5a, the amounts of diesel and gasoline consumed during the construction phases of the Project would be minimal, particularly in the context of total statewide consumption.

Off-road construction equipment and on-road vehicles (e.g., trucks) also consume fuel while idling. The Project would be compliant with the CARB's Airborne Toxics Control Measure to limit diesel-fueled commercial motor vehicle idling to 5 minutes. Consistent with BAAQMD's Basic Construction Mitigation Measures, signs would be posted at the Project sites to remind operators/drivers of the 5-minute idling limit.

Therefore, construction and demolition activities would be less than significant, and no mitigation is required with respect to the wasteful, inefficient, or unnecessary consumption of fuel or energy,

Operation and Maintenance (Less Than Significant, No Mitigation Proposed)

Rodeo Refinery

At the Rodeo Site, new operational units would be installed, and existing units will be idled or become non-operational, particularly the existing crude processing units, as described in Chapter 3, *Project Description*. Renewable feedstocks for the Project would arrive primarily by tanker, barge, and railcar. Future vessel traffic would be greater during the Project than under baseline conditions, and the mixture of vessel sizes and types would likely be different than under baseline conditions. Rail transport fuel use would increase due to higher numbers of railcars than under the baseline. Truck traffic to the Rodeo Site would decrease. Because the Project would demolish the Carbon Plant, there would be no further operational energy usage there.

Santa Maria Site and Pipeline Sites

The Project would eliminate operations of the Santa Maria Site and Pipeline Sites.

Project Operational Energy Consumption

The Project's operational energy consumption relative to the CEQA baseline is summarized in Table 4.6-5b.

Table 4.6-5b. Operational Energy Usage

Energy Use Type	CEQA Baseline (2019)	Project Operations	Change from CEQA Baseline
Electricity Consumption (MWh) – rounded to the nearest 100 MWh			
Rodeo Site	502,300	499,800	-2,500
Carbon Plant Site (Export to PG&E of 103,200 MWh in 2019)	17,700	0	-17,700
Rodeo Refinery Total	*520,000*	*499,800*	*-20,200*
Santa Maria Site	41,700	0	-41,700
Pipeline Sites	20,200	0	-20,200

Energy Use Type	CEQA Baseline (2019)	Project Operations	Change from CEQA Baseline
Electricity Imported (MWh) to Rodeo Site – rounded to the nearest 100 MWh			
From PG&E	69,800	58,400	-11,400
From Air Liquide	25,800	34,500	8,800
Electricity Consumption (MWh) – rounded to the nearest 100 MWh			
Rodeo Site	502,300	499,800	-2,500
Carbon Plant Site (Export to PG&E of 103,200 MWh in 2019)	17,700	0	-17,700
Rodeo Refinery Total	*520,000*	*499,800*	*-20,200*
Santa Maria Site	41,700	0	-41,700
Pipeline Sites	20,200	0	-20,200
Electricity Imported (MWh) to Rodeo Site – rounded to the nearest 100 MWh			
From PG&E	69,800	58,400	-11,400
From Air Liquide	25,800	34,500	8,800
Natural Gas Purchases (MMBtu/yr)			
Rodeo Site	8,404,700	1,608,200	-6,796,500
Carbon Plant Site	302,300	0	-302,300
Rodeo Refinery Total	*8,707,000*	*1,608,200*	*-7,098,800*
Santa Maria Site	825,400	0	-825,400
Pipeline Sites	337,200	0	-337,200
Mobile Source Fuel Consumption (gallons of diesel/yr)			
Trucks at Rodeo Site	460,700	285,700	-175,100
Marine at Rodeo Site	1,237,200	2,110,000	872,800
Rail at Rodeo Site	109,300	791,200	681,900
Rail at Carbon Plant	23,000	0	-23,000
Rodeo Refinery Total	1,830,200	3,186,900	1,356,600
Rail at Santa Maria Site	16,800	0	-16,800
Trucks at Santa Maria Site	265,200	0	-265,200
Total Electricity (MWh/yr)	**677,500**	**592,700**	**-84,800**
Total Natural Gas (MMBtu/yr)	**9,869,600**	**1,608,400**	**-8,261,200**
Total Diesel (gal/yr)	2,112,300	3,186,900	1,074,700

NOTES: MMBtu = million British thermal unit; MWh = megawatt-hour

The Carbon Plant would be demolished and would no longer produce electricity under the Project.

Gasoline is not included because operation of the Project would not change quantities from baseline; gasoline usage is due to worker commutes, which would not change at the Rodeo Site.

Positive values indicate an increase in energy usage relative to CEQA Baseline, while negative values indicate a decrease in energy usage.

The Rodeo Site will be greatly decreasing natural gas purchases as indicated above. Air Liquide will be increasing natural gas purchases to provide hydrogen for the Project (approximate increase of 4,439,100 MMBtu/yr above baseline).

Increase in marine fuel consumption during the Project is related to an expected increase in vessel traffic. Increase in rail related fuel consumption during the Project is related to increased rail cars per day and the conservative assumption of longest route. Because Project-specific railcar origin information is not known at this time, it is assumed all rail activity will occur on the longest travel route for linehaul movements, that is, the CA Southern Route. More information in Attachment A of Appendix B, *Air Quality and Greenhouse Gas Emissions Data*.

During the Project, the Rodeo Site would be expected to consume approximately 500,000 MWh of electricity and approximately 1,608,000 MMBtu of purchased natural gas, which is less energy than under baseline conditions. In addition, most of the electricity to be used at the Rodeo Site would still be produced onsite at the existing Steam Power Plant (approximately 407,000 MWh in 2019) and the remainder would be provided by Air Liquide and PG&E, as shown in Table 4.6-5b. Because of an overall reduction in fuel gas (RFG and natural gas) requirements, natural gas purchased from PG&E will be reduced, as shown in Table 4.6-5b.

The consumption of diesel fuel at the Rodeo Site would increase due to increases in marine vessel and rail traffic. These would be partially offset by the discontinuance of truck traffic at the Rodeo Site and the Santa Maria Site, and rail traffic at the Carbon Plant and Santa Maria Site. The consumption of gasoline, which is attributable to worker vehicles, would not change because employment at the Rodeo Site would not change.

Stationary sources at the Santa Maria Site and the Pipeline Sites would permanently cease consumption of energy during the Project due to the closure of those facilities.

Operation and Maintenance Significance Discussion

Appendix F of the CEQA Guidelines provides guidance for evaluating whether a project would result in the wasteful, inefficient, or unnecessary consumption of fuel or energy. The Appendix F factors guide the following evaluation of the energy impacts of the Project relative to this significance criterion.

Operation of the Project as a whole would result in decreases in the consumption of electricity, relative to the baseline, primarily as a result of the closure of the Santa Maria Site. Due to the closure of the Carbon Plant cogeneration system, the Carbon Plant site would no longer export electricity to PG&E. The Rodeo Site would continue to import electricity from PG&E, subject to availability of other electricity sources, such as Air Liquide, including renewable sources.

In 2019, the total generated electricity for California was 277,704 GWh (CEC 2020a), approximately 430,000 times the Project's total consumption, and consumers in Contra Costa County used 9,639 GWh (CEC 2020c), approximately 150 times the Project's consumption. Of the 499,800 MWh of electricity required by the Project at the Rodeo site, 406,800 MWh would be produced onsite. Because over 80 percent of the electricity required at the Rodeo site would be generated onsite, it would not represent a demand on regional electrical supply. Based on a comparison to the state-wide and Contra Costa County annual energy demand and the projected demand growth rate, the Project-related electricity consumption would not cause adverse effects on local and regional energy supplies or require additional generation capacity beyond the state-wide planned increase to accommodate projected energy demand growth.

Consumption of natural gas from the Project as a whole would decline substantially from baseline conditions. State-wide natural gas consumption in 2019 was approximately 1,315,800,000 MMBtu, and Contra Costa County natural gas demand was 120,504,539 MMBtu in 2019 (CEC 2020d). The Project's consumption of natural gas, 1,608,400 MMBtu/year, would represent 0.12 percent of statewide and 1.33 percent of Contra Costa County consumption (where all of the Project's consumption would occur). Accordingly, the Project's estimated natural gas consumption rate would not be substantial compared to the 2019 state-wide and countywide consumption, and would therefore not cause adverse effects on energy supplies.

The Project's consumption of diesel fuel would be 1,075,300 gallons per year above baseline levels due to expected marine traffic increase during the Project. The increase in consumption of 1,075,300 diesel gallons per year above baseline would represent 0.04 percent of the 4.5 billion gallons of diesel fuel consumed statewide.

The Project's use of electricity, natural gas, and diesel fuel would be minimal relative to total state and regional supplies, and would therefore have no adverse effect on energy resources or represent wasteful, inefficient, or unnecessary use of energy. PG&E has indicated that it has planned for future increases in demand for electricity and natural gas and will be able to meet those demands (PG&E 2020b). Furthermore, the Project would create renewable fuels that would contribute to the LCFS requirements and would continue to contribute to the state and region's supplies of energy in the form of transportation and heating fuels. Impacts related to the use of energy in Project operation would be less than significant and no mitigation is required with respect to the wasteful, inefficient, or unnecessary consumption of fuel or energy.

Construction and operation of the Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources, and impacts would be less than significant, and no mitigation is required.

Mitigation Measure: **None Required**

IMPACT 4.6-2

b. Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction/Demolition: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Project construction would require use of on-road trucks for soil and debris hauling and material deliveries, and off-road equipment such as excavators, cranes, forklifts, and pavers. The Project would comply with state and local requirements designed to minimize idling and associated emissions, which also minimizes use of fuel. In accordance with BAAQMD's Basic Construction Mitigation Measures, idling times for heavy duty trucks and vehicles shall be minimized by turning off the engine or reducing idling to a maximum of 5 minutes (BAAQMD 2017). In accordance with CARB emissions standards, all construction equipment with a model year of 2012 or later would comply with the engine standards of 13 California Code of Regulations Section 2449. The Project would comply with existing energy standards, including state and local standards designed to minimize use of fuel in construction vehicles. Therefore, construction and operation of the Project would not conflict with or obstruct adopted energy conservation plans or violate energy efficiency standards. The impact would be less than significant and no mitigation is required.

Santa Maria Site

As with the Rodeo Refinery, demolition activities at the Santa Maria Site would be required to implement construction best management practices of the San Luis Obispo County APCD Project and CARB. Compliance with these measures designed to minimize emissions is expected to result in a less-than-significant impact.

Pipeline Sites

The Pipeline Sites would be decommissioned, which would not require any construction or demolition activities that could create a conflict with or obstruction of adopted energy conservation plans or violate energy efficiency standards. The impact would be less than significant and no mitigation is required.

Operation and Maintenance: Less Than Significant, No Mitigation Proposed

Rodeo Refinery

Operation of the Project would comply with all federal and state regulations and policies regarding energy efficiency. The Project would be consistent with the Energy Policy Act of 2005, the CEC's Integrated Energy Policy, AB 1007, CARB's Mobile Source Strategy, and the Contra Costa General Plan because by providing renewable fuels it would help businesses, government entities, and consumers to reduce reliance on non-renewable energy sources and promote the use of renewable fuels. Furthermore, the Project converts the existing Rodeo Refinery from refining crude oil and petroleum-based feedstocks to refining renewable feedstocks. As noted in Appendix F to the CEQA Guidelines, the "goal of conserving energy implies the wise and efficient use of energy" and may be achieved through various means, including "decreasing reliance on fossil fuels" and "increasing reliance on renewable energy sources." Thus, the very nature of the Project serves to achieve the goal of conserving energy, resulting in the wise and efficient use of energy.

In addition, the Project would generate transportation fuel that is designed to meet the requirements of the LCFS. The LCFS sets CI benchmarks for transportation fuels, which reduce over time, and the program supports the diversification of the fuel pool in California not only to reduce GHG emissions, but to reduce petroleum dependency. The Project's participation in the LCFS program further supports energy conservation. Therefore, the impact would be less than significant and no mitigation is required.

Santa Maria Site

Any potential future development of the Santa Maria Site, and the associated level of required remediation, is speculative at this time, and would be a separate project and evaluated in a separate CEQA process by San Luis Obispo County. However, it is expected that San Luis Obispo County would require compliance with all federal and state regulations and policies regarding energy efficiency for any new development. Therefore, the Project would not conflict with or obstruct any federal or state energy conservation plans or violate any energy efficiency standards. The impact would be less than significant, and no mitigation is required.

Pipeline Sites

Operation and maintenance at the Pipeline Sites would discontinue with implementation of the Project since the pipelines would be decommissioned, which would reduce energy consumption, (or potentially sold, which would not change the baseline condition. Therefore, the Project would not conflict with or obstruct any federal or state energy conservation plans or violate any energy efficiency standards. The impact would be less than significant, and no mitigation is required.

Mitigation Measure: **None Required**

4.6.8 References

BAAQMD (Bay Area Air Quality Management District). 2017. California Environmental Quality Act Guidelines. May 2017. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

CARB (California Air Resources Board). 2011. Emissions Estimation Methodology for Ocean-Going Vessels. May 2011. Available at: https://ww3.arb.ca.gov/regact/2011/ogv11/ogv11appd.pdf.

———. 2017a. Clean Car Standards—Pavley, Assembly Bill 1493. Last Reviewed January 11, 2017. Available at: https://ww2.arb.ca.gov/californias-greenhouse-gas-vehicle-emission-standards-under-assembly-bill-1493-2002-pavley.

———. 2017b. 2017 Off-road Diesel Emission Factors. Available at: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road.

———. 2020. EMFAC Emissions Inventory: Statewide, Calendar Year 2019. Sum of Onroad and Offroad Emissions. Available at: https://arb.ca.gov/emfac/emissions-inventory.

CBE (California State Board of Equalization). 2020a. Net Taxable Gasoline Gallons, Including Aviation Gasoline. June 2020—Motor Vehicle Fuel 10 Year Reports. Available at: https://www.cdtfa.ca.gov/taxes-and-fees/MVF-10-Year-Report.pdf.

———. 2020b. Taxable Diesel Gallons 10 Year Report. Available at: https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm.

CEC (California Energy Commission). 2010. Guidelines for Certification of Combined Heat and Power Systems Pursuant to the Waste Heat and Carbon Emissions Reduction Act, Public Utilities Code, Section 2840 et seq.: Commission Modified Final Guidelines. Available at: http://www.energy.ca.gov/2009publications/CEC-200-2009-016/CEC-200- 2009-016-CMF-REV2.PDF. Accessed March 1, 2013.

———. 2018. Revised Transportation Energy Demand Forecast, 2018-2030. Publication Number: CEC-200-2018-003. Available at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=17-IEPR-05.

———. 2019. Supply and Demand of Natural Gas in California. Available at: https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california.

———. 2020a. 2019 Total System Electric Generation. Available at: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation.

———. 2020b. 2019 California Annual Retail Fuel Outlet Report Results (CEC-A15), Energy Assessment Division, September 22, 2020. Available at: https://www.energy.ca.gov/media/3874

———. 2020c. Electricity Consumption by County. Available at: http://www.ecdms.energy.ca.gov/elecbycounty.aspx

———. 2020d. 2018 Gas Consumption by County. Available at: http://www.ecdms.energy.ca.gov/gasbycounty.aspx

———. 2020e. Tracking Progress – Renewable Energy Highlights. July 2020. Available at: https://www.energy.ca.gov/sites/default/files/2019-12/renewable_highlights_ADA_0.pdf.

———. 2021. Final 2020 Integrated Energy Policy Report Update. Volume 1: Blue Skies, Clean Transportation. March. pages 131-132. Available at: https://efiling.energy.ca.gov/getdocument.aspx?tn=237268.

Contra Costa County. 2010. Contra Costa County General Plan 2005–2020. Contra Costa County, Department of Conservation and Development. Published January 18, 2005; Reprinted July 2010. Available at: https://www.contracosta.ca.gov/4732/General-Plan.

CPUC (California Public Utilities Commission). 2019. RPS Program Overview, 2018. Available at: http://www.cpuc.ca.gov/RPS_Overview/.

PG&E (Pacific Gas and Electric Company). 2019. 2019 Joint Annual Report to Shareholders. Available at: http://s1.q4cdn.com/880135780/files/doc_financials/2020/ar/PCG010_PGE_2019-Annual-Report_Web.pdf.

———. 2020a. 2019 Power Content Label. Available at: https://www.pge.com/pge_global/common/pdfs/your-account/your-bill/understand-your-bill/bill-inserts/2020/1220-PowerContent-ADA.pdf.

———. 2020b. Corporate Responsibility and Sustainability Report 2020. Available at: https://www.pgecorp.com/corp_responsibility/reports/2020/bu07_renewable_energy.html.

———. 2020c. Integrated Resource Plan 2020. Prepared for the California Public Utilities Commission. Available at: https://www.pge.com/pge_global/common/pdfs/for-our-business-partners/energy-supply/integrated-resource-planning/2020-PGE-Integrated-Resource-Plan.pdf.

Ramboll. 2021. Rodeo Renewed Project Air Quality Technical Report. Prepared for Phillips 66. June.

US Department of Energy. 2020. State of California Energy Risk Profile. Available at: https://www.energy.gov/sites/prod/files/2015/05/f22/CA-Energy%20Sector%20Risk%20Profile.pdf.

USEIA (US Energy Information Administration). 2020. California State Energy Profile. Available at: https://www.eia.gov/state/print.php?sid=CA.

USEPA and USDOT (US Environmental Protection Agency and US Department of Transportation). 2010. Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards. Final Rule. 75 Fed. Reg. 25324–25728.

———. 2011. Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles. 76 Fed. Reg. 57106.

———. 2014. Corporate Average Fuel Economy (CAFE) Standards. Available at: Corporate Average Fuel Economy (CAFE) Standards | US Department of Transportation.

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