3.5 - Energy

3.5.1 - Introduction

This section describes the existing energy setting in the project area as well as the relevant regulatory framework. This section also evaluates the possible impacts related to energy that could result from implementation of the project. Information in this section is based on project-specific energy calculation outputs included in Appendix B. No comments were received during the Environmental Impact Report (EIR) scoping period related to energy.

3.5.2 - Existing Setting

Energy Basics

Energy is generally transmitted either in the form of electricity, measured in kilowatts (kW)[1] or megawatts (MW),[2] or natural gas measured in British thermal units (BTU), or cubic feet.[3] Fuel, such as gasoline or diesel, is measured in gallons or liters.

Electricity

Electricity is used primarily for lighting, appliances, and other uses associated with the project.

Natural Gas

Natural gas is used primarily for heating, water heating, and cooking purpose and is typically associated with commercial and residential uses.

Fuel

Fuel is used primarily for powering off-road equipment, trucks, and passenger vehicles. The typical fuel types used are diesel and gasoline.

Electricity Generation, Distribution, and Use

State of California

The State of California generates approximately 206,336 gigawatt-hours (GWh) of electricity. Approximately 43.4 percent of the energy generation is sourced from natural gas, 29.7 percent from renewable sources (i.e., solar, wind, and geothermal), 17.9 percent from large hydroelectric sources, and the remaining 9 percent is sourced from coal, nuclear, oil, and other non-renewable sources.[4]

In 2016, California ranked third in the nation in conventional hydroelectric generation, second in net electricity generation from all other renewable energy resources combined, and first as a producer

[1] 1 kW = 1.000 watts; A watt is a derived unit of power that measure rate of energy conversion. 1 watt is equivalent to work being done at a rate of 1 joule of energy per second. In electrical terms, 1 watt is the power dissipated by a current of 1 ampere flowing across a resistance of 1 volt.

[2] 1 MW = 1 million watts

[3] A unit for quantity of heat that equals 100,000 British thermal units. A British thermal unit is the quantity of heat required to raise the temperature of 1 pound of liquid water 1 degree Fahrenheit at a constant pressure of 1 atmosphere.

[4] State of California. 2019. California Energy Commission (CEC). Website: https://www.energy.ca.gov/almanac/electricity_data/total_system_power.html. Accessed March 1, 2019.

of electricity from solar, geothermal, and biomass resources. In 2017, California was the leader in total utility-scale electricity generation from renewable energy sources.[5]

Electricity and natural gas is distributed through the various electric load-serving entities (LSEs) in California. These entities include investor-owned utilities (IOUs), publically owned LSEs, rural electric cooperatives, community choice aggregators, and electric service providers.[6]

Contra Costa County

Pacific Gas & Electric (PG&E) provides electricity to many of the cities throughout Contra Costa County. In April 2018, Marin Clean Energy became the primary electricity provider for several of these cities and portions of unincorporated Contra Costa County.[7] Most of the County's energy is consumed by residential activities (41 percent), followed by major industrial activities (34 percent) and all other nonresidential activities (25 percent).[8]

Project Site

The project site contains two residential buildings that consume electricity. As noted Chapter 2, Project Description, electricity for the project site is provided by PG&E.

Natural Gas Generation, Distribution, and Use

State of California

Natural gas is used for everything from generating electricity to cooking and space heating to an alternative transportation fuel. In 2012, total natural gas demand in California for industrial, residential, commercial, and electric power generation was 2,313 billion cubic feet per year (BCF/year), up from 2,196 BCF/year in 2010. Demand in all sectors except electric power generation remained relatively flat for the last decade due in large part to energy efficiency measures, but demand for power generation rose about 30 percent between 2011 and 2012.

Natural gas-fired generation has become the dominant source of electricity in California, as it fuels about 43 percent of electricity consumption followed by hydroelectric power. Because natural gas is a resource that provides load when the availability of hydroelectric power generation and/or other sources decrease, use varies greatly from year to year. The availability of hydroelectric resources, the emergence of renewable resources for electricity generation, and overall consumer demand are the variables that shape natural gas use in electric generation. Due to above average precipitation in 2011, natural gas used for electricity generation was 617 BCF, compared to lower precipitation years in 2010 and 2012 when gas use for electric generation was 736 BCF and 855 BCF, respectively.[9]

[5] United States Energy Information Administration. 2018. California State Profile and Energy Estimates. Website: https://www.eia.gov/state/?sid=CA. Accessed March 1, 2019.

[6] California Energy Commission (CEC). 2019. Electric Load-Serving Entities (LSEs) in California Website: https://www.energy.ca.gov/almanac/electricity_data/utilities.html. Accessed March 1, 2019.

[7] Marin Clean Energy (MCE). 2019. MCE Contra Costa. Website: https://www.mcecleanenergy.org/mce-contra-costa/. Accessed March 1, 2019.

[8] Contra Costa County. 2015. Contra Costa County Climate Action Plan. Website: http://www.co.contra-costa.ca.us/4554/Climate-Action-Plan. Accessed February 26, 2019.

[9] California Energy Commission (CEC). 2019. Supply and Demand of Natural Gas in California. Website: https://www.energy.ca.gov/almanac/naturalgas_data/overview.html. Accessed March 1, 2019.

Contra Costa County

As noted in Chapter 2, Project Description, PG&E provides natural gas to the unincorporated portions of Contra Costa County.

Project Site

The project site contains two residential buildings that consume natural gas. Natural gas for the project site is provided by PG&E.[10]

Fuel Use

State of California

The main category of fuel use in California is transportation fuel, specifically gasoline and diesel. Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline sold in California being consumed by light-duty cars, pickup trucks, and sport utility vehicles. In 2015, 15.1 billion gallons of gasoline were sold, which represents the largest transportation fuel used in California.[11] Diesel is the second largest transportation fuel used in California. According to the State Board of Equalization, in 2015 4.2 billion gallons of diesel, including off-road diesel, was sold. Nearly all heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction and heavy duty military vehicles and equipment have diesel engines.[12]

Project Site

Fuel use associated with the two existing residential buildings on the project site is mainly attributed to the use of vehicle fuel use—gasoline and diesel.

3.5.3 - Regulatory Framework

Federal

Energy Independence and Security Act

The Energy Policy Act of 2005 created the Renewable Fuel Standard program. The Energy Independence and Security Act of 2007 expanded this program by:

- Expanding the Renewable Fuel Standard program to include diesel in addition to gasoline;
- Increasing the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- Establishing new categories of renewable fuel, and setting separate volume requirements for each one; and
- Requiring the Environmental Protection Agency (EPA) to apply life-cycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

[10] Pacific Gas & Electric (PG&E). 2014. Gas Service Area Maps. Website: https://www.pge.com/tariffs/tm2/pdf/GAS_MAPS_Service_Area_Map.pdf. Accessed May 22, 2019.
[11] California Energy Commission (CEC). 2019. California Gasoline, Data, Facts, and Statistics. Website: https://www.energy.ca.gov/almanac/transportation_data/gasoline/. Accessed March 1, 2019.
[12] California Energy Commission (CEC). 2019. Diesel Fuel Data, Facts, and Statistics. Website: https://www.energy.ca.gov/almanac/transportation_data/diesel.html. Accessed May 22, 2019.

This expanded Renewable Fuel Standard program lays the foundation for achieving substantial reductions of GHG emissions from the use of renewable fuels, reducing the use of imported petroleum, and encouraging the development and expansion of the nation's renewable-fuels sector.

Signed on December 19, 2007, the Energy Independence and Security Act (EISA) of 2007 aims to:

- Move the United States toward greater energy independence and security;
- increase the production of clean renewable fuels;
- protect consumers;
- increase the efficiency of products, buildings, and vehicles;
- promote research on and deploy GHG capture and storage options;
- improve the energy performance of the Federal Government; and
- increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy.

EISA reinforces the energy reduction goals for federal agencies put forth in Executive Order 13423, as well as introduces more aggressive requirements. The three key provisions enacted are the Corporate Average Fuel Economy Standards, the Renewable Fuel Standard, and the appliance/lighting efficiency standards.

EPA is committed to developing, implementing, and revising both regulations and voluntary programs under the following subtitles in EISA, among others:

- Increased Corporate Average Fuel Economy Standards
- Federal Vehicle Fleets
- Renewable Fuel Standard
- Biofuels Infrastructure
- Carbon Capture and Sequestration[13]

EPA and National Highway Traffic Safety Administration Light-Duty Vehicle GHG Emission Standards and Corporate Average Fuel Economy Standards Final Rule

Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, the President put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile,

[13] United States Environment Protection Agency (EPA). Summary of the Energy Independence and Security Act. Website: https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act

equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

The EPA and the NHTSA issued final rules on a second-phase joint rulemaking, establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012.[14] The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleet wide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

The EPA and NHTSA issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that began in the 2014 model year and achieve up to a 20-percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles, and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10-percent reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

The State of California has received a waiver from the EPA to have separate, stricter corporate average fuel economy standards. Although global climate change did not become an international concern until the 1980s, efforts to reduce energy consumption began in California in response to the oil crisis in the 1970s, resulting in the incidental reduction of GHG emissions. In order to manage the State's energy needs and promote energy efficiency, Assembly Bill (AB) 1575 created the California Energy Commission (CEC) in 1975.

State

California AB 1493: Pavley Regulations and Fuel Efficiency Standards

California AB 1493, enacted on July 22, 2002, required the California Air Resources Board (ARB) to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011.[15]

[14] United States Environmental Protection Agency (EPA). 2012. EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks. Website: http://www.epa.gov/otaq/climate/documents/420f12051.pdf. Accessed August 21, 2016.

[15] California Air Resources Board (ARB). 2013d. Clean Car Standards—Pavley, Assembly Bill 1493. Website: http://www.arb.ca.gov/cc/ccms/ccms.htm. Accessed February 14, 2017.

The standards are to be phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in an approximately 22-percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30-percent reduction.

The second phase of the implementation for the Pavley Bill was incorporated into Amendments to the Low-Emission Vehicle (LEV) Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules will reduce pollutants from gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The regulations will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.[16]

California Code of Regulations Title 13: Motor Vehicles

California Code of Regulations, Title 13: Division 3, Chapter 10, Article 1, Section 2485: Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.[17] This measure seeks to reduce public exposure to diesel particulate matter and other air contaminants by establishing idling restrictions, emission standards, and other requirements for heavy-duty diesel engines and alternative idle reduction technologies to limit the idling of diesel-fueled commercial motor vehicles. Any person that owns, operates, or causes to operate any diesel-fueled commercial motor vehicle must not allow a vehicle to idle for more than 5 consecutive minutes at any location, or operate a diesel-fueled auxiliary power system for greater than 5 minutes at any location when within 100 feet of a restricted area.

California Code of Regulations, Title 13: Division 3, Chapter 9, Article 4.8, Section 2449: General Requirements for In-Use Off-Road Diesel-Fueled Fleets. This measure regulates oxides of nitrogen (NO_X), diesel particulate matter (DPM), and other criteria pollutant emissions from in-use off-road diesel-fueled vehicles. This measure also requires each fleet to meet fleet average requirements, or demonstrate that it has met "best available control technology" requirements. Additionally, this measure requires medium and large fleets to have a written idling policy that is made available to operators of the vehicles informing them that idling is limited to 5 consecutive minutes or less.

California Senate Bill 1078: Renewable Electricity Standards

On September 12, 2002, Governor Gray Davis signed Senate Bill (SB) 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that

[16] California Air Resources Board (ARB). 2011c. Status of Scoping Plan Recommended Measures. Website: www.arb.ca.gov/cc/scoping plan/sp_measures_implementation_timeline.pdf. Accessed February 14, 2017.

[17] Thomas Reuters Westlaw. 2019. California Code of Regulations, Title 13. Motor Vehicles. Website: https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I143B9530D46811DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default). Accessed February 27, 2019.

all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020. The ARB Board approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23.

California SB 350: Clean Energy and Pollution Reduction Act

In 2015, the State legislature approved and the Governor signed SB 350 which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the Renewables Portfolio Standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill due to opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission, the CEC, and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.[18]

California Code of Regulations Title 24

Part 6 (Energy Efficiency Standards for Residential and Nonresidential Buildings)

California Code of Regulations Title 24 Part 6 (California's Energy Efficiency Standards for Residential and Nonresidential Buildings), was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2016 Building Energy Efficiency Standards went into effect on January 1, 2017.[19] The 2019 Building Energy Efficiency Standards are scheduled to go into effect on January 1, 2020.

Part 11 (California Green Building Standards Code)

California Code of Regulations Title 24, Part 11, is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. The Code is updated on a regular basis, with the most recent update consisting of the 2016 California Green

[18] California Legislative Information (California Leginfo). 2015. Senate Bill 350 Clean Energy and Pollution Reduction Act of 2015. Website: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350. Accessed September 28, 2017.

[19] California Energy Commission (CEC). 2016. 2016 Building Energy Efficiency Standards Frequently Asked Questions. Website: http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf. Accessed December 1, 2016.

Building Code Standards that became effective January 1, 2017.[20] Local jurisdictions are permitted to adopt more stringent requirements, as State law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The Code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State Building Code provides the minimum standard that buildings need to meet in order to be certified for occupancy, which is generally enforced by the local building official.

California Public Utilities Code

The California Public Utilities Commission (CPUC) regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. It is the responsibility of the CPUC to (1) assure California utility customers safe, reliable utility service at reasonable rates; (2) protect utility customers from fraud; and (3) promote a healthy California economy. The Public Utilities Code, adopted by the legislature, defines the jurisdiction of the CPUC.

Local

Contra Costa County General Plan Conservation Element

Contra Costa County has renewable energy sources, in the form of wind energy and solar power that have yet to be fully utilized. Chapter 8, the Conservation Element of the Contra Costa County General Plan, contains the following goals and policies pertaining to the County's renewable energy resources.[21]

- **Goal 8-K:** To encourage the use of renewable resources where they are compatible with the maintenance of environmental quality.
- **Goal 8-L:** To reduce energy use in the County to avoid risks of air pollution and energy shortages which could prevent orderly development.

Contra Costa County Climate Action Plan

In 2005, the County established a Climate Change Working Group to coordinate County efforts to respond to climate change, and to guide practices that result in more sustainable actions.[22] On December 15, 2015, the Contra Costa County Climate Action Plan was approved by the Board of Supervisors.[23] Many County policies and initiatives support this effort, including:

- The Contra Costa County Municipal Climate Action Plan,[24] which includes a range of policies promoting energy efficiency and renewable energy;
- Bay Area Regional Energy Network,[25] a collaboration of the nine counties that make up the Bay Area that implements energy savings programs on a regional level;

[20] California Building Standards Commission (CBSC). 2016. Green Building Standards. Website: https://www.ladbs.org/docs/default-source/publications/code-amendments/2016-calgreen_complete.pdf?sfvrsn=6. Accessed June 27, 2017.

[21] Contra Costa County. 2005. Contra Costa County General Plan. January 18. Website: http://www.co.contra-costa.ca.us/4732/General-Plan. Accessed February 26, 2019.

[22] Contra Costa County. 2015. Contra Costa County Climate Action Plan. December 15. Website: http://www.co.contra-costa.ca.us/4554/Climate-Action-Plan. Accessed February 25, 2019.

[23] Contra Costa County. 2015. Contra Costa County Climate Action Plan. December 15. Website: http://www.co.contra-costa.ca.us/4554/Climate-Action-Plan. Accessed February 26, 2019.

[24] Contra Costa County. 2008. Contra Costa County Municipal Climate Action Plan. December. Website: www.co.contra-costa.ca.us/DocumentCenter/View/2905. Accessed February 27, 2019.

- Energy conservation policies and programs designed to reduce energy demand through home weatherization programs and green building guidelines; and,
- Alternative energy policies that will reduce GHG emissions through supporting appropriate renewable energy projects and encouraging energy recovery projects.

3.5.4 - Impacts and Mitigation Measures

According to 2019 CEQA Guidelines Appendix G, to determine whether impacts related to energy are significant environmental effects, the following questions are analyzed and evaluated. Would the project:

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

b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Approach to Analysis

For the purposes of this EIR, the approach to analysis for energy use is based on 2019 CEQA Guidelines Appendix F (Energy Conservation). CEQA Guidelines Appendix F is focused on the goal of conserving energy through the wise and efficient use of energy. Estimates of energy consumption associated with the project are based, in part, on information provided by the California Emissions Estimator Model (CalEEMod) output included in this Draft EIR as Appendix B. CalEEMod contains energy intensity rates for the various land uses selected; see Section 3.7, Greenhouse Gas Emissions—Approach to Analysis, for detailed information regarding how project-specific energy estimates are determined.

Renewable Energy/Energy Efficiency Plan Consistency Determination Methodology

The project is assessed for whether the project would conflict with or obstruct a State or local plan for renewable energy or energy efficiency. To achieve this, the project is assessed for its consistency with State goals and plans related to energy efficiency and renewable energy.

Specific Thresholds of Significance

Contra Costa County does not have quantitative thresholds for evaluation of energy; however, the following qualitative thresholds are used to evaluate the significance of energy impacts resulting from implementation of the project.

- Result in a wasteful, inefficient, or unnecessary consumption of energy during construction and operational activities; or
- Construction and operation of buildings and appliances that would not adhere to the energy-use reduction measures included in the California Green Building Code and required by Contra Costa County.

[25] Association of Bay Area Governments (ABAG). 2019. BayRen [Bay Area Regional Energy Network]: Local Governments Empowering Our Communities. Website: https://www.bayren.org/. Accessed February 27, 2019.

Impact Evaluation

Energy Use

Impact ENER-1: The project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

A significant impact would occur if the project would result in the inefficient, wasteful, or unnecessary use of energy.

Construction

During construction, the project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. It is not anticipated that natural gas would be consumed as part of project construction. Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during site clearing, grading, paving, and building construction. The types of equipment could include gasoline- and diesel-powered construction and transportation equipment, including trucks, bulldozers, frontend loaders, forklifts, and cranes. Based on CalEEMod estimations within the modeling output files used to estimate GHG emissions associated with the project, construction-related vehicle trips would result in approximately 1.32 million vehicle miles traveled, and consume an estimated 62,074 gallons of gasoline and diesel combined during the construction phase (Appendix B). Additionally, on-site construction equipment would consume an estimated 18,353 gallons of diesel fuel (Appendix B).[26]

Limitations on idling of vehicles and equipment and requirements that equipment be properly maintained would result in fuel savings. California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by the ARB. Additionally, given the cost of fuel, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Other equipment could include construction lighting, field services (office trailers), and electrically driven equipment such as pumps and other tools. Single-wide mobile office trailers, which are commonly used in construction staging areas, generally range in size from 160 square feet to 720 square feet. A typical 720-square-foot office trailer would consume approximately 17,725 kilowatt-hour (kWh) during the 24-month construction phase (Appendix B). Due to the temporary nature of construction and the financial incentives for developers and contractors to use energy-consuming resources in an efficient manner, the construction phase of the project would not result in wasteful, inefficient, and unnecessary consumption of energy. Therefore, the construction-related impacts related to electricity and fuel consumption would be less than significant.

[26] As noted in the construction equipment fuel calculation in Appendix B, cranes would be powered by electricity, and forklifts would be powered by liquid propane or compressed natural gas, rather than diesel. Thus, the energy consumption of cranes and forklifts was not included in the calculation of construction equipment diesel fuel usage.

Operation

Electricity and Natural Gas

The operational phase of the project would consume energy as part of building operations and transportation activities. Building operations for the project would involve energy consumption for multiple purposes including, but not limited to, building heating and cooling, refrigeration, lighting, and electronics. Based on CalEEMod energy use estimations, operations (for both the apartments and for the enclosed parking lot and elevator) would consume approximately 2.15 million kWh of electricity and an estimated 2.48 million kilo-British thermal unit (kBTU) (2.43 million cubic feet) of natural gas on an annual basis (Appendix B). The parameters used to arrive at the CalEEMod-provided energy estimates are described in more detail in Section 3.7, Greenhouse Gas Emissions—Approach to Analysis, while complete CalEEMod output files are contained in Appendix B.

The project would be designed and constructed in accordance with the County's latest adopted energy efficiency standards, which are based on the State's Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards, widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. Furthermore, the Contra Costa County General Plan and Climate Action Plan include energy conservation initiatives designed to reduce energy demand through home weatherization programs, green building guidelines, and alternative energy policies that would reduce energy use through supporting appropriate renewable energy projects and encouraging energy recovery projects. Compliance with these policies would ensure that building energy consumption would not result in the use of energy in a wasteful, inefficient, or unnecessary manner. Therefore, the operational impact related to building electricity and natural gas consumption would be less than significant.

Fuel

Operational energy would also be consumed during vehicle trips associated with the project. Fuel consumption would be primarily related to vehicle use by residents, visitors, and employees associated with the project. Based on energy use estimations contained within the CalEEMod output files used to estimate the project's generation of GHG emissions, project-related vehicle trips would result in approximately 4.12 million vehicle miles traveled and consume an estimated 117,378 gallons of gasoline and diesel combined, annually (CalEEMod output files and energy-specific calculations are included in Appendix B).

The project site is located near the Interstate 680 (I-680) Treat Boulevard interchange. Specifically, the project site is approximately 0.36 mile east of I-680. As such, it would be in proximity to a regional route of travel. The project site is also located 0.12 mile from the Bay Area Rapid Transit (BART) Pleasant Hill BART Station, which is within what is typically considered walking distance. The existing transportation facilities in the area would provide future residents, visitors, and employees associated with the project with access to public transportation, thus further reducing fuel consumption demand. For these reasons, operational-related transportation fuel consumption

would not result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the operational impact related to vehicle fuel consumption would be less than significant.

Level of Significance

Less Than Significant

Energy Efficiency and Renewable Energy Standards Consistency

Impact ENER-2: The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

A significant impact would occur if the project would conflict with or obstruct a State or local plan for renewable energy or energy efficiency. The County has not developed a specific energy reduction or renewable energy plan at the time of this writing. Since the County has not adopted specific plans, the analysis is based on consistency with State goals and plans related to energy efficiency and renewable energy.

Construction

As discussed under Impact ENER-1, the project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449(d)(3) and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by the ARB. The project would comply with these regulations. Thus, it is anticipated that construction of the proposed plan would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation

The project would be served with electricity provided by PG&E.[27] About 80 percent of the electricity that PG&E delivered in 2017 was a combination of renewable and GHG-emissions-free resources.[28] The 2017 power mix included 27 percent non-emitting nuclear generation, 18 percent large hydroelectric facilities, 33 percent eligible renewable resources, such as wind, geothermal, biomass, solar, and small hydro, 20 percent natural gas/other, and 2 percent unspecified power. PG&E is ahead of schedule in meeting the California RPS of 33 percent by 2020 mandate with renewable energy making up 51 percent of its energy portfolio.

Part 11, Chapter 4, of the State's Title 24 energy efficiency standards establishes mandatory measures for residential buildings, including material conservation and resource efficiency. The project would also be required to comply with these mandatory measures. The project would also

[27] Pacific Gas & Electric (PG&E). 2019. Exploring Clean Energy Solutions. Website: https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page. Accessed February 26, 2019.

[28] Renewable sources included solar, wind, geothermal, biomass, and small hydroelectric sources. GHG-emissions-free sources of energy included nuclear and large hydro. "GHG-emissions-free resources" refers to energy sources other than renewable energy resources that also do not result in GHG emissions, such as non-emitting nuclear and hydroelectric.

comply with the California Building Codes Standards requiring proposed apartment buildings to be solar ready. In addition, per California Building Codes Standards, the proposed building would be required to provide wiring that would allow installation of electric vehicle (EV) charging equipment in any private garages or carports.

Compliance with these aforementioned mandatory measures would ensure that the project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

Level of Significance

Less Than Significant

3.5.5 - Cumulative Impacts

The geographic scope of the cumulative energy analysis is the portion of PG&E's service area that covers incorporated and unincorporated Contra Costa County. Cumulative projects considered as part of this cumulative analysis include the project and other cumulative projects identified in Table 3-1.

Electricity and Natural Gas

Cumulative projects would be required to comply with Title 24 minimum energy efficiency standards. The cumulative buildings would be designed in accordance with Title 24, California's Energy Efficiency Standards for Residential and Nonresidential Buildings as applicable. These standards include minimum energy efficiency requirements related to building envelope, mechanical systems (e.g., heating, ventilation, and air conditioning [HVAC] and water heating systems), and indoor and outdoor lighting. The incorporation of the Title 24 standards into the design of the cumulative projects, including the project, would ensure that the cumulative projects would not result in the inefficient, unnecessary, or wasteful consumption of electricity or natural gas. Therefore, the project, in conjunction with other existing, planned, and foreseeable future projects listed in Table 3-1, would result in a less than significant cumulative impact related to energy consumption in the form of electricity and natural gas.

Fuel

Cumulative projects would be required to comply with California Code of Regulations Title 13, Sections 2449(d)(3) and 2485, that limit idling from both on-road and off-road diesel-powered equipment and are enforced by ARB. Compliance with these regulations by the cumulative projects, including the project, would ensure that the cumulative projects would not result in the inefficient, unnecessary, or wasteful consumption of fuel. Therefore, the project, in conjunction with other existing, planned, and foreseeable future projects listed in Table 3-1, would result in a less than significant cumulative impact related to energy consumption in the form of fuel.

Level of Cumulative Significance

Less Than Significant

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