4.5 Energy

This section describes the existing conditions related to energy consumption, identifies associated regulatory requirements, and evaluates the potential energy consumption and conservation impacts related to implementation of the 123 Independence Drive Residential Project (project; proposed project) site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the project.

The primary sources reviewed to prepare this section include the City of Menlo Park (City) General Plan (City of Menlo Park 2016a), the 2019 California Building Standards Code, the adopted 2022 California Building Standards Code (effective January 1, 2023), and information from the City. Other sources consulted are listed in Section 4.5.5, References Cited. In addition to those sources, the analysis in this section is based, in part, on the Air Quality, Greenhouse Gas Emissions, and Energy Calculations prepared by Dudek in March 2022 (Appendix C1) and the Transportation Impact Analysis prepared by Dudek in September 2022 (Appendix J1).

Public comments received in response to the Notice of Preparation from the Sequoia Union High School District concerns with the potential increase in traffic volumes within the project area.

4.5.1 Existing Conditions

Electricity

The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into electrical energy. The delivery of electricity involves a number of system components, including power generation facilities, transmission and distribution lines, substations and transformers that lower transmission line power (voltage) to a level appropriate for on-site distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Production of electricity and its conveyance through the power grid occur in response to market demand.

Energy capacity, or electrical power, is generally measured in watts while energy use is measured in watt-hours (Wh). For example, if a light bulb has a capacity rating of 100 watts, the energy required to keep the bulb on for 1 hour would be 100 Wh. If 10 100-watt bulbs were on for 1 hour, the energy required would be 1,000 Wh or 1 kilowatt-hour (kWh). On a utility scale, a generator's capacity is typically rated in megawatts, which is 1 million watts, while energy usage is measured in megawatt-hours (1 million watt-hours) or gigawatt-hours (1 billion watt-hours).

Peninsula Clean Energy

Residences and businesses within the City of Menlo Park, including the project site, receive electricity from either the Pacific Gas and Electric Company (PG&E) or the Peninsula Clean Energy Authority (PCE). PCE is a Community Choice Aggregator that was created as a Joint Powers Agency in 2016 to serve all areas of San Mateo County. In March 2021, PCE received approval from the California Public Utilities Commission (CPUC) to also serve the City of Los Banos. PCE is the default energy provider throughout San Mateo County, including each of the 20 incorporated cities within the County, but residents may opt-out of obtaining energy from PCE and instead obtain it from PG&E. Energy supplied through PCE is transmitted to customers through transmission lines and other infrastructure owned and maintained by PG&E. In 2020, a total of 4,168 million kWh of electricity was consumed in San Mateo County, with 2,516 million kWh being used by non-residential customers and 1,652 million kWh being used by residential customers (CEC 2021a).

PCE serves 765,000 customers in San Mateo County by providing more than 3,500 gigawatt hours annually of electricity. PCE obtains all of its electric power from renewable resources (e.g., water, wind, and solar) and carbon-free sources (e.g., hydroelectric and geothermal). As of November 2021, PCE had secured long-term contracts for 500 megawatts (MW) of solar energy, 102 MW of energy storage, 357 MW of wind energy, and 35 MW of geothermal energy (PCE 2022). This includes a 15-year solar-plus-storage Power Purchase Agreement with Leeward Renewable Energy to receive electric power from Leeward Renewable Energy's 102 MW Chaparral Solar Facility in Kern County, California. The agreement includes purchase of energy and capacity from this facility's 52 MW (208 megawatt-hour) battery storage system (businesswire.com 2021). Customers of PCE have two electricity options to choose from, ECOplus which is 50 percent renewable energy (default option) and 100 percent carbon-free energy, and ECO100, which is 100 percent renewable energy (PCE 2022).

Pacific Gas & Electric

PG&E provides electric services to 5.4 million customers via 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines over a 70,000-square-mile service area that includes Northern California and Central California (PG&E 2016). According to PG&E, its customers consumed 78,519 million kWh of electricity in 2020 (Table 4.5-1) (CEC 2021b).

Table 4.5-1. Pacific Gas and Electric Company 2020 Electricity Consumption

Sector	Total Electricity (in Millions of kWh)
Agricultural and Water Pump	6,637.59
Commercial Buildings	26,246.78
Commercial Other	3,948.56
Industry	9,814.34
Mining and Construction	1,747.64
Residential	29,833.54
Streetlight	290.38
Total Consumption[a]	**78,518.84**

Source: CEC 2021b.
Notes: kWh = kilowatt-hour.
[a] Total may not sum precisely due to rounding.

PG&E receives electric power from a variety of sources. According to the CPUC's 2021 California Renewables Portfolio Standard Annual Report, 35 percent of PG&E's power came from eligible renewable energy sources in 2019, including biomass/waste, geothermal, small hydroelectric, solar, and wind sources (CPUC 2021). Therefore, PG&E exceeded the state's Renewables Portfolio Standard (RPS) goal of 33 percent renewable energy delivered by 2020.

Based on recent energy supply and demand projections in California, statewide annual peak electricity demand is projected to grow an average of 1,087 megawatts per year for the next decade, or 1.5 percent annually, and consumption per capita is expected to remain relatively constant at 7.6 to 8.0 megawatt-hours per person (CEC 2018).

Natural Gas

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs, mainly located outside the State, and delivered through high-pressure transmission pipelines. The natural gas transportation system is a nationwide network, and therefore, resource availability is typically not an issue. Natural gas provides almost one-

third of the state's total energy requirements and is used in electricity generation, space heating, cooking, water heating, industrial processes, and CPUC Public Utilities Commission regulates natural gas utility service for approximately 10.8 million customers who receive natural gas from PG&E, Southern California Gas, San Diego Gas and Electric Company, Southwest Gas, and several smaller natural gas utilities. PG&E provides natural gas service to most of Northern California, including San Mateo County. As provided in Table 4.5-2, PG&E customers consumed approximately 4,509 million therms of natural gas in 2020 (CEC 2021c).

Table 4.5-2. Pacific Gas and Electric Company 2020 Natural Gas Consumption

Sector	Total Natural Gas (in Millions of Therms)
Agricultural and Water Pump	44.03
Commercial Buildings	796.94
Commercial Other	50.97
Industry	1,585.35
Mining and Construction	139.96
Residential	1,891.28
Total Consumption[a]	**4,508.54**

Source: CEC 2021c.
Note:
[a] Total may not sum precisely due to rounding.

In 2020, PG&E delivered 200 million therms of natural gas to San Mateo County, with the majority going to residential uses (118 million therms) (CEC 2021d). Notably, the project would be built in accordance with the City's Municipal Code Chapter 12.16, approved September 2019, which requires new residential buildings be "all-electric," meaning they must be built without a natural gas supply.

Petroleum

There are more than 36 million registered vehicles in California, and those vehicles consume an estimated 16.8 billion gallons of fuel each year (CEC 2019a; DMV 2020). Petroleum currently accounts for approximately 92 percent of California's transportation energy consumption (CEC 2019a). However, technological advances, market trends, consumer behavior, and government policies could result in significant changes in fuel consumption by type and in total. At the federal and state levels, various policies, rules, and regulations have been enacted to improve vehicle fuel efficiency, promote the development and use of alternative fuels, reduce transportation-source air pollutants and greenhouse gas (GHG) emissions, and reduce vehicle miles traveled (VMT). Chapter 4.7, Greenhouse Gas Emissions, discusses in more detail both federal and state regulations that would help increase fuel efficiency of motor vehicles and reduce GHG emissions (see Section 4.7.2, Regulatory Framework). Market forces have driven the price of petroleum products steadily upward over time, and technological advances have made use of other energy resources or alternative transportation modes increasingly feasible.

Largely as a result of and in response to these multiple factors, gasoline consumption within the state has declined in recent years, and availability of other alternative fuels/energy sources has increased. The quantity, availability, and reliability of transportation energy resources have increased in recent years, and this trend will likely continue and accelerate (CEC 2019a). Increasingly available and diversified transportation energy resources act to promote continuing reliable and affordable means to support vehicular transportation within the state.

4.5.2 Regulatory Framework

Federal Regulations

Federal Energy Policy and Conservation Act and Corporate Average Fuel Economy Standards

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards, known as the Corporate Average Fuel Economy standards, for on-road motor vehicles in the United States. Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States. Pursuant to the act, the National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards. In 2012, new Corporate Average Fuel Economy (CAFE) standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 FR 62624–63200). In 2020, NHTSA and the U.S. Environmental Protection Agency (EPA) finalized amendments to the CAFE standards for model years 2021 through 2026 under the Safer Affordable Fuel-Efficient Vehicles Rule. Those amendments reduced the requirement for annual increases in efficiency from approximately 5 percent (as established in 2012) to approximately 1.5 percent. The Safer Affordable Fuel-Efficient Vehicles Rule also revoked California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates for the state. However, in December 2021, NHTSA and EPA again revised the CAFE standards and GHG emissions standards for passenger cars and light trucks for model years 2023–2026, and reinstated California's authority to set its own standards. The final standards will achieve significant reductions in energy consumption and GHG emissions within the transportation sector.

Energy Policy Act of 1992 and 2005

The Energy Policy Act of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. The act includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. The act requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are also included in the act. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. In addition to setting increased Corporate Average Fuel Economy standards for motor vehicles, the EISA facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances

- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020
- While superseded by the EPA and NHTSA actions described previously, establishing miles per gallon targets for cars and light trucks and directing the NHTSA to establish a fuel economy program for medium-and heavy-duty trucks and create a separate fuel economy standard for trucks

This federal legislation requires ever-increasing levels of renewable fuels (the RFS) to replace petroleum (EPA 2017). The EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains at least a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the U.S. As required under the act, the original RFS program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in several key ways that lay the foundation for achieving significant reductions in GHG emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the renewable fuels sector in the United States. The updated program is referred to as "RFS2" and includes the following:

- EISA expanded the RFS program to include diesel, in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- EISA established new categories of renewable fuel and set separate volume requirements for each one.
- EISA required the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green" jobs.

State Regulations

California Environmental Quality Act

In accordance with the California Environmental Quality Act (CEQA) Guidelines and Appendix F, Energy Conservation, of the CEQA Guidelines, in order to ensure that energy implications are considered in project decisions, EIRs must include a discussion of the potential significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides a list of energy-related topics that should be analyzed in an EIR. In addition, while not described as significance thresholds for determining the significance of impacts related to energy, Appendix F provides the

following topics that the lead agency may consider in the energy analysis in an EIR, where topics are applicable or relevant to the project:

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

Warren-Alquist Act

The California Legislature passed the Warren-Alquist Act in 1974, which gives statutory authority to the California Energy Commission (CEC). The legislation also incorporated the following three key provisions designed to address the demand side of the energy equation:

- It directed the CEC to formulate and adopt the nation's first energy conservation standards for both buildings constructed and appliances sold in California.
- It removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high demand projections, and transferred it to the more impartial CEC.
- It directed the CEC to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as "non-conventional energy sources."

State of California Energy Action Plan

The CEC and CPUC approved the first State of California Energy Action Plan in 2003. The plan established shared goals and specific actions to ensure the provision of adequate, reliable, and reasonably priced electrical power and natural gas supplies; it also identified cost-effective and environmentally sound energy policies, strategies, and actions for California's consumers and taxpayers. In 2005, the CEC and CPUC adopted a second Energy Action Plan to reflect various policy changes and actions of the prior 2 years.

At the beginning of 2008, the CEC and CPUC determined that it was not necessary or productive to prepare a new energy action plan. This determination was based, in part, on a finding that the state's energy policies have been significantly influenced by the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (discussed below). Rather than produce a new energy action plan, the CEC and CPUC prepared an "update" that examines the state's ongoing actions in the context of global climate change.

Renewables Portfolio Standard

Senate Bill (SB) 1078 (2002) established the California RPS Program and required that a retail seller of electricity purchase a specified minimum percentage of electricity generated by eligible renewable energy resources as

defined in any given year, culminating in a 20 percent standard by December 31, 2017. These retail sellers include electrical corporations, community choice aggregators, and electric service providers. The bill relatedly required the CEC to certify eligible renewable energy resources, design and implement an accounting system to verify compliance with the RPS by retail sellers, and allocate and award supplemental energy payments to cover above-market costs of renewable energy.

SB 107 (2006) accelerated the RPS established by SB 1078 by requiring that 20 percent of electricity retail sales be served by renewable energy resources by 2010 (not 2017). Additionally, SB X1-2 (2011) requires all California utilities to generate 33 percent of their electricity from eligible renewable energy resources by 2020. Specifically, SB X1-2 sets a three-stage compliance period: by December 31, 2013, 20 percent shall come from renewables; by December 31, 2016, 25 percent shall come from renewables; and by December 31, 2020, 33 percent shall come from renewables.

SB 350 (2015) requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030, with interim goals of 40 percent by 2024 and 45 percent by 2027.

SB 100 (2018) increased the standards set forth in SB 350. The bill establishes that 44 percent of the total electricity sold per year to retail customers in California be secured from qualifying renewable energy sources by December 31, 2024, with that number increasing to 52 percent by December 31, 2027, and 60 percent by December 31, 2030. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of the retail sales of electricity to California. This bill requires that the achievement of 100 percent zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

Consequently, utility energy generation from non-renewable resources is expected to be reduced based on implementation of the 60 percent RPS in after December 31, 2030.

California Energy Efficiency Action Plan

The 2019 California Energy Efficiency Action Plan has three primary goals for the state: double energy efficiency savings by 2030 relative to a 2015 base year (per SB 350), expand energy efficiency in low-income and disadvantaged communities, and reduce GHG emissions from buildings. This plan provides guiding principles and recommendations on how the state would achieve those goals. These recommendations include:

- identifying funding sources that support energy efficiency programs,
- identifying opportunities to improve energy efficiency through data analysis,
- using program designs as a way to encourage increased energy efficiency on the consumer end,
- improving energy efficiency through workforce education and training, and
- supporting rulemaking and programs that incorporate energy demand flexibility and building decarbonization (CEC 2019b).

AB 3232

AB 3232 (Warren-Alquist Act) required the CEC to adopt building design and construction standards and energy and water conservation standards for new residential and nonresidential buildings to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy, including energy associated with the use of water.

AB 3232 also requires the CEC to adopt standards for a program of electrical load management for each utility service area and assess the potential for the state to reduce the emissions of GHGs from the state's residential and commercial building stock by at least 40 percent below 1990 levels by January 1, 2030. In addition, CEC would develop integrated energy policy reports, to report on the emissions of GHGs associated with the supply of energy to residential and commercial buildings.

AB 1007

AB 1007 (2005) required the CEC to prepare a statewide plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the plan in partnership with the California Air Resources Board (CARB) and in consultation with the other state, federal, and local agencies. The plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

AB 32 and SB 32

In 2006, the Legislature enacted AB 32, the California Global Warming Solutions Act. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020.

In 2016, the Legislature enacted SB 32, which extended the horizon year of the state's codified GHG reduction planning targets from 2020 to 2030, requiring California to reduce its GHG emissions to 40 percent below 1990 levels by 2030.

In accordance with AB 32 and SB 32, CARB prepares scoping plans to guide the development of Statewide policies and regulations for the reduction of GHG emissions. Many of the policy and regulatory concepts identified in the scoping plans focus on increasing energy efficiencies and the use of renewable resources and reducing the consumption of petroleum-based fuels (such as gasoline and diesel). As such, the State's GHG emissions reduction planning framework creates co-benefits for energy-related resources. Additional information on AB 32 and SB 32 is provided in Chapter 4.7 Greenhouse Gas Emissions, of this Draft EIR.

California Building Standards

The California Building Standards Code was established in 1978 and serves to enhance and regulate California's building standards (California Code of Regulations, Title 24). Part 6 establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 6 is updated periodically (every 3 years) to incorporate and consider new energy efficiency technologies and methodologies.

The 2019 Title 24 standards were approved and adopted by the California Building Standards Commission in December 2018. The 2019 standards became effective January 1, 2020. The standards require that all low-rise residential buildings have a photovoltaic system meeting the minimum qualification requirements such that annual electrical output equal to or greater than the dwelling's annual electrical usage. Notably, net energy metering rules limit residential rooftop solar generation to produce no more electricity than the home is expected to consume on an annual basis. Single-family homes built with the 2019 standards will use approximately 7 percent less energy due to energy efficiency measures versus those built under the 2016 standards, while new non-residential buildings will use approximately 30 percent less energy.

Looking beyond the 2019 standards, the most important energy characteristic for a building will be that it produces and consumes energy at times that are appropriate and responds to the needs of the grid, which reduces the building's emissions.

In furtherance of that characteristic, the 2019 standards require that new single-family homes include solar photovoltaic to meet the home's expected annual electric needs and also encourage demand responsive technologies, including battery storage, heat pump water heaters, and improving the building's thermal envelope through high performance attics, walls, and windows. These smarter homes perform better and affect the grid less, which reduces the building's GHG emissions.

The 2022 standards will improve upon the 2019 standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The CEC updates the Title 24 Energy Code every 3 years. The CEC adopted the 2022 Title 24 Energy Code in August 2021 and the California Building Standards Commission approved incorporating the updated code into the California Building Standards Code in December 2021. The 2022 Energy Code will go into effect on January 1, 2023.

Title 24 also includes Part 11, the California Green Building Standards Code (CALGreen). CALGreen instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential, and state-owned buildings, as well as schools and hospitals. The current code is the 2019 California Building Code; however, the 2022 California Building Code was adopted in December 2021 and will be effective January 1, 2023. The mandatory standards require the following:

- In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for low-emitting, fuel-efficient and carpool/van pool vehicles.
- Construction shall facilitate future installation of electric vehicle supply equipment.
- Shade trees shall be planted to comply with specifications for surface parking areas, landscape areas, and hardscape areas.
- Water conserving plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with efficiency standards.
- Outdoor potable water use in landscaped areas shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources Model Water Efficient Landscape Ordinance, whichever is more stringent.
- Outdoor recycled water supply systems shall be installed in accordance with applicable state codes.
- Installations of heating, ventilation, and air conditioning (HVAC); refrigeration; and fire suppression equipment shall comply with specified standards.

The CALGreen standards also include voluntary efficiency measures that are implemented at the discretion of agencies and applicants.

SB 1368

On September 29, 2006, Governor Arnold Schwarzenegger signed into law SB 1368 (Perata, Chapter 598, Statutes of 2006). The law limits long-term investments in baseload generation by the state's utilities to those power plants that meet an emissions performance standard jointly established by the CEC and the CPUC.

The CEC has designed regulations that:

- Establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 pounds carbon dioxide (CO_2) per megawatt-hour. This would encourage the development of power plants that meet California's growing energy needs while minimizing their emissions of GHGs;
- Require posting of notices of public deliberations by publicly owned utilities on long-term investments on the CEC website. This would facilitate public awareness of utility efforts to meet customer needs for energy over the long-term while meeting the state's standards for environmental impact; and
- Establish a public process for determining the compliance of proposed investments with the emissions performance standard (EPS) (Perata, Chapter 598, Statutes of 2006).

Integrated Energy Policy Report

CEC is responsible for preparing integrated energy policy reports, which identify emerging trends related to energy supply, demand, conservation, public health and safety, and maintenance of a healthy economy. The latest Integrated Energy Policy Report was released in early 2018 and addressed a variety of issues, including, but not limited to, implementation of SB 350, electricity resource/supply plans, electricity and natural gas demand forecast, natural gas outlook, transportation energy demand forecasts, doubling energy efficiency savings, integrated resource planning, climate adaptation and resiliency, renewable gas, Southern California energy reliability, distributed energy resources, strategic transmission investment plan, and existing power plant reliability issues (CEC 2019b).

AB 1493

Adopted in 2002 by the state legislature, AB 1493 ("Pavley" regulations) required that the CARB develop and adopt, no later than January 1, 2005, regulations to achieve the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles.

The first California request to implement GHG standards for passenger vehicles, known as a waiver request, was made in December 2005 and was denied by the EPA in March 2008. That decision was based on a finding that California's request to reduce GHG emissions from passenger vehicles did not meet the Clean Air Act requirement of showing that the waiver was needed to meet "compelling and extraordinary conditions."

The EPA granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks, and sport utility vehicles on June 30, 2009. On September 24, 2009, CARB adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. These amendments are part of California's commitment to a nationwide program to reduce new passenger vehicle GHGs from 2012 through 2016. CARB's September 2009 amendments will allow for California's enforcement of the Pavley rule while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to harmonize its rules with the federal rules for passenger vehicles.

It is expected that the Pavley regulations will reduce GHG emissions from California passenger vehicles by about 22 percent in 2012 and about 30 percent in 2016, all while improving fuel efficiency and reducing motorists' costs.

Executive Order S-1-07

Issued on January 18, 2007, Executive Order (EO) S-1-07 sets a declining Low Carbon Fuel Standard for GHG emissions measured in CO_2-equivalent (CO_2e) grams per unit of fuel energy sold in California. The target of the Low

Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources, such as algae, wood, and agricultural waste. In addition, the Low Carbon Fuel Standard would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The Low Carbon Fuel Standard is anticipated to lead to the replacement of 20 percent of the fuel used in motor vehicles with alternative fuels by 2020.

Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or SB 375, coordinates land use planning, regional transportation plans, and funding priorities to help California meet its GHG emissions reduction mandates. As codified in California Government Code Section 65080, SB 375 requires metropolitan planning organizations to include a sustainable communities strategy in their regional transportation plans. The main focus of the sustainable communities strategy is to plan for growth in a fashion that will ultimately reduce GHG emissions, but the strategy is also a part of a bigger effort to address other development issues within the general vicinity, including transit and VMT, which influence the consumption of petroleum-based fuels. Plan Bay Area 2050 is the SCS for the region. As required by SB 375, Plan Bay Area 2050 defines a transportation and land use/housing strategy for the Bay Area to address transportation mobility and accessibility needs, land development, and GHG emissions reduction requirements through 2050 (MTC and ABAG 2021).

Truck and Bus Regulation, On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

On December 12, 2008, CARB approved the Truck and Bus Regulation to significantly reduce PM, and NO_x emissions from existing diesel vehicles operating in California. Amendments to this regulation were approved by CARB on April 25, 2014.

The regulation applies to nearly all diesel fueled, dual-fueled, or alternative diesel-fueled trucks and buses with a gross vehicle weight rating greater than 14,000 pounds that are privately or federally owned and for privately and publicly owned school buses. The purpose of this regulation is to reduce emissions of diesel PM, NO_x, and other criteria pollutants from in-use diesel-fueled vehicles.

Heavier trucks and buses with a gross vehicle weight rating greater than 26,000 pounds must comply with a schedule by engine model year or owners can report to show compliance with more flexible options. Starting January 1, 2012, heavier trucks were required to meet the engine model year schedule. Fleets that comply with the schedule must install the best available PM filter on 1996 model year and newer engines and replace the vehicle 8 years later. Trucks with 1995 model year and older engines must be replaced starting in 2015. Replacements with a 2010 model year or newer engines meet the final requirements, but owners can also replace with used trucks that have a future compliance date on the schedule. For example, a replacement with a 2007 model year engine complies until 2023. By 2023, all trucks and buses must have 2010 model year engines with few exceptions. No reporting is required if complying with this schedule (CARB 2014).

Advanced Clean Cars Program

The Advanced Clean Cars (ACC) I program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package of regulations: the Low-Emission Vehicle regulation for criteria air pollutant and GHG

emissions and a technology forcing regulation for zero-emission vehicles (ZEV) that contributes to both types of emission reductions (CARB 2021a). The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75 percent less smog-forming pollution than the average new car sold in 2015. The ZEV program will act as the focused technology of the ACC I program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid EVs in the 2018 to 2025 model years.

The ACC II program is currently in development to establish the next set of Low-Emission Vehicle and ZEV requirements for model years after 2025 to contribute to meeting federal ambient air quality ozone standards and California's carbon neutrality standards (CARB 2021a). The main objectives of ACC II are:

1. Maximize criteria and GHG emission reductions through increased stringency and real-world reductions.
2. Accelerate the transition to ZEVs through both increased stringency of requirements and associated actions to support wide-scale adoption and use.

An ACC II rulemaking package, which considered technological feasibility, environmental impacts, equity, economic impacts, and consumer impacts, was adopted by CARB in August 2022.

Advanced Clean Trucks Program

The purpose of the Advanced Clean Trucks Regulation (June 2020) is to accelerate the market for zero-emission vehicles in the medium- and heavy-duty truck sector and to reduce emissions NO_x, fine particulate matter, TACs, GHGs, and other criteria pollutants generated from on-road mobile sources (CARB 2021b). Requiring medium- and heavy-duty vehicles to transition to zero-emissions technology will reduce health risks to people living in and visiting California and is needed to help California meet established near- and long-term air quality and climate mitigation targets. The regulation has two components including (1) a manufacturer sales requirement and (2) a reporting requirement:

1. **Zero-emission truck sales:** Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines will be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales.
2. **Company and fleet reporting:** Large employers including retailers, manufacturers, brokers and others will be required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, will be required to report about their existing fleet operations. This information will help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

Executive Order B-16-12

Governor Brown issued EO S-16-12 on March 23, 2012. The EO requires that state entities under the governor's direction and control support and facilitate the rapid commercialization of ZEVs. It orders CARB, the CEC, CPUC, and other relevant agencies work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve the following by 2015:

- The state's major metropolitan areas will be able to accommodate ZEVs, each with infrastructure plans and streamlined permitting
- The state's manufacturing sector will be expanding ZEV and component manufacturing

- The private sector's investment in ZEV infrastructure will be growing
- The state's academic and research institutions will be contributing to ZEV research, innovation and education.

CARB, the CEC, and CPUC, are also directed to establish benchmarks to help achieve the following goals by 2020:

- The state's ZEV infrastructure will be able to support up to one million vehicles
- The costs of ZEV will be competitive with conventional combustion vehicles
- ZEVs will be accessible to mainstream consumers
- There will be widespread use of ZEVs for public transportation and freight transport
- Transportation sector GHG emissions will be falling as a result of the switch to ZEVs
- Electric vehicle charging will be integrated into the electricity grid
- The private sector's role in the supply chain for ZEV component development and manufacturing will be expanding.

Benchmarks are also to be established to help achieve the following goals by 2025:

- Over 1.5 million ZEVs will be on California roads and their market share will be expanding
- Californians will have easy access to ZEV infrastructure
- The ZEV industry will be a strong and sustainable part of California's economy
- California's clean, efficient vehicles will annually displace at least 1.5 billion gallons of petroleum fuels.

On a statewide basis, the EO establishes a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050.

SB 1383

SB 1383 (Chapter 395, Statutes of 2016). establishes targets to achieve a 50 percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025. Law grants CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and establishes an additional target that not less than 20 percent of currently disposed of edible food is recovered for human consumption by 2025 (CalRecycle 2019).

Regional and Local Regulations

City of Menlo Park General Plan

Policies pertaining to improving air quality are addressed in the Circulation and the Open Space/Conservation, and the Noise and Safety Elements of the City's General Plan. Relevant General Plan policies related to air quality are included in the following subsections.

Circulation Element

Goal CIRC-3: Increase mobility options to reduce traffic congestion, greenhouse gas emissions, and commute travel time.

Policy CIRC-3.1: Support development and transportation improvements that help reduce per service population (or other efficiency metric) VMT.

Goal CIRC-4: Improve Menlo Park's overall health, wellness, and quality of life through transportation enhancements.

Policy CIRC-4.1: Encourage the safer and more widespread use of nearly zero-emission modes, such as walking and biking, and lower emission modes like transit, to reduce GHG emissions.

Policy CIRC-4.2: Promote non-motorized transportation to reduce exposure to local air pollution, thereby reducing risks of respiratory diseases, other chronic illnesses, and premature death.

Open Space/Conservation, Noise and Safety Element

Goal OSC 4: Promote Sustainability and Climate Action Planning.

Policy OSC 4.1: Encourage, to the extent feasible, (1) a balance and match between jobs and housing, (2) higher density residential and mixed-use development to be located adjacent to commercial centers and transit corridors, and (3) retail and office areas to be located within walking and biking distance of transit or existing and proposed residential developments.

Policy OSC 4.2: Promote and/or establish environmentally sustainable building practices or standards in new development that would conserve water and energy, prevent stormwater pollution, reduce landfilled waste, and reduce fossil fuel consumption from transportation and energy activities.

Policy OSC 4.3: Promote the installation of renewable energy technology, such as, on residences and businesses through education, social marketing methods, establishing standards and/or providing incentives.

Policy OSC 4.4: Explore the potential for installing infrastructure for vehicles that use alternative fuel, such as electric plug in recharging stations.

Policy OSC 4.5: Encourage projects to achieve a high level of energy conservation exceeding standards set forth in the California Energy Code for Residential and Commercial development.

Policy OSC 4.6: Strive to meet the California State Integrated Waste Management Board per person target of waste generation per person per day through their source reduction, reuse, and recycling programs.

Policy OSC 4.8: Develop and implement a zero waste policy, or implement standards, incentives, or other programs that would lead the community towards a zero waste goal.

Goal OSC 5: Enhance and preserve air quality in accord with State and regional standards, and encourage the coordination of total water quality management including both supply and wastewater treatment.

Policy OSC 5.3: Encourage water-conserving practices in businesses, homes and institutions.

City of Menlo Park Municipal Code

On September 24, 2019, the Menlo Park City Council approved a reach code ordinance, which amended Chapter 12 of the City's Municipal Code. The amendments require electricity as the only fuel source for most new buildings (not natural gas; emergency generators, however, can use natural gas). This ordinance would apply to new construction projects. Specifically, residential buildings must have an electric energy source for space heating, water heating, cooking appliances, and clothes dryers and cannot have any natural gas or propane plumbing

installed within the building. Furthermore, new high-rise buildings (more than three stories) would require a minimum of a 3-kilowatt photovoltaic system for buildings less than 10,000 square feet and a minimum of a 5-kilowatt photovoltaic system for buildings greater than or equal to 10,000 square feet (City of Menlo Park 2019). In addition, Section 16.45.130 of the City's Zoning Ordinance applies green building requirements to development projects within the R-MU zone district. This includes the following standards:

- 100 percent of the project's energy demand be met through any combination of the following measures: on-site energy generation; purchase of 100 percent renewable electricity through PCE or PB&E in an amount equal to the annual energy demand of the project; purchase and installation of local renewable energy generation within the City of Menlo Park in an amount equal to the annual energy demand of the project; and/or purchase of certified renewable energy credits and/or certified renewable energy offsets annually in an amount equal to the annual energy demand of the project;
- Construction of a new building 100,001 square feet and above must meet Leadership in Energy and Environmental Design (LEED) Gold BD+C standards;
- Construction of 100,001 square feet and above must enroll in EPA Energy Star Building Portfolio Manager and submit documentation of compliance;
- Attain the City's indoor and outdoor water use efficiency standards and be dual plumbed for the internal use of recycled water; and
- Prepare and implement a zero-waste management plan.

The City's Municipal Code Section 12.18.050 also imposes the following requirements on developments involving the construction of more than two multifamily dwelling units:

- Each townhome must be prewired for one electric vehicle charger; and
- Electric vehicle charging stations must be installed in 15 percent of the required parking spaces.

4.5.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to energy are based on Appendix G and Section 15130 of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to energy would occur if the project would:

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.
C. Result in cumulatively considerable energy impacts.

4.5.4 Impacts and Mitigation Measures

Methodology

Construction

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate potential project-generated GHG emissions during construction, which were then used to estimate energy consumption.

Construction of project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. All details for construction criteria air pollutants discussed in Chapter 4.2, Air Quality, and Appendix A of this Draft EIR are also applicable for the estimation of construction-related GHG emissions. The estimated GHG emissions were back-calculated based on carbon content (i.e., kilograms of CO2 per gallon) in order to estimate fuel usage during project construction. The conversion factor for gasoline is 8.38 kilograms per metric ton CO2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO2 per gallon (The Climate Registry 2021). Energy use calculations for construction are provided in Appendix A.

Operational

During project operations, activities that would consume energy would include electricity use for building operations, electricity for water and wastewater conveyance, and petroleum consumption from residents, visitors, and delivery vehicle trips. Additional assumptions for these sources are described in Chapter 4.7, Greenhouse Gases and energy use calculations for operations are provided in Appendix C1.

Project Impacts

Impact 4.5-1 Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Implementation of the project would increase the demand for electricity at the project site and gasoline and diesel consumption in the project area during construction and operation relative to existing uses. Because the existing uses at the project site use natural gas and the new buildings that would be constructed at the project site would be all-electric, the project would reduce the demand for natural gas.

Electricity

Construction Use

Temporary electric power for as-necessary lighting and electronic equipment such as computers inside temporary construction trailers would be provided by PG&E or PCE. The electricity used for such activities would be temporary, would be substantially less than that required for project operation, and would therefore have a negligible contribution to the project's overall energy consumption.

Operational Use

Project operation would require electricity for multiple purposes including, but not limited to, building heating and cooling, lighting, appliances, and electronics. Additionally, the supply, conveyance, treatment, and distribution of water would indirectly result in electricity usage. CalEEMod was used to estimate project emissions from electricity uses (see Appendix C1 for calculations). The existing land uses energy consumption was estimated by using default electricity generation rates in CalEEMod, based on the existing land use and climate zone. Based on the CalEEMod modeling, the existing land uses are estimated to consume approximately 899,487 kWh per year. The electricity consumption under the proposed project at full buildout was provided by the project sponsor (The Sobrato Organization) and is estimated to be approximately 4,451,000 kWh per year. As such, upon project implementation,

electricity demand and consumption at the project site would increase by 3,551,513 kWh per year (or 3.6 million kWh per year) (Appendix C-1).

The energy demand calculations do not take into account all of the project's energy-saving design features that surpass the code requirements. As such, the project's electricity use would be more efficient than what is required and would likely be even lower than the calculations presented above. Specifically, the project's green building features would involve the following:

Apartments

- All electric buildings to reduce greenhouse gas emissions
- On-site solar photovoltaic arrays to offset energy use and cost
- Electric vehicle charging stations
- Bike facilities for residents and visitors
- Water use reduction through efficient plumbing fixtures
- Use of native/adapted species to reduce irrigation needs
- Dual plumbing for recycled water reuse for building
- Recycled water reuse for irrigation
- Enhanced ventilation and carbon dioxide monitors for better indoor air quality
- Enhanced combustion ventilation and garage pollutant protection

Townhomes

- All electric buildings to reduce greenhouse gas emissions
- On-site solar photovoltaic arrays to offset energy use and cost
- Electric vehicle chargers
- Water use reduction through efficient plumbing fixtures
- Use of native/adapted species to reduce irrigation needs
- Recycled water reuse for irrigation
- Enhanced ventilation and carbon dioxide monitors for better indoor air quality
- Enhanced combustion ventilation and garage pollutant protection

These aspects of the project design would reduce energy associated with indoor and outdoor lighting, as well as direct energy consumption for each residential unit, and indirect energy consumption associated with water and wastewater treatment and conveyance. In addition, construction of the proposed project would be required to comply with the 2022 Title 24 Standards at a minimum and depending on timing of full project buildout, may be required to comply with future, more stringent energy codes at the time of construction. The 2022 Title 24 Standards include robust requirements for energy efficiency that apply to the planning, design, operation, construction, use and occupancy of every newly constructed building or structure.

Because the project is located within the R-MU zone district, Section 16.45.130 of the City's Zoning Ordinance would be applicable to the project, which includes the following green building requirements for development projects:

- 100 percent of the project's energy demand be met through on-site generation and/or renewable energy sources and/or be offset through the purchase of certified renewable energy credits;
- Construction of a new building of 100,001 square feet or more must meet LEED Gold standards;
- New construction of 100,001 square feet or more must enroll in EPA Energy Star Building Portfolio Manager and submit documentation of compliance;
- Attain indoor and outdoor water use efficiency standards and be dual plumbed for the internal use of recycled water; and
- Prepare and implement a zero-waste management plan.

Although electricity consumption would increase at the project site due to implementation of the project, the project would comply with the City's mandatory green building ordinance through implementing energy-efficiency measures. In addition, the project would be more energy efficient than the existing development on the site. The energy resources involved in in project construction and operation would be used to accommodate existing and projected demand for housing rather than induce unnecessary energy use. Further, the amount of energy used by each project resident would be less than residents in older homes or less dense developments, such as traditional single-family subdivisions. For these reasons, electricity consumption of the proposed project would not be considered inefficient, wasteful, or unnecessary, and impacts would be **less than significant.**

Natural Gas

Construction

Natural gas is not anticipated to be required during project construction. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed below under the "petroleum" subsection. Any minor amounts of natural gas that may be consumed as a result of project construction would have a negligible contribution to the project's overall energy consumption.

Operational Use

As previously discussed under Section 4.5.2, Regulatory Framework, the Menlo Park City Council approved a reach code ordinance, which amended Chapter 12 of the City's Municipal Code. The amendments require electricity as the only fuel source for new residential buildings (not natural gas, other than for emergency generators). This ordinance applies to new construction projects. Specifically, residential buildings must have an electric energy source for space heating, water heating cooking appliances, and clothes dryers and cannot have any natural gas or propane plumbing installed within the building. Accordingly, the project would be built "all electric" and would not result in natural gas consumption. Default natural gas usage rates in CalEEMod were used for the existing land uses. According to these estimations, the existing manufacturing and research and development land uses would consume approximately 2,803,488 thousand British thermal units (kBTU) per year. As such, upon project implementation, natural gas demand at the project site would decrease by 2,803,488 kBTU per year (Appendix C-1). This amount of natural gas is equivalent to a reduction of 28,041 therms. Therefore, the project would not result in natural gas consumption that would be considered inefficient or wasteful, and impacts would be **less than significant**.

Petroleum

Construction Use

Heavy-duty construction equipment of various types would be used during each phase of project construction. The CalEEMod analysis discussed in Section 4.2, Air Quality, and included in Appendix C1, lists the assumed equipment usage for each phase of construction. Based on that analysis, diesel-fueled construction equipment would run for an estimated total of 307,856 hours as summarized in Table 4.5-3.

Table 4.5-3. Hours of Operation for Construction Equipment

Construction Phase	Hours of Equipment Use
Demolition	4,752
Site Preparation	144
Grading	2,880
Building Construction	91,776
Paving	2,464
Architectural Coating	205,840
Total	**307,856**

Source: Appendix C1.

The estimated diesel fuel use from construction equipment is shown in Table 4.5-4.

Table 4.5-4. Construction Equipment Diesel Demand

Phase	Pieces of Equipment[a]	Equipment CO_2 (MT)[a]	kg CO_2/ Gallon[b]	Gallons
Demolition	9	81.04	10.21	7,936.94
Site Preparation	3	5.32	10.21	521.18
Grading	8	139.81	10.21	13,693.37
Building Construction	12	1,476.51	10.21	144,614.00
Paving	7	58.37	10.21	5,716.48
Architectural Coating	62	3,522.83	10.21	345,037.69
			Total	**517,519.66**

Sources:
[a] Appendix C1
[b] The Climate Registry 2021.
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Calculations for total worker, vendor, and hauler fuel consumption are provided in Table 4.5-5 (Construction Worker Vehicle Gasoline Demand); Table 4.5-6 (Construction Vendor Truck Diesel Demand); and Table 4.5-7 (Construction Haul Truck Diesel Demand).

Table 4.5-5. Construction Worker Vehicle Gasoline Demand

Phase	Trips	Vehicle CO_2 (MT)[a]	kg CO_2/ Gallon[b]	Gallons
Demolition	528	1.54	8.78	175.93
Site Preparation	36	0.11	8.78	11.99

Table 4.5-5. Construction Worker Vehicle Gasoline Demand

Phase	Trips	Vehicle CO_2 (MT)[a]	kg CO_2/ Gallon[b]	Gallons
Grading	360	1.03	8.78	117.36
Building Construction	114,720	305.58	8.78	34,804.58
Paving	0	5.78	8.78	658.20
Architectural Coating	20,750	54.09	8.78	6,160.46
			Total	41,928.52

Sources:
[a] Appendix C1
[b] The Climate Registry 2021.
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Table 4.5-6. Construction Vendor Truck Diesel Demand

Phase	Trips	Vehicle CO_2 (MT)[a]	kg/CO_2/ Gallon[b]	Gallons
Demolition	198	2.10	10.21	206.00
Site Preparation	18	0.19	10.21	18.73
Grading	135	1.42	10.21	138.80
Building Construction	19,120	191.69	10.21	18,774.62
Paving	0	0.00	10.21	0.00
Architectural Coating	2,075	20.49	10.21	2,006.68
			Total	21,144.83

Sources:
[a] Appendix C1
[b] The Climate Registry 2021.
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

Table 4.5-7. Construction Haul Truck Diesel Demand

Phase	Trips	Vehicle CO_2 (MT)[a]	kg CO_2/ Gallon[b]	Gallons
Demolition	200	9.45	10.21	925.41
Site Preparation	0	0.00	10.21	0.00
Grading	3,700	172.79	10.21	16,923.34
Building Construction	3,500	155.74	10.21	15,254.15
Paving	0	0.00	10.21	0.00
Architectural Coating	0	0.00	10.21	0.00
			Total	33,102.90

Sources:
[a] Appendix C1
[b] The Climate Registry 2021.
Notes: CO_2 = carbon dioxide; MT = metric ton; kg = kilogram.

As shown in Tables 4.5-4 through 4.5-7, the project is estimated to consume 613,696 gallons of petroleum during the construction phase. The project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes, which would minimize fuel consumption. While construction activities would consume petroleum-based fuels, consumption of such resources would be temporary

and would cease upon the completion of construction. Further, the petroleum consumed related to project construction would be typical of construction projects of similar types and sizes and would not necessitate new petroleum resources beyond what are typically consumed in California. Therefore, because petroleum use during construction would be temporary and relatively minimal, and would not be wasteful or inefficient, impacts would be **less than significant**.

Further, construction of the project is necessary to meet housing demand in a jobs-rich area. Since the housing responds to demand, using resources to construct housing is not wasteful. In addition, the housing is relatively dense, using fewer construction materials per unit than a less dense project, such as a single-family, large lot subdivision. As discussed above, those resources would be used as efficiently as possible.

Operational Use

During operations, the majority of fuel consumption resulting from the project would involve the use of motor vehicles traveling to and from the project site, as well as fuels used for alternative modes of transportation that may be used by employees, visitors, residents, and guests of the project.

Petroleum fuel consumption associated with motor vehicles traveling to and from the project site is a function of the vehicle miles traveled as a result of project operation. The annual unmitigated VMT as estimated by CalEEMod, attributable to the project is expected to be approximately 4,416,233 VMT (Appendix C1). The project would result in the consumption of an estimated 131,890 gallons of gasoline per year and 6,130 gallons of diesel per year from operation of vehicle trips traveling to and from the project site, or 138,020 gallons of petroleum per year. The existing uses was estimated to consume 71,321 gallons of gasoline per year and 2,990 gallons of diesel per year or 74,310 gallons of petroleum per year. As such, implementation of the project would lead to an increase in petroleum consumption of 63,709 gallons of petroleum per year, due to the increased number of vehicles traveling to and from the project site. As shown in Table 4.14-5, the proposed Transportation Demand Management Plan would reduce project-generated VMT per resident by 20.63 percent compared to the average VMT for the project site transportation analysis zone of 13.29 miles per day. With the resulting VMT per resident of 10.55 miles per day, the proposed project is expected to generate 4,274,333 VMT per year. Thus, the CalEEMod modeling and fuel consumption calculations presented above slightly overestimate the project's fuel consumption.

Over the lifetime of the project, the fuel efficiency of the vehicles being used by the residents, guests, and visitors of the project is expected to increase. As such, the amount of gasoline consumed as a result of vehicular trips to and from the project site during operation would decrease over time. As discussed under Section 4.5.2, there are numerous regulations in place that require and encourage increased fuel efficiency. For example, CARB has adopted a new approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single coordinated package of standards, as discussed in Section 4.5.2. The new approach also includes efforts to support and accelerate the numbers of plug-in hybrids and zero-emission vehicles in California (CARB 2021). Additionally, in response to SB 375, CARB has adopted the goal of reducing per-capita GHG emissions from 2005 levels by 10 percent by the year 2020 and 19 percent by the year 2035 for light-duty passenger vehicles in the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) planning area. This reduction would occur in part by reducing vehicle miles traveled through the integration of land use planning and transportation (MTC and ABAG 2021). As such, operation of the project is expected to use decreasing amounts of petroleum over time, due to advances in fuel economy.

Note that due to the urban setting of the project site, which is served by passenger rail and bus services, it is expected that residents, visitors, and guests may use transit or non-vehicular modes of transportation to travel to

and from the project site. The Caltrain commuter rail system serves the Menlo Park Station, located at 1120 Merrill Street, approximately 2 miles south of the project site. The study area is also served by the Menlo Park Shuttle Service and the SamTrans bus service, which collectively provide local and regional public transit within the project area (see Section 4.14, Transportation, and Appendix J1 for details). Also, use of transit and non-vehicular modes of transportation is anticipated to increase over time, as local and regional plans and policies facilitating increased use and development of transit and non-vehicular transportation modes are implemented. Section 4.5.2 summarizes some of these plans and policies, which includes *Plan Bay Area 2050*, which was adopted by MTC and ABAG October 2021. Additionally, project-specific sustainable design features would include electric vehicle charging electric infrastructure consistent with State and Local requirements as identified at the time of plan check submittal and other transportation features, as described in Section 3.4 of this EIR. Such features include preparation and implementation of a Transportation Demand Management Plan and provision of on-site bicycle storage and preferential parking for low-emission/fuel-efficient vehicles and carpools/vanpools for residents and visitors. Additionally, the proposed project design would allow for pedestrian circulation in the project area by employing design features that improve the landscape and streetscape, making the area more pedestrian friendly.

In summary, although project implementation would result in an increase in petroleum use during construction and operation, over time vehicles would use less petroleum due to advances in fuel economy. Additionally, the project would include a variety of features that are expected to reduce the number of vehicles traveling to and from the site during operation. For example, the project would include implementation of a Transportation Demand Management Plan, would be accessible via a variety of major bus lines, would include on-site bicycle infrastructure, and would enhance the pedestrian-friendliness of the project area. As such, while the project would generate 870 new daily vehicle trips compared to existing conditions, as discussed in Section 4.14, Transportation, implementation of the Transportation Demand Management Plan would ensure that daily trips are reduced sufficient to ensure that vehicle miles traveled per capita for project site residents would be at least 15 percent below the regional average. Further, the project would add non-vehicular transportation amenities to the site that are not currently present, such as enhanced streetscape, bicycle parking and storage, and preferred parking for low-emission/fuel-efficient vehicles and carpools/vanpools. Additionally, when viewed on a regional scale, the project is an urban infill project located within a major population center where residential units are in demand, as reflected in the regional and local growth projections under ConnectMenlo and Plan Bay Area. When compared with new development projects sited on previously undeveloped land and away from population centers, infill projects are generally expected to involve fewer VMT during operation. Given these considerations, the petroleum consumption associated with the project would not be considered inefficient or wasteful, and impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 4.5-2 Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The project would be subject to and would comply with, at a minimum, the California Building Energy Efficiency Standards (24 CCR, Part 6). Part 6 of Title 24 establishes energy efficiency standards for residential and non-residential buildings constructed in California in order to reduce energy demand and consumption. As such, the project would exceed California code requirements for energy efficiency, as demonstrated below.

Part 11 of Title 24 sets forth voluntary and mandatory energy measures that are applicable to the project under the California Green Building Standards Code. As discussed under Impact 4.5-1, the project would result in an increased demand for electricity and petroleum. In accordance with CALGreen's Title 24 Part 11 Tier 2 voluntary efficiency measures, the project would have at least 75 percent of its construction and demolition waste diverted from landfills. In addition, the project is subject to the City's reach code ordinance which requires new residential projects be built "all-electric." See Section 3.4 for a full list of green components incorporated into the project design.

The project would also be consistent with the energy use and efficiency strategies of the City's CAP as illustrated in Section 4.7. As previously discussed, the project would include solar-power-generation equipment, meet LEED Gold standards, enroll in the EPA Energy Star Building Portfolio Manager, attain indoor and outdoor water use efficiency standards, and implement a zero-waste management plan.

Furthermore, as explained in Section 4.5.1, the City is a partner agency with PCE, a Community Choice Aggregator, which is the default electric energy provider in the City and sources 100 percent of its energy from renewable and/or carbon-free sources. Customers have two electricity options to choose from, ECOplus which is 50 percent renewable energy (default option), and ECO100, which is 100 percent renewable energy. Under both options, the project would include renewable energy as part of the power content mix and would be consistent with the City's renewable energy commitment.

Finally, the proposed project is consistent with state goals (as reflected in bills such as SB 375 and SB 743) to respond to housing demand by building housing near job centers, which results in more efficient use of energy. The Project is in a robust job center and would help balance the jobs with housing. Providing needed housing close to jobs rather than in other locations, such as the Central Valley, reduces fuel use.

Because the project would comply with and exceed the existing energy standards and regulations, the project would result in a **less-than-significant** impact associated with the potential to conflict with energy standards and regulations.

Mitigation Measures

No mitigation measures are required.

Cumulative Impacts

Buildout of the project, related projects, and additional forecasted growth in the PG&E and PCE service area would cumulatively increase the demand for electricity and natural gas supplies and infrastructure capacity.

Impact 4.5-3 Would the project result in a cumulatively considerable energy impact?

Although project development would result in the use of renewable and non-renewable resources during construction and operation, which could limit future availability of non-renewable energy sources, the use of such resources would be on a relatively small scale, would be reduced by measures making the project more energy-efficient, and would be consistent with growth expectations for the service areas.

All cumulative projects would be required to comply with regulatory measures such as CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes, minimizing construction fuel consumption. Additionally, petroleum use by cumulative projects relative to construction activities is reasonably expected to continue to decline, as Tier 4 construction equipment, which is more fuel efficient, becomes more widely available. While construction activities related to the project would consume petroleum-based fuels,

consumption of such resources would be temporary and would cease upon the completion of construction. Regarding operations, the cumulative projects within the areas serviced by PG&E and PCE would be applicable to this analysis. Projects that include development of large buildings or other structures that would have the potential to consume energy in an inefficient manner would have the potential to contribute to a cumulative impact. However, as discussed in Impacts 4.5-1 and 4.5-2, comprehensive state and local regulations are designed and would be implemented to increase and ensure energy efficiency.

As described in Impact 4.5-1, the project would not result in wasteful, inefficient, or unnecessary use of energy due to the implementation of water, energy and mobility project design features and compliance with and exceedance of Title 24 building standards. For the same reason, the project would not conflict with relevant energy-related plans, as discussed in the analysis for Impact 4.5-2. Cumulative projects that include long-term energy demand, such as residential and/or non-residential developments, would be subject to CALGreen, which provides energy efficiency standards for commercial and residential buildings. CALGreen is used to implement increasingly stringent energy efficiency standards that would require the project and the cumulative projects to minimize the wasteful and inefficient use of energy. In addition, cumulative projects would be required to meet or exceed the Title 24 building standards, further reducing the inefficient use of energy. Furthermore, various federal and state regulations, including the Low Carbon Fuel Standard, Pavley Clean Car Standards, and Low Emission Vehicle Program, would serve to reduce the transportation fuel demand of cumulative projects.

In consideration of cumulative energy use, the project would not contribute to a wasteful or inefficient demand on energy resources or services, and would not conflict with energy-related plans. Therefore, the project's contribution would not be cumulatively considerable and cumulative impacts related to the use of energy would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

4.5.5 References Cited

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