3.6 Energy Consumption

3.6.1 Introduction

This section evaluates the potential effects of energy consumption associated with development and operation of the Yosemite Avenue-Gardner Avenue to Hatch Road Annexation Project (proposed project). This section describes the existing conditions around the project site; outlines applicable federal, state, and regional regulations pertaining to energy use; and identifies potential project-specific and cumulative impacts on energy use and measures to minimize these impacts.

As discussed in Chapter 1, Introduction, a Notice of Preparation (NOP) for this Environmental Impact Report (EIR) was initially published in December 2016 based on the original project applications. In 2019, the project applicant submitted revised applications and site plans, increasing the number of residential units from 330 to 540 and increasing the amount of onsite parking. The City issued a revised NOP in May 2020. No comments were received in response to the NOP that raised concerns regarding energy consumption. Both NOPs and the comments received in response to them are provided in Appendix A.

Resources referenced to prepare this section include the Merced Vision 2030 General Plan (City of Merced 2012), reports on energy consumption and energy-efficiency prepared by the California Energy Commission (CEC), and Dudek's modeling of project construction and operation using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 (CAPCOA 2017). The CalEEMod modeling is provided in Appendix D.

3.6.2 Environmental Setting

Project Site Energy Supply

Pacific Gas and Electric Company (PG&E) currently provides electrical service to the existing residences and church property within the project site. PG&E also provides natural gas supply in Merced County.

Statewide Electricity Consumption

Electricity usage in California varies substantially by the types of uses in a building, types of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Seasonal changes in weather also result in wide fluctuations in typical daily energy use. Due to the state's energy efficiency building standards and efficiency and conservation programs, California's electricity use per capita has remained stable for more than 30 years, while the national average has steadily increased (CEC 2015). The state's Building Code is updated every three years. The 2016 and 2019 updates include more stringent requirements for energy-efficiency in new structures. The 2019 updates also include requirements for residences to include onsite photovoltaic power-generation. As discussed in more detail in

Section 3.6.3 Regulatory Setting, the building code requirements further reduce the energy consumption of new residences and commercial buildings.

The Renewables Portfolio Standard (RPS) established a goal for California to increase the amount of electricity generated from renewable energy resources to 20 percent by 2010 and 33 percent by 2020. The current goals are to have renewable energy sources for 44 percent of the total electricity sold to retail customers in California per year by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. Currently, California's in-state renewable generation is composed of biomass, geothermal, small hydro, wind, and solar generation sites that make up approximately 25 percent of the total in-state generational output.

The Overview webpage at the California Energy Almanac, the online database of the CEC, states that statewide electricity generation exceeds 200,000 gigawatt-hours (GWh) each year, with natural gas as the main source for electricity generation, responsible for 60.5 percent of the total in-state electric generation system power. The CEC identifies that "in 2019, total generation for California was 277,704 gigawatt-hours (GWh), down 2.7 percent, or 7,784 GWh, from 2018 (CEC 2021a). In Merced County, the CEC reported an annual electrical consumption of approximately 3.70 billion kilowatt-hours (kWh) in total, with 0.73 billion kWh for residential use in 2019 (CEC 2021b).

The CEC prepares an Integrated Energy Policy Report (IEPR) every year to document the CEC's assessments of a variety of energy issues facing California, including current and projected energy demands, development of renewable energy sources, and energy-efficiency. The 2019 IEPR reports that the California Department of Finance's estimates that California added nearly 187,000 residents in 2018, which represents less than 1 percent growth since 2017. Further, there were 77,000 new housing units constructed in 2018, resulting in more than 14.2 million total housing units in the state. Multi-family units comprised 31.5 percent of the new housing units in 2018. The Department of Finance estimates that ongoing growth rates would remain at less than 1 percent per year. Based on this projection, the CEC estimates that in 2030, statewide energy consumption would be nearly 321,300 GWh (CEC 2020).

The CEC also finds that a portion of the projected energy consumption would be offset by rooftop solar power generation, noting that before 2018, more than 1,300 megawatts (MW) were generated from photovoltaic (PV) systems on individual buildings (referred to as behind the meter, or BTM), and by the end of 2018, the BTM PV capacity had increased to 8,000 MW. By 2030, the 2019 IEPR forecasts that BTM PV capacity is expected to reach approximately 23,300 MW (CEC 2020).

PG&E Service

PG&E provides electric services to 5.1 million customers, including residents of the City of Merced and most portions of Merced County, through 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines (PG&E 2021). According to the CEC, PG&E generated approximately 78.07 billion kilowatt-hours (kWh) of electricity in total in 2019, of which approximately 28 billion kWh was consumed by the residential sector and 29.6 billion kWh was consumed by commercial buildings (CEC 2021c).

Statewide Natural Gas Consumption

Natural gas is commonly used for cooking and space heating as well as for generating electricity and as an alternative transportation fuel. In California, natural gas is used for space heating, oil refining, industrial processes, cooking, electricity generation, and grid reliability. Demand for natural gas can vary depending on factors such as weather, price of electricity, economic conditions, environmental regulations, energy efficiency programs, and the availability of alternative renewable energy sources.

The California Public Utilities Commission (CPUC) regulates natural gas utility service for approximately 10.8 million customers who receive natural gas from PG&E and other natural gas utilities. The majority of California's natural gas customers are residential and small commercial customers (core customers). These customers accounted for approximately 30 percent of the natural gas delivered by California utilities in 2016. Large consumers, such as electric generators and industrial customers (noncore customers), accounted for approximately 70 percent of the natural gas delivered by California utilities in 2016 (EIA 2018). In 2019, California's estimated annual energy use included approximately 21.4 billion therms of natural gas (EIA 2021). California relies on out-of-state natural gas imports for the majority of the natural gas supply. In 2017, in-state sources provided about 10 percent of the natural gas consumed in California, while interstate pipeline shipments satisfied the remaining 90 percent. This ratio of in-state to out-of-state natural gas supply is projected to continue in future years. (CEC 2020).

PG&E also provides natural gas service to the County of Merced. The system receives gas from PG&E's regional transmission system. The CEC reports that PG&E consumed a total of approximately 4.94 billion British thermal units (MMBtu) of natural gas in 2016, with 1.9 billion MMBtu for residential use. In Merced County, total natural gas consumption was approximately 120.16 million MMBtu in 2019, with 25.94 million MMBtu for residential use (CEC 2021d).

The 2019 IEPR forecast for natural gas demand includes increased demands from projected natural gas vehicle adoption, amounting to an additional 150 million therms by 2030 but finds that "this modest increase is more than offset by the energy savings impacts from new building

standards, as well as reduced consumption in the mining sector." By 2030, statewide end-user natural gas consumption is projected to decline to just below 12,800 million therms in 2030. This projected reduction is attributed to a transition to cleaner energy sources as required under Senate Bill 100, which established state policy for renewable energy and zero-carbon resources to supply 100 percent of retail sales of electricity to California customers (and 100 percent of electricity procured to serve all state agencies) by December 31, 2045 (CEC 2020).

The 2019 IEPR finds that market trends in California "are signaling the start of a transition away from natural gas as the state's primary electricity source." Key factors in this transition are the price decreases for renewable resources, particularly for solar PV, which contributed to a 12 percent increase in solar generation between 2017 and 2018, and the CPUC plans to retire aging coastal natural gas plants that use ocean water for cooling (CEC 2020).

Transportation Energy Demand

The 2019 IEPR notes that there are approximately 30 million registered cars, trucks, buses, and other motorized on-road vehicles in California, and that the increase in vehicle ownership and the number of miles driven in the last 60 years has made "the transportation sector the largest contributor of greenhouse gas (GHG) emissions in the state, as well as a leading cause of air pollution and ozone-forming gas emissions." The transportation sector energy demand is reflected in the electricity and natural gas forecasts discussed above. The forecasts include the effect of the anticipated increase in the use of zero-emission vehicles (ZEVs), including plug-in electric vehicles and fuel cell electric vehicles. Even considering increases in ZEVs, petroleum-based fuels represent the largest shares of transportation energy demand under existing conditions and through 2030. However, a decline in gasoline demand is projected, primarily due to improvements in fuel efficiency and increased electrification. The transportation electricity consumption represents 5.4 percent of overall electricity projected demand for 2030, with a total transportation-sector demand equivalent to slightly more than 19 billions of gasoline-gallon equivalent in 2019 to slightly more than 17 billions of gasoline-gallon equivalent by 2030 (CEC 2020).

3.6.3 Regulatory Setting

Federal

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 FR 62624–63200). Fuel economy is determined

based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

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 includes the following other provisions related to energy efficiency:

- Renewable Fuel Standard (RFS) (Section 202) – this requires ever-increasing levels of renewable fuels to replace petroleum, reducing imports of petroleum, and encouraging development and expansion of the renewable fuels sector in the United States
- Appliance and Lighting Efficiency Standards (Sections 301–325)
- Building Energy Efficiency (Sections 411–441)

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.

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) regulates and oversees the energy industries in the interests of the American public. The Energy Policy Act of 2005 gave FERC additional responsibilities including interstate commerce, licenses and inspections, energy markets, and penalizing energy organizers and individuals who violate FERC rules in the energy market.

State

California Environmental Quality Act

Appendix F of the CEQA Guidelines, Energy Conservation, includes recommendations for information that should be included in an EIR to "assure that energy implications are considered in project decisions" (14 CCR 15000 et seq.). Appendix F directs that EIRs should include "discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3))" (14 CCR 15000 et seq.). Specifically, the energy assessment should include energy requirements and energy use efficiencies of the project by fuel type and amount for each stage of the project, the effects of the project on local and regional energy supplies and on requirements for additional capacity, compliance with existing energy

standards, the effects of the project on energy resources, and the project's projected transportation energy use requirements and overall use of efficient transportation alternatives.

State Climate Change Targets

As discussed in more detail in Section 3.7 Greenhouse Gas Emissions, California has engaged in regulatory efforts since 2005 with the goal of reducing GHG emissions. Many of these efforts relate to energy consumption because they seek to improve energy-efficiency in buildings, transportation, and power generation. The first effort was an Executive Order (EO) issued in June 2005, EO S-3-05, which set the following targets for reducing GHG emissions :

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80 percent below 1990 levels

This was followed in 2006 with the Legislature enacting AB 32, the California Global Warming Solutions Act of 2006 (California Health and Safety Code, Sections 38500–38599 et seq.), which codified the first two targets from EO S-3-05. As required by AB 32, in 2008, the California Air Resources Board (CARB) approved *The Climate Change Proposed Scoping Plan: A Framework for Change* (Scoping Plan). The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission-reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. Elements of the Scoping Plan that relate to energy consumption include the following (CARB 2008):

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewable energy mix of 33 percent
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (17 CCR 95480 et seq.)

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012 (CARB 2014). In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030

target of 40 percent below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050, as set forth in S-3-05. In December 2017, CARB approved the 2017 Climate Change Scoping Plan Update (Second Update, CARB 2017). The Second Update identifies new technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. These strategies include implementing renewable energy and energy efficiency (including the mandates of SB 350) standards.

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24 Building Standards)

According to the 2019 IEPR, "in 2017, the most recent data available, the state's building stock accounted for almost a quarter of statewide GHG emissions, including fossil fuel consumed onsite (for example, gas or propane for heating) and electricity consumption (for example, for lighting, appliances, and cooling)" (CEC 2020). Thus, increasing energy-efficiency in buildings is a key strategy for reducing statewide GHG emissions.

The CEC administers Title 24 Building Standards, which were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. California's building efficiency standards are updated on an approximately 3-year cycle. The current Title 24 standards are the 2019 Title 24 Building Energy Efficiency Standards, which became effective January 1, 2020.

Title 24 also includes Part 11, California's Green Building Standards (CALGreen). CALGreen institutes mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential, high-rise residential, state-owned buildings, schools, and hospitals, as well as certain residential and non-residential additions and alterations. The CALGreen 2019 standards have improved upon the previous 2016 CALGreen standards and went into effect on January 1, 2020. Specifically, the CALGreen 2019 standards increase the energy-efficiency standards for new residences and require PV systems be installed on all new single-family and multi-family units that are three stories or less, with the system sized to offset the home's annual electricity consumption. The CEC finds that over the three years that the CALGreen 2019 standards are in effect, energy consumption of new structures would be reduced sufficiently to reduce cardon dioxide emissions by 700,000 metric tons, which is equivalent to taking 115,000 gasoline-powered cars off the roads (assuming each car has a fuel efficiency of 18 miles per gallon) (CEC 2021e).

Renewable Energy and Energy Procurement

Through several legislative actions and EOs, California has established policies and regulations that require use of renewable energy generation sources throughout the state. This includes the Renewables Portfolio Standard (RPS) program, which was first established in 2002 under SB 1078 and sets minimum standards for utility providers to obtain energy from renewable sources. The RPS was accelerated in 2006 with SB 107, in 2011 with SB X1-2, in 2015 with SB 350, and most recently in 2018 with SB 100 which calls for California's electricity system to become 100 percent zero-carbon by 2045. The current goals are to have renewable energy sources for 44 percent of the total electricity sold to retail customers in California per year by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. As reported in the 2019 IEPR, renewable resources such as solar and wind accounted for about 34 percent of California's electricity use in 2018.

Consequently, utility energy generation from non-renewable resources is expected to be reduced based on implementation of the RPS standards. Therefore, the proposed project's reliance on non-renewable energy sources would also be reduced.

Local

City of Merced Vision 2030 General Plan

The City's General Plan includes the following policies and implementing actions relating to energy use that are applicable to the proposed project (City of Merced 2012).

Policy SD-3.1 Promote the use of solar energy technology and other alternative energy resources.

Implementing Actions

3.1.a Encourage the use of solar energy in design and management of all new construction in the City.

3.1.b Require all new subdivisions to maximize, to the extent feasible, proper orientation of lots with regard to solar utilization.

3.1.c Encourage developers and builders to properly design all structures on each building lot in the City to take fullest advantage of solar use in heating and cooling.

3.1.d Encourage developers and builders to maximize "passive" solar design, such as large south-facing windows for winter heat gains and overhangs and shading for summer heat protection. The City should collect and make available to builders and homeowners design

solutions to passive solar construction problems and support the local building industry's efforts to comply with State regulations on energy conservation design standards.

Policy SD-3.2 Encourage the use of energy conservation features, low-emission equipment, and alternative energy sources for all new residential and commercial development

Implementing Actions

3.2.b Cooperate with the local building industry, utilities and the SJVAPCD to promote enhanced energy conservation standards for new construction.

3.2.c Encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption

3.2.d Encourage builders to develop "green" and/or LEED-Certified (or other similar programs) buildings.

3.6.4 Impacts

Methods of Analysis

The following assessment of energy consumption and conservation is based on the air pollutant and greenhouse gas emission modeling completed using the CalEEMod modeling software. The modeling output files are provided in Appendix D to this Draft EIR.

For the purposes of this analysis, energy consumption is measured in kilowatt hours (kWh) or million British thermal units (MMBtu). One MMBtu is equivalent to 293.297 kWh.

Thresholds of Significance

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

- Result in wasteful, inefficient, or unnecessary consumption of energy.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Impacts and Mitigation Measures

Impact 3.6-1: Implementation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy. This would be a less-than-significant impact.

The Crossings

Construction

Energy consumption would occur during construction and project operation. Electricity use is generally low during construction, being limited to lighting, electrically powered hand tools, and electronic equipment (such as computers inside temporary construction trailers and heating, ventilation, and air conditioning). These types of equipment would not require use of substantial quantities of electricity and would be in use only temporarily.

Natural gas is not anticipated to be required during construction of the proposed project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed under the following subsection, Petroleum. Any minor amounts of natural gas that may be consumed as a result of proposed project construction would be temporary and negligible.

Petroleum would be consumed throughout construction of the proposed project. Fuel consumed by construction equipment would be the primary energy resource expended over the course of construction, and vehicle-miles traveled (VMT) associated with the transportation of construction materials and construction worker commutes would also result in petroleum consumption. Heavy-duty construction equipment associated with construction activities and haul trucks involved in moving dirt around the project site, would rely on diesel fuel. Construction workers would travel to and from the project site throughout the duration of construction. It is assumed that construction workers would travel to and from the project site in gasoline-powered vehicles.

Heavy-duty construction equipment of various types would be used during each phase of construction. CalEEMod was used to estimate construction equipment usage, and results are included in Appendix D. Based on that analysis, over all phases of construction, diesel-fueled construction equipment would operate for an estimated 38,640 hours, as summarized in Table 3.6-1, Hours of Operation for Construction Equipment.

Table 3.6-1
Hours of Operation for Construction Equipment

Phase	Hours of Equipment Use
Demolition	1,440
Site Preparation	1,120
Grading	2,880
Building Construction	30,800
Paving	1,680
Architectural Coating 1	240
Architectural Coating 2	240
Architectural Coating 3	240
Total	**38,640**

Source: Appendix D

Fuel consumption from construction equipment was estimated by converting the total carbon dioxide (CO_2) emissions from each construction phase to gallons using conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 9.13 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.35 kilograms per metric ton CO_2 per gallon. The estimated diesel fuel use from operation of construction equipment is shown in Table 3.6-2, Construction Equipment Diesel Demand.

Table 3.6-2
Construction Equipment Diesel Demand

Phase	Equipment CO_2 (MT)	kg CO_2/Gallon	Gallons
2021	1,091.70	10.35	11,299.1
2022	1,430.81	10.35	14,080.9
2023	168.73	10.35	1,746.4
Total			**27,126.4**

CO_2 = carbon dioxide; kg = kilogram; MT = metric ton
Sources: Appendix D (equipment CO_2); The Climate Registry 2016 (kg/CO_2/gallon).

Fuel consumption from worker and vendor trips is estimated by converting the total CO_2 emissions from each construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Worker vehicles are assumed to be gasoline fueled, and vendor/hauling vehicles are assumed to be diesel fueled. Calculations of fuel consumption from construction

workers and vendors are provided in Table 3.6-3, Construction Worker Vehicle Gasoline Demand, and Table 3.6-4, Construction Vendor Truck Diesel Demand.

Table 3.6-3
Construction Worker Vehicle Gasoline Demand

Phase	Vehicle CO_2 (MT)	kg CO_2/Gallon	Gallons
2021	342.87	9.13	3,130
2022	575.75	9.13	5,257
2023	6.94	9.13	63
Total			**8,450**

CO_2 = carbon dioxide; kg = kilogram; MT = metric ton
Sources: Appendix D (equipment CO_2); The Climate Registry 2016 (kg/CO_2/gallon).

Table 3.6-4
Construction Vendor Truck Diesel Demand

Phase	Vehicle CO_2 (MT)	kg/CO_2/Gallon	Gallons
2021	328.14	10.35	3,396.25
2022	531.57	10.35	5,501.75
2023	41.87	10.35	433.35
Total			**9,331.35**

CO_2 = carbon dioxide; kg = kilogram; MT = metric ton
Sources: Appendix D (construction worker CO_2); The Climate Registry 2016 (kg/CO_2/gallon).

As shown in Tables 3.6-3 and 3.6-4, the proposed project is estimated to consume 17,781 gallons of petroleum during the construction phase. By comparison, approximately 64 billion gallons of petroleum would be consumed in California over the course of the proposed project's construction period (27 months) based on statewide consumption of approximately 28.6 billion gallons (681 million barrels) of petroleum in 2018 (EIA 2021). The proposed project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes. This would ensure that petroleum use during construction is not wasteful or inefficient. Therefore, because it is not possible to avoid petroleum use during construction of the proposed project, and all energy consumption would be temporary, minimal, and not be wasteful or inefficient, impacts would be **less than significant**.

Operation

During project operation, energy consumption includes electricity for operating the various buildings, such as appliances, lighting, heating/cooling, kitchen operations, and pool maintenance

and operation. Natural gas consumption may also occur within kitchens and for heating, while petroleum use is associated with all residents, employees, and visitors traveling to and from the site.

Once the project is constructed, the proposed project would consume electricity onsite for interior and exterior lighting, use of appliances and equipment within each building, and operations of heating and cooling systems. All buildings constructed as part of the proposed project would be required to comply with the City's Green Building Ordinance and the 2019 Title 24 standards or the most recent standards at the time of building issuance.

Additionally, the project includes the following design measures to minimize onsite energy consumption:

- Use of drought tolerant, indigenous plantings to minimize water use.
- Incorporating open and naturally ventilated circulation spaces in buildings to minimize energy use.
- Cut-off luminaires (no upward light emitted).
- Installation of Electric Vehicle Supply Equipment (EVSE) and designated parking for low-emitting and fuel-efficient vehicles.
- Short-term and long-term bicycle parking.
- Energy efficient mechanical and plumbing systems.
- Energy efficient building envelope with water resistance and moisture management.
- Solar shading devise to minimize heat gain on south and west facing facades.
- Construction waste reduction, disposal and management.
- Energy efficient HVAC systems and building commissioning.
- Indoor air quality using non-toxic, non-V.O.C paints and adhesives, moisture control, acoustical control, natural daylight and natural ventilation.

The increase in the number of residents onsite would increase the amount daily vehicle trips that access the site, which would result in an increase in the total VMT in the project area.

Petroleum fuel consumption is largely associated with motor vehicles traveling to and from the project site and is directly related to VMT. As shown in Appendix D, the daily VMT attributable to the proposed project is expected to be approximately 6,307 miles, with an annual total of 2,302,165 miles. The U.S. EPA lists the average miles for gallon for passenger vehicles as 24.9 miles per gallon. This correlates to annual consumption of 92,456 gallons of gasoline based operational VMT. By comparison, California as a whole consumed approximately 28.6 billion

gallons (681 million barrels) of petroleum in 2018 (EIA 2021). Thus, the project represents a 0.00000323 percent increase in statewide annual petroleum consumption during operation.

Over the lifetime of the proposed project, the fuel efficiency of the vehicles being used by residents and employees is expected to increase and the amount of petroleum consumed as a result of vehicular trips to and from the project site during operation would decrease over time. There are numerous regulations in place that require and encourage increased fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the numbers of plug-in hybrids and zero-emissions vehicles in California (CARB 2016). Inclusion of electric-vehicle charging outlets would result in the potential for reduced petroleum use during operation because residents and employees would have the option of charging their electric vehicles.

In summary, although the proposed project would increase petroleum use during operation, the use would be a small fraction of the statewide use and, due to vehicle efficiency increases, would diminish over time. Further the proposed project would implement sustainability features in order to reduce direct and indirect energy demand. The proposed project is consistent with the City's development projections and the demand for housing and commercial land uses in the project area demonstrates that the energy consumption associated with the project would not be unnecessary. Therefore, operation of the proposed project would not result in a wasteful, inefficient or unnecessary consumption of energy and impacts would be **less than significant**.

Remainder Area

The project proposes to pre-zone the 40.2-acre Remainder Area to Low Density Residential (R-1-10) and Urban Transition (U-T). No new development within the Remainder Area is proposed at this time. At this time, no development is proposed for the Remainer Area; thus, implementation of the proposed project would not result in additional energy consumption from this area. However, the portions of the Remainder Area proposed to be zoned R-1-10 could support single-family residential development. The energy demand associated with new residences within the Remainder area would be similar to the energy demand for the residential uses in The Crossings development because all new single-family homes would be subject to the requirements of the Building Code and CalGreen Standards in effect at the time that building permits are issued. Therefore, energy would not be used in a wasteful or inefficient manner and impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

Impact 3.6-2: Implementation of the proposed project would not conflict with existing energy standards and regulations. This would be a less-than-significant impact.

The Crossings

As discussed in Impact 3.6-1, the new buildings constructed under the proposed project would adhere to applicable building code energy standards and regulations and the project includes implementation of project features to minimize energy consumption, provide for onsite energy generation by installing PV for the residential units, and reduce water consumption (which reduces the indirect consumption of electricity for water and wastewater treatment and conveyance). The proposed project would be built and operated in accordance with all existing, applicable regulations at the time of construction. Thus, the proposed project would not conflict with existing energy standards or regulations, and impacts would be **less than significant**.

Remainder Area

Future development in the Remainder Area would be required to comply with all applicable building code energy standards and regulations. This future construction would be built and operated in accordance with all existing, applicable regulations at the time of construction. Therefore, construction and operation of new land uses within the Remainder Area would not conflict with existing energy standards or regulations, and impacts would be **less than significant**.

Mitigation Measures

No mitigation measures are required.

3.6.5 Cumulative Impacts

Impact 3.6-3: The proposed project would contribute to a cumulative increase in regional energy consumption but would not result in wasteful or inefficient use of energy. This would be a less-than-significant impact.

In the context of the residential and commercial development proposed under this project, consideration of energy consumption is inherently a cumulative issue because the project-specific energy demands are extremely low relative to statewide energy demands. Further, energy consumption itself is not an adverse environmental effect, but as shown in Section 3.6.3, Regulatory Setting, California has identified that energy consumption and generation are substantial sources of GHG emissions, which contribute to climate change effects. Thus, an individual small project would not result in a direct change in the environment because it would

not have a material effect on the global climate or the state's ability to achieve GHG reduction targets. Rather, these effects would result from the energy demands of many individual projects across the state. Therefore the geographic area for consideration of cumulative impacts associated with energy consumption is the State of California, and the cumulative development scenario for this consideration is the statewide projected development and population growth, which generally is reflected by planned development under General Plans across the state.

As discussed in Section 3.6.3, the State has adopted multiple laws and policies that define the State's priorities and targets for improved energy-efficiency in buildings and transportation, increased use of renewable sources for energy generation, and other strategies for achieving the State's GHG reduction targets. The analysis of proposed project's impact related to energy consumption presented in Impacts 3.6-1 and 3.6-2 above addresses the project's contribution to statewide energy demand management and energy efficiency. Energy consumption by the project was determined not to be wasteful, inefficient, or necessary. The proposed project would use electricity that would rely less on generation by fossil fuels, in accordance with the RPS targets, and would utilize various energy efficient design features. Furthermore, structures within the project site would be required to comply with the adopted California Building Code and CALGreen Standards, which include energy efficiency provisions. Therefore, the project would be consistent with state standards and targets and would not impair the State's ability to achieve the identified targets.

The State's targets for prior years have been achieved and the state is on track to continue to achieve the targets for future years (CEC 2020, CARB 2017). It is reasonably expected that the state's energy-efficiency and GHG targets will be met and thus the cumulative impact would be less than significant. Therefore, there is no significant cumulative impact to which this project could contribute.

3.6.6 References Cited

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

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California Code of Regulations, Title 17, Section 95480 et seq. Low Carbon Fuel Standard.

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