3.6 Energy

3.6.1 Introduction

This section describes the regulatory and environmental setting for energy resources and energy use in the vicinity of the Proposed Project and the Atwater Station Alternative. It also describes the impacts on energy resources that would result from implementation of the Proposed Project and the Atwater Station Alternative.

Additional considerations with regard to energy resources and energy use are presented in Section 3.3, *Air Quality*, which discusses the implications of energy use on air quality; Section 3.8, *Greenhouse Gas Emissions*, which calculates potential greenhouse gas emissions from energy use; and Section 3.18, *Utilities and Service Systems*, which describes potential interruptions of electricity and natural gas service. Cumulative impacts on energy resources, in combination with planned, approved, and reasonably foreseeable projects, are discussed in Chapter 4, *Other CEQA-Required Analysis.*

3.6.2 Regulatory Setting

This section summarizes federal, state, regional, and local regulations related to energy resources and energy use that are applicable to the Proposed Project and the Atwater Station Alternative.

3.6.2.1 Federal

Energy Policy Act of 1992

The Energy Policy Act of 1992 consists of 27 titles detailing the various measures designed to lessen the nation's dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title III of Act addresses alternative fuels. It gave the U.S. Department of Energy administrative power to regulate the minimum number of light-duty alternative fuel vehicles required in certain federal fleets beginning in fiscal year 1993. The primary goal of this program is to cut petroleum use in the U.S. by 2.5 billion gallons per year by 2020.

Energy Policy Act of 2005

The Energy Policy Act of 2005, which was intended to establish a comprehensive, long-term energy policy, is implemented by the U.S. Department of Energy. The act addresses energy production in the United States (U.S.), including oil, gas, coal, and alternative forms of energy, as well as energy efficiency and tax incentives. Energy efficiency and tax incentive programs include credits for the construction of new energy efficient houses, production or purchase of energy efficient appliances, and loan guarantees for entities that develop or use innovative technologies that avoid the production of GHGs. To reduce national energy consumption, the Act also directed the National Highway Traffic Safety Administration (NHTSA) within the U.S. Department of Transportation to establish the Corporate Average Fuel Economy (CAFE) Program. Under the CAFE Program, NHTSA prescribes and enforces average fuel economy standards for passenger cars and light trucks sold in the U.S.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 was intended to increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy. The Energy Independence and Security Act of 2007 amended the Energy Policy Act of 2005 to introduce more aggressive requirements. The Act's three key provisions strengthened the CAFE standards, the federal renewable fuel standard, and the federal energy efficiency standards for appliances and lighting.

Safer Affordable Fuel-Efficient Vehicles Rule

The National Highway Traffic Safety Administration (NHTSA) sets the Corporate Average Fuel Economy (CAFÉ) standards to improve the average fuel economy and reduce GHG emissions generated by cars and light-duty trucks. NHTSA and USEPA have proposed amendments to the current fuel efficiency standards for passenger cars and light-duty trucks and new standards covering model years 2021 through 2026. Under the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, current standards would be maintained through 2026. California, 22 other states, the District of Columbia, and two cities filed suit against the proposed action on September 20, 2019.[1] The lawsuit requests a "permanent injunction prohibiting Defendants from implementing or relying on the Preemption Regulation," but does not stay its implementation during legal deliberations. Part 1 of the SAFE Vehicles Rule went into effect on November 26, 2019. Part 2 of the Rule was finalized on March 30, 2020. The SAFE Vehicles Rule will decrease the stringency of CAFÉ standards to 1.5 percent each year through model year 2026, as compared with the standards issued in 2012, which would have required about 5 percent annual increases. Because the rule would increase on-road vehicle emissions, it has been taken into account in the construction analysis as a worst-case analysis if the rule prevails in court. The rule has not been taken into account in the operational energy analysis because taking it into account would result in a higher energy reduction benefit given that on road vehicles would have higher fuel consumption with the new rules compared to the former rule; this is a worst-case analysis if the rule does not prevail in court. In January 2021, the Biden Administration announced plans to propose replacement or revision of the SAFE rule later in 2021.

3.6.2.2 State

California Green Building Standards

California Code of Regulations (Cal. Code Regs.), Title 24, Part 11, known as CALGreen, sets standards for sustainable building design for residential and non-residential buildings in California. This code sets forth sustainable construction practices applicable to planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. Effective January 1, 2014, 2013 CALGreen mandates permitted new residential and non-residential building construction, demolition, and certain additions and alteration projects to recycle and/or salvage for reuse a minimum of 50 percent of the nonhazardous construction and demolition debris generated during a project (CALGreen 4.408, 5.408, 301.1.1, and 301.3). 2016 CALGreen became effective January 1, 2017 and increases the recycle and/or salvage mandate to 65 percent for new residential and non-residential building construction, demolition, and certain additions and alteration projects (2016 CALGreen 4.408 and 5.408).

[1] *California et al. v. United States Department of Transportation et al.*, 1:19-cv-02826, U.S. District Court for the District of Columbia,

Senate Bill 1389, Chapter 568, Statutes of 2002

The California Energy Commission (CEC) is responsible for, among other things, forecasting future energy needs for the state and developing renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation. Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report assessing major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The report is also intended to provide policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies. The 2019 *Integrated Energy Policy Report*, the most recent report required under SB 1389, was released to the public in February 2020 (California Energy Commission 2020a).

Assembly Bill 2076, Reducing Dependence on Petroleum

The CEC and the California Air Resources Board are directed by Assembly Bill 2076 (passed in 2000) to develop and adopt recommendations for reducing dependence on petroleum. A performance-based goal is to reduce petroleum demand to 15 percent below 2003 demand by 2020.

Senate Bills 1078, 107, and 2—Renewables Portfolio Standard

SBs 1078 (2002), 107 (2006) and 2 (2011), California's Renewables Portfolio Standard (RPS), obligates investor-owned utilities, energy service providers, and Community Choice Aggregators to procure additional retail sales per year from eligible renewable sources with the long-range target of procuring 33 percent of retail sales from renewable resources by 2020. In 2018, SB 100 was signed into law, which again increases the RPS to 60 percent by 2030 and requires all the state's electricity to come from carbon-free resources by 2045 (California Public Utilities Commission 2020). The California Public Utilities Commission (CPUC) and the CEC are jointly responsible for implementing the program.

Senate Bills 350 and 100—De Leon (Clean Energy and Pollution Reduction Act of 2015, 100 Percent Clean Energy Act of 2017)

SB 350 was approved by the California Legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions are to require the following by 2030: (1) an RPS of 50 percent and (2) a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings. These mandates will be implemented by future actions of CPUC and CEC. SB 100 was approved by the California Legislature in August 2018 and signed by Governor Brown in September 2018. Its key provisions include updating the SB 350 RPS requirement from 50 to 60 percent by 2030 and creating the policy of planning to meet all the state's retail electricity supply with a mix of RPS-eligible and zero-carbon resources by December 31, 2045, for a total of 100 percent clean energy.

California Code of Regulations Title 20 and Title 24, Part 6

New buildings constructed in California must comply with the standards contained in Cal. Code Regs. Title 20, Energy Building Regulations, and Title 24, Energy Conservation Standards. Cal. Code Regs. Title 20 standards range from power plant procedures and siting to energy efficiency standards for appliances, ensuring reliable energy sources are provided and diversified through energy efficiency and renewable energy resources. Cal. Code Regs. Title 24 requires the design of building shells and building components to conserve energy. The Energy Conservation Standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977 and were most recently revised in 2016 (per Cal. Code Regs. Title 24, Part 6). These standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (i.e., Cal. Code Regs. Title 24, Part 11) was adopted as part of the California Building Standards Code. The code was last updated in 2016. Cal. Code Regs. Part 11 establishes mandatory standards, including planning and designing for sustainable site development, energy efficiency (i.e., more than the California Energy Code requirements), water efficiency and conservation, material conservation and resource efficiency, and environmental quality. The 2019 standards improved upon the 2016 standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2019 standards went into effect on January 1, 2020.

California Energy Code

California's energy efficiency standards for residential and nonresidential buildings are described in Cal. Code Regs. Title 24, Part 6. These standards were established in 1978 in response to a legislative mandate to reduce California's energy consumption and have been updated periodically to include new energy efficiency technologies and methods. The California Energy Code requires compliance with energy efficiency standards for all new construction, including new buildings, additions, alterations, and, in nonresidential buildings, repairs.

California Energy Action Plan

The CEC is responsible for preparing the *State Energy Action Plan* (California Public Utilities Commission 2008), which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The *State Energy Action Plan* calls for the State to assist in the transformation of its transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the fewest environmental and energy costs. First-priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer electricity usage during peak periods to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To further this policy, the *State Energy Action Plan* identifies several strategies, including aiding public agencies and fleet operators.

Executive Order N-79-20

On September 23, 2020, Governor Gavin Newsom issued Executive Order N-79-20, directing the state to require that, by 2035, all new cars and passenger trucks sold in California be zero-emission vehicles. Following the order, the California Air Resources Board will develop regulations to meet the requirements of this Executive Order. The executive order also "directs state agencies to develop strategies for an integrated, statewide rail and transit network, and incorporate safe and accessible infrastructure into projects to support bicycle and pedestrian options, particularly in low-income and disadvantaged communities" (California Office of the Governor 2020).

3.6.2.3 Regional and Local

The San Joaquin Regional Rail Commission (SJRRC), a state joint powers agency, proposes improvements inside and outside of the Union Pacific Railroad (UPRR) right-of-way (ROW). The Interstate Commerce Commission Termination Act (ICCTA) affords railroads engaged in interstate commerce considerable flexibility in making necessary improvements and modifications to rail infrastructure, subject to the requirements of the Surface Transportation Board.[2] ICCTA broadly preempts state and local regulation of railroads and this preemption extends to the construction and operation of rail lines. As such, activities within the UPRR ROW are clearly exempt from local building and zoning codes and other land use ordinances. However, facilities located outside of the UPRR ROW, including proposed stations, the proposed Merced Layover & Maintenance Facility, and the Atwater Station Alternative would be subject to regional and local plans and regulations. Though ICCTA does broadly preempt state and local regulation of railroads, SJRRC intends to obtain local agency permits for construction of facilities that fall outside of the UPRR ROW even though SJRRC has not determined that such permits are legally necessary and such permits may not be required.

Appendix G of this environmental impact report (EIR), *Regional Plans and Local General Plans*, provides a list of applicable goals, policies, and objectives from regional and local plans of the jurisdictions in which the Proposed Project and the Atwater Station Alternative would be located. Section 15125(d) of the CEQA Guidelines requires an EIR to discuss "any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans." These plans were considered during the preparation of this analysis and were reviewed to assess whether the Proposed Project and the Atwater Station Alternative would be consistent with the plans of relevant jurisdictions.[3] The Proposed Project and the Atwater Station Alternative would be generally consistent with the applicable goals, policies, and objectives related to energy use and conservation identified in Appendix G.

3.6.3 Environmental Setting

This section describes the environmental setting related to energy resources and energy use. For the purposes of this analysis, the study area for energy resources and energy use is defined as the service area of identified energy providers that currently provide service to ACE or would provide service to the Proposed Project or the Atwater Station Alternative. This section begins with an overview of energy consumption in the state, followed by a detailed description of existing petroleum, natural gas, and electricity use in the study area.

3.6.3.1 Overview of Energy Consumption in the State

Overall, California's energy consumption (per capita) and production are among the lowest and highest, respectively, in the nation. Because of its mild climate and energy efficiency programs, California ranked 48th in the nation for per capita energy consumption in 2018 (the most recent year for which data is available) (Energy Information Administration 2020b). In 2018, California ranked fourth in the nation in conventional hydroelectric generation, second in net electricity generation from other renewable energy resources, and first as a producer of electricity from

[2] Altamont Corridor Express (ACE) operates within a ROW and on tracks owned by the UPRR, which operates interstate freight rail service in the same ROW and on the same tracks.

[3] An inconsistency with regional or local plans is not necessarily considered a significant impact under CEQA unless it is related to a physical impact on the environment that is significant in its own right.

biomass, geothermal, and solar energy (Energy Information Administration 2020b). As of January 2019, California ranked third in the nation in petroleum refining capacity (Energy Information Administration 2020b).

The transportation end-use sector consumes the largest share of energy in California. In 2018, transportation accounted for 39.8 percent of all energy consumed in California, compared to 23.2 percent for industrial uses, 18.9 percent for commercial uses, and 18.1 percent for residential uses (Energy Information Administration 2020a). Table 3.6-1 compares various modes of passenger travel within the United States and the approximate energy use for each mode. Commuter rail energy use per passenger mile was less than cars, personal trucks, and transit buses in 2017. In other words, commuter rail is more energy efficient per passenger mile than other common transportation modes for intercity commuting.

Table 3.6-1. 2017 U.S. Passenger Travel Mode and Energy Use

Travel Mode	Vehicle Miles (millions)	Passenger Miles (millions)	Energy Consumption (Btu per vehicle mile)	Energy Consumption (Btu per passenger mile)
Cars	1,424,302	2,195,206	4,451	2,888
Personal Trucks	1,214,523	2,210,432	6,067	3,334
Motorcycles	20,149	23,978	2,844	2,390
Air	5,848	685,977	280,416	2,391
Buses (Transit)	2,513	20,209	36,468	4,535
Rail (Transit)	832.6	20,169	19,297	788
Rail (Commuter)	378	12,384	54,251	1,657
Rail (Intercity-Amtrak)	316	6,563	31,644	1,524

Source: Davis & Boundy 2020.
Btu = British thermal unit.

3.6.3.2 Petroleum, Electricity and Natural Gas

Among the various types of energy sources, petroleum (diesel fuel) is the primary fuel consumed, in terms of operational energy demand, and is used to propel Altamont Corridor Express (ACE) locomotives on their scheduled runs. Of the other primary energy sources, electricity is used principally for station and parking facility lighting, and natural gas is not used (Garcia pers. comm.). Each of these fuel sources and the providers are described in the following sections.

Petroleum

California's crude oil production has declined overall in the past 30 years; however, it remains one of the top producers of crude oil in the nation, accounting for approximately 4 percent of total U.S. production in 2018. California ranks third in the nation in petroleum refining capacity and accounts for one-tenth of the total U.S. capacity (Energy Information Administration 2020b).

Valley Pacific Petroleum provides diesel fuel for the operation of ACE trains. Valley Pacific Petroleum obtains its fuel from the Chevron Richmond Refinery, a 2,900-acre petroleum refinery in Richmond, California, which processes about 250,000 barrels of crude oil per day (Chevron 2020). In 2017, ACE diesel fuel consumption was approximately 455,000 gallons to power four weekday roundtrips between Stockton and San Jose (Pennino pers. comm. A, B).

Electricity

California's electricity use is assessed annually by the California Independent System Operator (CAISO) and the California Public Utilities Commission (CPUC). CAISO is a not-for-profit corporation in charge of operating the long-distance, high-voltage power lines that deliver electricity, and CPUC publishes the *Long-Term Procurement Plan*, which aims to implement a safe, reliable, and cost-effective electricity supply in California. CAISO works with state agencies, generation and transmission owners, load-serving entities, and other balancing authorities to identify any issues regarding upcoming operating conditions. Significant amounts of new renewable generation have reached commercial operation, and this trend is expected to continue as new renewable generation comes online to meet the state's 60 percent renewables requirement by 2030 (California Independent System Operator 2020).

Electricity use for the Proposed Project would occur at the new stations and at the Merced Layover & Maintenance Facility. Table 3.6-2 lists the service providers that maintain energy utilities where the Proposed Project and the Atwater Station Alternative would be located. Table 4.6-3 provides information on peak energy demand and electricity consumption by service provider.

Table 3.6-2. Electricity Providers by Proposed or Alternative Facility

Municipality	Proposed or Alternative Facility	Electricity Provider
City of Ceres	Ceres to Merced Extension Alignment	Turlock Irrigation District
Stanislaus County (unincorporated areas)	Ceres to Merced Extension Alignment	
City of Turlock	Ceres to Merced Extension Alignment	
	Turlock Station	
City of Livingston	Ceres to Merced Extension Alignment	PG&E & Merced Irrigation District
	Livingston Station	
City of Atwater	Ceres to Merced Extension Alignment	
	Atwater Station Alternative	
City of Merced	Ceres to Merced Extension Alignment	
	Merced Layover & Maintenance Facility	
	Merced Station	
Merced County (unincorporated areas)	Ceres to Merced Extension Alignment	Turlock Irrigation District & Merced Irrigation District

PG&E = Pacific Gas and Electric Company.

Table 3.6-3. Electricity Consumption and Peak Demand by Electricity Providers

Electricity Provider	Electricity Consumption (GWh) in 2019	Peak Demand (MW) in 2018
PG&E	78,072	10,976
Turlock Irrigation District	2,084	629
Merced Irrigation District	499	109

Source: California Energy Commission 2019, 2020b.
GWh = gigawatt hour.
MW = megawatt.
PG&E = Pacific Gas and Electric Company.

Pacific Gas and Electric

Pacific Gas and Electric Company (PG&E) provides electricity for approximately 5.2 million customer accounts in a 70,000-square-mile service area in Northern and Central California. PG&E's service area stretches from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. Within PG&E's service area, PG&E operates 107,000 circuit miles of electric distribution lines and 18,000 circuit miles of interconnected transmission lines (Pacific Gas and Electric Company 2020a).

In PG&E's service area, total electricity consumption was approximately 78,072 gigawatt hours (GWh) in 2019 (California Energy Commission 2020b). The California Energy Commission reported that peak demand within the PG&E service area was approximately 11,000 megawatts (MW) in 2018. Peak demand is the amount of electricity consumed at any given moment, usually integrated over a 1-hour period. Peak demand is important in evaluating system reliability, identifying congestion points on the electrical grid, and designing required system upgrades.

PG&E's generation portfolio includes hydroelectric facilities, a nuclear power plant, and a natural gas power plant (Pacific Gas and Electric Company 2020a; 2020b). The net operating capacity of these facilities at the end of 2019 was 7,686 MW. In 2019, PG&E generated 33,849 GWh through its own facilities, and purchased 27,210 GWh to meet the demands of its customers (Pacific Gas and Electric Company 2020a).

Turlock Irrigation District

The Turlock Irrigation District owns and operates an electric generation, transmission, and distribution system that serves approximately 102,000 customer accounts within a 662-square-mile area. The Turlock Irrigation District service area includes Ceres and Turlock and stretches from the Santa Clara County border in the west to the Tuolumne County border in the east. The Turlock Irrigation District operates 389 miles of transmission lines in Stanislaus and Merced Counties (Turlock Irrigation District 2018).

The total electricity consumption in 2019 within Turlock Irrigation District's service area was 2,084 GWh (California Energy Commission 2020b). Peak demand in 2018 was 629 MW (California Energy Commission 2019). The Turlock Irrigation District's reported electric generation capacity from Turlock Irrigation District's hydroelectric, natural gas, and wind facilities included 154 MW of electricity from district-owned hydroelectric facilities, 521 MW from district-owned natural gas facilities, and 137 MW from one district-owned wind facility (Turlock Irrigation District 2018).

Merced Irrigation District

Merced Irrigation District operates transmission and distribution electrical facilities serving customers spanning 560 square miles in eastern Merced County. Merced Irrigation District currently provides power to electric services approximately 11,000 customers in Eastern Merced County including Livingston, Atwater and Merced (Merced Irrigation District 2020).

The total electricity consumption in 2019 within Merced Irrigation District's service area was 499 GWh (California Energy Commission 2020b). The most recent peak demand figures from 2018 total 109MW (California Energy Commission 2019). Merced Irrigation District purchases nearly all its power from the Turlock Irrigation District, which generates its own power and purchases power from others, including PG&E.

Natural Gas

PG&E is the only natural gas service provider for Stanislaus and Merced Counties and is responsible for maintaining the infrastructure for natural gas distribution and transmission. PG&E's natural gas system spans 70,000 square miles, serves approximately 6 million gas customers, and delivers 970 billion cubic feet (BCF) of gas per year, or 2.6 BCF per day. PG&E's gas transmission and distribution pipelines stretch from Eureka in the north to Bakersfield in the south and from the Pacific Ocean in the west to the Sierra Nevada in the east. PG&E has more than 6,500 miles of gas transportation pipeline and 42,000 miles of gas distribution pipeline. PG&E's network of high-pressure natural gas transmission pipelines generally follows existing transportation corridors, such as roads and railroad tracks (Pacific Gas and Electric Company 2020b).

3.6.4 Impact Analysis

This section describes the environmental impacts of the Proposed Project and the Atwater Station Alternative on energy resources. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant.

3.6.4.1 Methods for Analysis

Energy use associated with construction and operation of the Proposed Project and Atwater Station Alternative were assessed and quantified using standard and accepted energy intensity factors.

Construction

Construction of the Proposed Project and Atwater Station Alternative would require gasoline and diesel, as the primary sources of energy, for construction equipment, employee transport, and haul truck vehicles. Energy consumption associated with construction would be temporary and would cease when construction activities are complete. Construction-period energy demand is presented for the Proposed Project and Atwater Station Alternative. This construction-period energy demand was estimated using energy factors from the Energy Information Administration (2020c).

Operations

The analysis of energy demand associated with operations of the Proposed Project and the Atwater Station Alternative considers the following components.

- The increased consumption of fuels for operations of the extended passenger rail service and locomotive idling.
- The increased consumption of fuels from expanded shuttle service at the Great America and Pleasanton Stations due to changes in ridership.
- Increased electricity demand at the proposed stations, the Merced Layover & Maintenance Facility, and the Atwater Station Alternative. Increased natural gas demand at the Merced Layover & Maintenance Facility.
- The savings in automobile fuel consumption from reduced automobile vehicle miles traveled (VMT) due to the shift of travelers from automobiles to passenger rail transit.

For comparison purposes and to derive the net operational energy consumption, the energy demand for each component is converted into British thermal units (Btu) based on their respective energy intensity factor. The methodology for deriving the operational energy demand for each of these components is summarized below. In addition, the methodology for determining the net energy impacts from the Proposed Project is also included for each of these components below. The energy demand for each of these components is compared to the No Project Conditions. Energy use under the No Project Conditions is defined as the energy use if the Proposed Project were not to be implemented. The No Project Conditions does not account for the energy use outside of the Ceres to Merced area (except for the shuttles) because the Proposed Project would not affect ACE service outside of the Ceres to Merced Area (except for the shuttles).

ACE Operations and Locomotive Idling

New ACE passenger rail service between Ceres and Merced would result in increased diesel fuel combustion from additional locomotive operations and increased idling[4] while loading passengers at stations and warming up after receiving routine maintenance. It is anticipated that the fleet would be maintained at the Merced Layover & Maintenance Facility (for light maintenance and daily servicing) or at the existing ACE Rail Maintenance Facility in Stockton (for heavy maintenance and repairs).

This analysis compares the energy use from operations of trains due to the Proposed Project in 2030 (full operations)[5] and 2040 (horizon year) with the No Project Conditions in 2030 and 2040. Under the No Project Conditions, there would be no train service between Ceres and Merced and, therefore, no energy use under the No Project Conditions associated with operations of ACE locomotives.

Expanded Shuttle Service

Changes in ACE ridership with operations of the Proposed Project would have corresponding effects on vehicle shuttle demand and VMT. ACE provides vehicle shuttle connections at the existing Great America and Pleasanton Stations. This analysis presents these increases on fuel consumption based on existing fuel usage. In addition, implementation of the Proposed Project would eliminate the Ceres–Merced Bus Bridge[6], which is a bus service that would run between Ceres and Merced and connect to the trains at Ceres, which was approved as Phase I of the *ACE Extension Lathrop to Ceres/Merced EIR* (Prior EIR). This analysis presents these decrease in fuel consumption from the elimination of this bus service.

This analysis compares the energy use from the operations of shuttles due to the Proposed Project in 2030 and 2040 with the No Project Conditions in 2030 and 2040. Under the No Project Conditions, the Proposed Project would not be implemented and the increase in ridership would not take place. Therefore, there would be no increase in shuttle service at the existing Great America

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[4] For locomotive idling, the worst-case year would be full operations (2030) because there would be about twice as much idling at the Merced Station and about four times as much idling at the Merced Layover & Maintenance Facility, compared to the idling at these two locations for initial operations of one train in 2025. This analysis evaluates the full operational scenario in 2030.

[5] As discussed in Chapter 2, *Project Description*, operations could start by 2025 with one round trip per day between Ceres and Merced increasing to four round trips per day in 2030. The year 2030 was selected for the Energy analysis over 2025 since the Project would first reach its full level of operation in 2030 including its full level of train operations. In addition, given the progressive improvement in passenger vehicle efficiency, the benefits of diverting passenger vehicle use through increase train use would be lower in 2030 than in 2025 on a per vehicle-mile travelled (VMT) diverted basis and thus the analysis for 2030 would be conservative compared to 2025.

[6] This would be an electric bus bridge.

and Pleasanton Stations and no associated energy demand. Under the No Project Conditions, operations of the Ceres to Merced Bus Bridge would take place and there would be an associated energy demand from operations of this service.

Station and Merced Layover & Maintenance Facility Operations

The Proposed Project includes the construction of three new stations (Turlock, Livingston, and Merced Stations). In addition, the Merced Layover & Maintenance Facility would be constructed to support operation and maintenance activities associated with the Proposed Project. Operation of these new facilities would result in new electricity consumption, in particular for lighting at surface parking lots at stations and wayside power at the Merced Layover & Maintenance Facility.

This analysis compares the energy use from operations of the proposed stations and the Merced Layover & Maintenance Facility in 2030 and 2040 with the No Project Conditions in 2030 and 2040. Under the No Project Conditions, there would be no operations of the stations or facilities and, therefore, there would be no energy use under the No Project Conditions associated with operations of stations and facilities.

Displaced Passenger Vehicle Miles

The Proposed Project would introduce new passenger rail service between Ceres and Merced. Operations of the Proposed Project would divert traffic from the region's roadways and reduce automobile usage. In order to estimate avoided VMT, an energy intensity factor was used to convert each automobile vehicle mile into energy demand in Btu. The estimated energy intensity factor for light duty cars was 3,070 Btu per vehicle-mile in 2018 (Bureau of Transportation Statistics 2020). Although energy intensity is likely to decrease, this value was conservatively assumed to be the same for 2030 and 2040.

This analysis compares the energy savings (due to reduced VMT) from operations of the Proposed Project in 2030 and 2040 with the No Project Conditions in 2030 and 2040. The No Project Conditions would involve the use of a bus bridge between Ceres and Merced instead of train service. This bus bridge would result in VMT reductions (compared to the existing conditions without the bus bridge) because passengers would use the bus bridge and then ACE train service instead of driving. The passenger ridership quantities and VMT reductions associated with the bus bridge are considered to be part of the system-wide No Projection Conditions. The Proposed Project's displaced quantity of VMT is relative to No Project Conditions and, thus, represents the Proposed Project's incremental reduction in VMT relative to system-wide ACE operation, including operation of the bus bridge.

3.6.4.2 Thresholds of Significance

According to Appendix F of the CEQA Guidelines, conserving energy may be achieved by decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy sources. Appendix G of the CEQA Guidelines identifies significance criteria to be considered for determining whether a project could have significant impacts on energy conservation. Under these criteria, an energy impact would be considered significant if construction or operation of the Proposed Project would have either of the following consequences.

- Potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.6.4.3 Impacts and Mitigation Measures

Impact EN-1	Construction and operations of the Proposed Project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources.
Level of Impact	**Less than significant impact (beneficial)**

Impact Characterization and Significance Conclusion

Proposed Project

Construction

Construction impacts are defined as those resulting from building the Proposed Project, its associated infrastructure, and related physical changes. During construction of the Proposed Project, energy in the form of gasoline and diesel would be consumed to produce and transport construction materials, operate and maintain construction equipment, and transport construction workers to and from work sites. Energy would be used to construct the Proposed Project. Natural gas is not typically used during construction and none of the construction equipment identified for the Proposed Project would require electricity. Energy consumption associated with construction would be temporary and would cease when construction activities are complete.

Table 3.6-4 summarizes the estimated expenditure of diesel and gasoline associated with construction of the Proposed Project. Total gasoline and diesel use for construction of the Proposed Project is estimated to be approximately 233,000 gallons (36 billion Btu). However, the energy expenditure associated with construction of the Proposed Project would be temporary and limited to the duration of the construction period.

In addition, many financial incentives are offered by government agencies and utility companies to support energy-efficient investments. Thus, it is anticipated that construction materials built and purchased from offsite suppliers would be efficiently produced based on the economic incentive for efficiency. Additionally, jurisdictions where the Proposed Project would be constructed require reuse and recycling of construction and demolition materials, which would reduce the inherent energy cost of materials. Furthermore, implementation of Mitigation Measures AQ-2.1 and AQ-2.2 would require use of advanced emissions controls for off-road equipment, all construction equipment to be properly maintained, advanced emissions controls for locomotives, and use of a modern fleet for material delivery and haul trucks during the construction of the Proposed Project. These mitigation measures would require the use of newer construction equipment, locomotives, and on-road vehicles that are generally more fuel efficient than older models. Thus, energy resources would not be consumed in a wasteful, inefficient, or unnecessary manner during construction and environmental impacts would be less than significant.

Table 3.6-4. Proposed Project—Construction Fuel Consumption

Proposed Project Facilities	Fuel Consumption, Diesel (gallons)	Fuel Consumption, Gasoline (gallons)	Btu (billions)[a, b]
Ceres to Merced Extension Alignment	97,542	12,661	15
Turlock Station	27,628	3,446	4
Livingston Station[c]	24,515	2,855	4
Merced Station	21,401	2,265	3
Merced Layover & Maintenance Facility	62,065	8,183	10
Total	233,151	29,410	*36*

[a] Diesel heat content used for conversion to Btu: 137,381 Btu/gallon (Energy Information Administration 2020c).
[b] Gasoline heat content used for conversion to Btu: 120,286 Btu/gallon (Energy Information Administration 2020c).
[c] The Atwater Station Alternative would require the same amount of fuel during construction, as the proposed Livingston Station.

Operations

Operations impacts are those resulting from ongoing, routine, and occasional activities associated with operation of the Proposed Project. During operations, the new stations would not result in any demand for natural gas (Garcia pers. comm.) and would comply with applicable Cal. Code Regs., Title 24 standards for energy efficiency. The Merced Layover & Maintenance Facility would, however, require the use of natural gas.

Proposed Project operations would involve up to four additional one-way morning service trips and four additional one-way evening service trips between Ceres and Merced, operations of new stations (the Turlock Station, Livingston Station, and Merced Station), and operations of the Merced Layover & Maintenance Facility, all of which would result in an increase in energy consumption. However, the new service and accessibility to ACE passenger rail services would encourage the diversion of travelers and commuters from automobiles to passenger rail. The reduction in automobile VMT and the related decrease in fuel consumption would offset the energy demands for the Proposed Project and result in a net energy savings relative to the No Project Conditions.

As described in Section 3.6.4.1, *Methods for Analysis*, the analysis of energy demand associated with the Proposed Project considers the following components.

- Increased consumption of petroleum from operation of passenger rail service. Renewable diesel fuel would be used for the locomotives, which would result in lower petroleum consumption than what is presented in this section.
- Increased consumption of fuel from expanded shuttle service at Great America and Pleasanton Stations due to increased ridership with the Proposed Project.
- New consumption of electricity associated with the Turlock Station, Livingston Station, Merced Station, and the Merced Layover & Maintenance Facility. New consumption of natural gas with the Merced Layover & Maintenance Facility.
- Reduced automobile VMT and savings in automobile fuel consumption due to modal shift to commuter rail transit.

New operations of passenger rail services would result in increased consumption of petroleum. Table 3.6-5 summarizes the daily operating hours and associated diesel use under existing conditions (2019)[7], the 2030 scenarios, and the 2040 scenarios. Operations of the Proposed Project would increase diesel use by approximately 17.2 billion Btu annually in 2030 and 2040 compared to the No Project Conditions.

Table 3.6-5. Proposed Project and Atwater Station Alternative Operations—Annual Locomotive Fuel Consumption

	Daily Hours by Locomotive[a]	Diesel Use (gallons)	Diesel Use (Btu billions)[b]
Existing Conditions (2019)[c]	17.6	455,000	63.1
2030 No Project Conditions	0	0	0.0
2030 Proposed Project	4.8	124,953	17.2
2030 Atwater Station Alternative	4.8	124,953	17.2
[2030 Proposed Project] – [2030 No Project Conditions]			17.2
[2030 Atwater Station Alternative] – [2030 No Project Conditions]			17.2
2040 No Project Conditions	0	0	0.0
2040 Proposed Project	4.8	124,953	17.2
2040 Atwater Station Alternative	4.8	124,953	17.2
[2040 Proposed Project] – [2040 No Project Conditions]			17.2
[2040 Atwater Station Alternative] – [2040 No Project Conditions]			17.2

[a] Locomotive fuel consumption rate based on the Prior EIR (25,852 gallons per hour of operation).
[b] Diesel heat content used for conversion to Btu: 137,381 Btu/gallon (Energy Information Administration 2020c).
[c] The numbers presented for the existing conditions represent the energy use along the existing system between San Jose and Stockton. No ACE Locomotives currently operate between Ceres and Merced.

Operations of the Proposed Project would result in expanded shuttle service at Great America and Pleasanton Stations due to increased ridership (see Chapter 2, *Project Description*). Expanded shuttle vehicle services would increase fuel consumption of diesel, compressed natural gas (CNG), and electricity. Table 3.6-6 summarizes the annual diesel, CNG, and electricity use of vehicle shuttles/bus bridges under existing conditions (2019), the 2030 scenarios, and the 2040 scenarios. Shuttle and bus operations due to operation of the Proposed Project would result in a decrease of diesel, CNG, and electricity use by approximately 0.2 billion Btu in 2030, compared to the No Project Conditions, and an increase of diesel, CNG, and electricity use of approximately 0.5 billion Btu in 2040, compared to the No Project Conditions.

Operations of the Proposed Project would also result in new consumption sources of electricity associated with new stations and the Merced Layover & Maintenance Facility, and new consumption of natural gas associated with the Merced Layover & Maintenance Facility. Table 3.6-7 summarizes the energy use anticipated for operations of the new stations included in Proposed Project. As shown, operation of the Proposed Project would result in increased energy demand of approximately 6,424 million Btu per year, compared to the No Project Conditions.

[7] 2019 was used as the baseline condition because full year data was not available for 2020 during EIR preparation and because 2020 is an anomalous year for transportation emissions due to the substantial disruptions due to the COVID-19 health emergency.

Table 3.6-6. Proposed Project and Atwater Station Alternative Operations—Annual Vehicle Shuttle/Bus Bridge Fuel Consumption

	Annual Fuel			Btu (billions)			
	Great America Station Vehicle Shuttle (CNG, diesel gallon equivalent)	Pleasanton Station Vehicle Shuttle (diesel, gallons)	Ceres-Merced Bus Bridge (kWh)	Great America Station Vehicle Shuttle[a]	Pleasanton Station Vehicle Shuttle[a]	Ceres–Merced Bus Bridge[b]	Total
Existing (2019)	-	-	-	-	-	-	-
2030 No Project Conditions	-	-	197,943	-	-	0.7	0.7
2030 Proposed Project	3,111	676	-	0.4	0.1	-	0.5
2030 Atwater Station Alternative	3,111	676	-	0.4	0.1	-	0.5
[2030 Proposed Project] – [2030 No Project Conditions]							-0.2
[2030 Atwater Station Alternative] – [2030 No Project Conditions]							-0.2
2040 No Project Conditions	-	-	197,943	-	-	0.7	0.7
2040 Proposed Project	8,710	-	-	1.2	-	-	1.2
2040 Atwater Station Alternative	8,710	-	-	1.2	-	-	1.2
[2040 Proposed Project] – [2040 No Project Conditions]							0.5
[2040 Atwater Station Alternative] – [2040 No Project Conditions]							0.5

CNG = compressed natural gas.
kWh = kilowatt hour.
[a] Diesel heat content used for conversion to Btu: 137,381 Btu/gallon (Energy Information Administration 2020c).
[b] Electricity heat content used for conversion to Btu: 3,412 Btu/kWh (Energy Information Administration 2020c).

1 **Table 3.6-7. Proposed Project and Atwater Station Alternative Operations—Energy Use at New Stations and Facilities**

Proposed and Alternative Facilities	Energy Usage with the No Project Conditions (kWh, Btu, Btu millions, or gallons)	Future Energy Usage (kWh, Btu, Btu millions, or gallons)
Proposed Project		
Electricity at Turlock Station (kWh/month)	--	2,584
Electricity at Livingston Station (kWh/month)	--	2,655
Electricity at Merced Station (kWh/month)	--	3,086
Electricity at Merced Layover & Maintenance Facility (kWh/month)	--	77,218
Natural Gas at Merced Layover & Maintenance Facility (Btu/month)	--	243,483,333
Emergency Generator Fuel Consumption at Merced Layover & Maintenance Facility (average gallons/month)		10
Total Monthly Electricity (kWh)	--	*85,543*
Total Annual Electricity (kWh)	--	*1,026,516*
Total Annual Electricity, Natural Gas, and Diesel Consumption —(Btu millions)[a]	--	*6,440*
Total Annual Proposed Project Electricity and Natural Gas Above No Project Conditions (Btu millions)	--	*6,440*
Alternative Analyzed at an Equal Level of Detail		
Electricity at Atwater Station Alternative	--	2,799
Total Monthly Electricity with the Atwater Station Alternative (kWh)	--	*85,687*
Total Annual Electricity with the Atwater Station Alternative (kWh)	--	*1,028,244*
Total Annual Electricity and Natural Gas with Atwater Station Alternative—(Btu millions)[a]	--	*6,446*
Total Annual Atwater Station Alternative Electricity and Natural Gas Above No Project Conditions (Btu millions)	--	*6,446*

kWh = kilowatt hour.
Btu = British thermal units.
[a] Electricity heat content used for conversion to Btu: 3,412 Btu/kWh (Energy Information Administration 2020c).

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Operations of the Proposed Project would also result in reduced automobile VMT and savings in automobile fuel consumption due to modal shift to commuter rail transit. This modal shift would offset the energy demands associated with ACE operations and locomotive idling, expanded shuttle service, station operations, and operations of the Merced Layover & Maintenance Facility. Table 3.6-8 presents the annual energy savings from reduced automobile VMT due to modal shift for 2030 and 2040. Based on the projected ACE ridership resulting from operation of the Proposed Project, the mode switch from vehicle to ACE under the Proposed Project is estimated to reduce VMT annually by approximately 24.0 million in 2030 and approximately 30.7 million in 2040, compared to the No Project Conditions. This decrease in automobile VMT would result in an annual savings of approximately 73.6 billion Btu per year in 2030 and approximately 94.2 billion Btu per year in 2040, compared to the No Project Conditions.[8]

Table 3.6-8. Proposed Project and Atwater Station Alternative Operations—Annual ACE Ridership and Total Automobile VMT Displaced

	Annual ACE Ridership (thousands)	Annual Auto VMT Displaced (millions)	Btu Reduction (billions)[a]
Existing (2019)	0	0	0
2030 No Project Conditions	0	0	0
2030 Proposed Project	441	24.0	73.6
2030 Atwater Station Alternative	445	24.4	74.8
[2030 Proposed Project] – [2030 No Project Conditions]			*73.6*
[2030 Atwater Station Alternative] – [2030 No Project Conditions]			*74.8*
2040 No Project Conditions	0	0	0
2040 Proposed Project	567	30.7	94.2
2040 Atwater Station Alternative	570	31.1	95.5
[2040 Proposed Project] – [2040 No Project Conditions]			*94.2*
[2040 Atwater Station Alternative] – [2040 No Project Conditions]			*95.5*

Source: Bureau of Transportation Statistics 2020.
VMT = vehicle miles traveled.
Btu = British thermal units.
[a] An "energy intensity factor" was used to convert each automobile vehicle mile into energy demand in Btu. The estimated energy intensity factor for light duty cars was 3,070 Btu per vehicle-mile in 2018. This value was conservatively assumed to be the same for 2030 and 2040.

Overall, operations of the Proposed Project would result in net energy savings. As shown in Table 3.6-9, the annual net energy reductions from operation of the Proposed Project would be approximately 50.2 billion Btu per year in 2030 and approximately 70.1 billion Btu per year in 2040, compared to the No Project Conditions.

[8] With the No Project Conditions, ACE service between Ceres and Merced would consist of electric bus service only. As noted in Section 3.6.4.1, Methods for Analysis, the No Project Conditions would result in reductions of VMT from the use of the bus bridge. Energy reductions from those VMT reductions are not included in the No Project Conditions row in Table 3.6-8 because the Proposed Project's VMT-related emissions are relative to the entire ACE system, including the bus bridge. In other words, for VMT accounting purposes the No Project Conditions are assumed to be zero.

Table 3.6-9. Proposed Project and Atwater Station Alternative Operations—Summary of Annual Energy Demand (Compared to No Project Conditions)

Source of Energy Use	Btu/Year (2030) (billions)	Btu/Year (2040) (billions)
Proposed Project Energy Expenditures (net change from No Project Conditions)		
Locomotive fuel consumption	17.2	17.2
Shuttle fuel consumption	-0.2	0.5
Energy use at new stations and the Merced Layover & Maintenance Facility	6.4	6.4
Subtotal	23.4	24.1
Atwater Station Alternative Energy Expenditures (net change from No Project Conditions)		
Locomotive fuel consumption	17.2	17.2
Shuttle fuel consumption	-0.2	0.5
Energy use at new stations and the Merced Layover & Maintenance Facility	6.4	6.4
Subtotal	23.4	24.1
Proposed Project and Atwater Station Alternative Energy Savings		
VMT displaced (Proposed Project)	-73.6	-94.2
Net Energy Demand (Proposed Project)	**-50.2**	**-70.1**
VMT Displaced (Atwater Station Alternative)	-74.8	-95.5
Net Energy Demand (Atwater Station Alternative)	**-51.4**	**-71.4**

VMT = vehicle miles traveled.
Btu = British thermal units.

As shown in Table 3.6-1, rail travel per passenger-mile is less energy intensive than travel by car, personal truck, and transit buses per passenger-mile. With implementation of the Proposed Project, additional travelers could choose to ride ACE instead of an alternative form of transportation. Therefore, despite increased energy demand as a result of additional train operations and roundtrips, implementation of the Proposed Project would reduce automobile VMT and consequently reduce energy consumption per passenger mile. This change in energy consumption due to the Proposed Project would be an environmental benefit.

Overall, as shown in Table 3.6-9, operation of the Proposed Project would result in a net energy savings compared to the No Project Conditions. Energy use benefits achieved through operation of the Proposed Project would offset the short-term construction energy use in less than a year. Energy savings achieved thereafter would contribute to reductions in energy use. In addition, energy demand at new stations and facilities would be further minimized through compliance with Cal. Code Regs., Title 24 standards and would not result in activities that consume electricity in an inefficient manner. Energy demand with operations of the Proposed Project would result in less energy use than the No Project Conditions. As such, the Proposed Project would result in a beneficial impact on the environment and, therefore, the environmental impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources would be less than significant.

Atwater Station Alternative

Like the Proposed Project, the Atwater Station Alternative would result in a less-than-significant (beneficial) environmental impact from reduced energy demand. Operations of the Atwater Station Alternative would result in a slightly greater reduction of VMT than the proposed Livingston Station.

The estimated expenditure of diesel and gasoline associated with construction of the Atwater Station Alternative would be the same as for the proposed Livingston Station (see Table 3.6-4). For the same reasons as the Proposed Project, energy resources would not be consumed in a wasteful, inefficient, or unnecessary manner during construction of the Atwater Station Alternative and environmental impacts would be less than significant.

For the same reasons as the Proposed Project, the Atwater Station Alternative would result in a beneficial impact on the environment and the environmental impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources would be less than significant. As shown in Table 3.6-5 and 3.6-6, operations of the Atwater Station Alternative would result in the same demand of locomotive fuel consumption and shuttle fuel consumption as the Proposed Project. As shown in Table 3.6-7, electrical use at the Atwater Station Alternative would be slightly greater than the proposed Livingston Station due to the slightly larger station footprint. In addition, as shown in Table 3.6-8, the Atwater Station Alternative is expected to reduce the energy demand slightly more than the proposed Livingston Station because the Atwater Station Alternative would result in a greater VMT reduction than the proposed Livingston Station. Overall, as summarized in Table 3.6-9, operations of the Atwater Station Alternative is expected to have a greater reduction in energy demand compared to the Proposed Project. In 2030, operation of the Atwater Station Alternative is expected to result in a net energy savings of 51.4 billion Btu per year compared to a net energy savings of 50.2 billion Btu per year for the Proposed Project. In 2040, operation of the Atwater Station Alternative is expected to result in a net energy savings of 71.4 billion Btu per year compared to a net energy savings of 70.1 billion Btu per year for the Proposed Project. Energy use benefits achieved through operation of the Atwater Station Alternative would offset the short-term construction energy use in less than a year. Energy savings achieved thereafter would contribute to reductions in energy use.

Impact EN-2	Construction and operations of the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.
Level of Impact	**Less than significant impact**

Impact Characterization and Significance Conclusion

Proposed Project

There are various state and local plans that contain policies about clean energy and energy efficiency. The *State Energy Action Plan* calls for the state to assist in the transformation of its transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the fewest environmental and energy costs (California Public Utilities Commission 2008). The Regional Transportation Plan/Sustainable Communities Strategy for Merced County contains a goal to reduce usage of nonrenewable energy resources for transportation purposes. The general plans for Merced County and the cities of Livingston, Merced, and Turlock contain policies related to clean energy and energy efficiency. These policies are contained in *Appendix G, Regional Plans and Local General Plans* and generally relate to promoting energy efficiency and clean energy in building design and transportation.

As discussed in Impact EN-1, during construction of the Proposed Project, energy would be consumed to produce and transport construction materials, to operate and maintain construction equipment, and to transport construction workers to and from work sites. Large equipment used for construction would be powered with diesel fuel. Overall, energy consumption would involve mostly diesel fuel for construction equipment and transport, with negligible quantities of electricity required. PG&E, Turlock Irrigation District, and Merced Irrigation District would be able to accommodate the increase in temporary electricity use with existing resources. Electricity consumption during construction would not be substantial and, thus, would not affect the ability of PG&E, Turlock Irrigation District, or Merced Irrigation District to serve the region with existing supplies or obstruct the ability of these electricity providers to comply with applicable state or local plan requirements regarding clean energy.

Operation of the Proposed Project would result in an increase in energy consumption. The energy consumption would be primarily associated with the trains' consumption of diesel fuel and consumption of energy at new stations and the Merced Layover & Maintenance Facility. During operation of the Proposed Project, ACE trains would continue to run on diesel fuel. Renewable diesel fuel would be used for the locomotives, which would result in less traditional diesel fuel consumption than what is presented in this section. As such, the fuel estimate is conservative because it does not account for the use of renewable diesel fuel. Energy savings from avoided VMT would fully offset energy use from train operation under the Proposed Project, as the amount of energy consumed in diesel fuel use would be less than the amount of energy saved from avoided personal vehicle use under the No Project Conditions (see Table 3.6-9). Lighting, mechanical systems, and maintenance activities at new stations and the Merced Layover & Maintenance Facility would result in demand for electricity and natural gas from regional and local providers. The energy consumption during operation would not result in a substantial increase in energy demand and would not obstruct the ability of energy providers to comply with state and local plan requirements regarding clean energy. In addition, the new stations and layover facility would comply with applicable Cal. Code Regs., Title 24 standards, which require installation and maintenance of energy-efficient electrical systems. As discussed in Impact EN-1, energy use benefits achieved through operation of the Proposed Project would offset the short-term construction energy use in less than a year.

Overall, the Proposed Project would not obstruct the ability of energy providers to comply with state and local plan requirements regarding clean energy and impacts would be less than significant.

Atwater Station Alternative

The *City of Atwater General Plan* contains energy-related policies with similar intent to those included in the other general plans that are applicable to the Proposed Project. As described in Impact EN-1, the Atwater Station Alternative would reduce energy demand to a greater extent than the proposed Livingston Station because the Atwater Station Alternative would result in a slightly greater VMT reduction. These energy savings would fully offset energy use from train operation under the Atwater Station Alternative. For the same reasons as described for the Proposed Project, the Atwater Station Alternative would result in a less than significant impact, as it would not conflict with or obstruct applicable state and local plans related to clean energy or energy efficiency.

3.6.4.4 Overall Comparison of the Proposed Livingston Station and Atwater Station Alternative

Because the Atwater Station Alternative would have slightly higher ridership and associated VMT reductions than the proposed Livingston Station, the Atwater Station Alternative would have slightly greater reduction in energy demand compared to the proposed Livingston Station. As shown in

Table 3.6-9, annual energy reductions for the Atwater Station Alternative would be greater than the proposed Livingston Station by 1.2 and 1.3 billion Btu per year, relative to the No Project Conditions.

Overall, both the Atwater Station Alternative and the proposed Livingston Station would result in benefits from reduced energy demand. However, overall, the Atwater Station Alternative would result in greater benefits due to slightly greater reductions in energy demand.