4.18 Energy Conservation

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This section presents the impacts of the proposed project related to energy use and conservation. Existing energy supply sources and energy use in Monterey County and California as a whole are discussed. Regulatory requirements pertaining to energy use and conservation are described. Mitigation measures are prescribed to avoid or reduce the inefficient, wasteful, and unnecessary energy consumption associated with project implementation.

CEQA § 21100(b) requires evaluation of the potential energy impacts of a proposed project, and consideration of mitigation measures that would avoid or reduce the wasteful, inefficient, and unnecessary consumption of energy associated with the project. Appendix F of the CEQA Guidelines provides three goals for energy conservation:

- Decrease overall per capita energy consumption;
- Decrease reliance on natural gas and oil; and
- Increase reliance on renewable energy sources.

In addition, Appendix F of the CEQA Guidelines indicates that EIRs may include consideration of the following six energy conservation-related environmental impact types:

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

With regard to NEPA, the Council on Environmental Quality (CEQ) regulations 40 CFR 1502.16(e) require analysis of "energy requirements and conservation potential of various alternatives and mitigation measures."

This section does not address the potential air pollutant or greenhouse gas emissions associated with various forms of energy consumption. See Sections 4.10, Air Quality, and 4.11, Greenhouse Gas Emissions, for such discussions.

4.18.1 Setting/Affected Environment

The study area for the analysis of energy conservation impacts is state-wide in terms of energy supplies, and site specific in terms of the energy consumption associated with the project's various components. There are no MBNMS resources that would be affected by impacts identified in this section; all impacts related to energy conservation would occur outside of MBNMS boundaries. Therefore MBNMS resources are not described in the environmental setting/affected environment.

4.18.1.1 California's Energy Supplies

With a relatively mild Mediterranean climate and strict energy efficiency and conservation requirements, California's per capita energy consumption ranked 48th in the nation, indicating a low per capita use of energy; the state's low use of energy was due in part to this mild climate and its energy efficiency programs (USEIA, 2016a). Nevertheless, with a population of 38.7 million people, California is the second largest energy-consuming state in the U.S. (USEIA, 2016b).

Electricity

The production of electricity requires the consumption or conversion of energy resources such as water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in California in 2015, 44.0 percent was generated by natural gas-fired power plants, 6.0 percent by coal-fired power plants, 5.4 percent from large hydroelectric dams, 9.2 percent from nuclear power plants, and 21.9 percent from renewable sources including solar and wind power (CEC, 2016a). The remaining balance (13.5 percent) came from unspecified sources (CEC, 2016a).

Natural Gas

Most of the natural gas consumed in California is extracted from on- and off-shore sites from the producing regions of the southwest (42 percent), the Rocky Mountains (23 percent), and Canada (22 percent), while the remainder is produced in California (12 percent) (CEC, 2016c). Although contractually California can receive natural gas from any producing region in North America, due to the current natural gas pipeline configurations, California can only import physical supplies from the three producing regions referenced above.

In 2012, California consumed 2,313 billion cubic feet of natural gas per day (CEC, 2016c). Of this, the majority (45 percent) was used for California's electricity market. The other end users of natural gas were the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors. Transportation, storage, and transmission losses accounted for the remaining natural gas consumption (CEC, 2016c).

Gasoline

Gasoline is by far the largest transportation fuel by volume used in California. Nearly all of the gasoline used in California is obtained through the retail market. In 2012, approximately 14.5 billion gallons of gasoline were sold in California's retail market (CEC, 2016f).

Diesel

Diesel fuel is the second largest transportation fuel by volume used in California behind gasoline. It is estimated that approximately 44 percent of total diesel sales in California are associated with retail sales. In 2012, more than three billion gallons of diesel were sold in California's retail market (CEC, 2016e). According to the U.S. Department of Energy's Energy Information Administration, nearly all semi-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction, and military vehicles and equipment have diesel engines.

4.18.1.2 Local Energy Systems

Electricity

Electricity is generated and distributed via a network of high voltage transmission lines commonly referred to as the power grid. Pacific Gas and Electric Company (PG&E) provides electrical power to approximately 16 million people throughout a 70,000 square mile service area in Northern and Central California, including Monterey County (PG&E, 2016b). PG&E's service area extends from Eureka to Bakersfield (north to south), and from the Sierra Nevada to the Pacific Ocean (east to west). PG&E produces and purchases energy from a mix of conventional and renewable generating sources. **Table 4.18-1** shows the electric power mix that PG&E delivered to its customers in California in 2015.

TABLE 4.18-1
PG&E'S 2015 ELECTRIC POWER MIX DELIVERED TO CUSTOMERS

Power Source	Percentage of Total
Nuclear	23%
Natural Gas	25%
Large Hydroelectric	6%
Coal	<1%
Other[a]	<1%
Unspecified Sources[b]	17%
Eligible Renewables	30%

NOTES:
[a] "Other" includes diesel oil and petroleum coke (a waste byproduct of oil refining).
[b] "Unspecified Sources" refers to electricity purchased from the grid that is not traceable to specific generation sources by any auditable contract trail.

SOURCE: PG&E, 2016a.

Of the electricity delivered by PG&E to its customers in 2015, 25 percent was generated by natural gas-fired power plants, 6 percent came from large hydroelectric dams, and 23 percent came from nuclear power plants. The remaining in-state electrical power generation (47 percent)

was supplied by renewable sources (30 percent) and other unspecified sources (17 percent) (PG&E, 2016a).

The most recent year for electrical energy consumption data (2015) by county shows that the amount of electrical energy consumed within Monterey County totaled 2,666 million kilowatt-hours, which represents about 2.6 percent of PG&E's total electricity consumed in 2015 (CEC, 2016b).

Natural Gas

Natural gas service is provided in the project area by PG&E, which serves approximately 16 million customers through 6,750 miles of gas transmission lines. PG&E's natural gas is delivered via high-pressure pipelines to its load centers with compressors used to maintain transmission pressure. The gas is then received at either an underground storage facility or redistributed through another series of smaller distribution pipelines. The most recent year of natural gas consumption data (2015) by county shows that the amount of natural gas consumed within Monterey County totaled 102.46 million therms of natural gas, which represents about 2.3 percent of PG&E's total natural gas consumed in 2015 (CEC, 2016b).

Gasoline and Diesel Fuel

In 2012, all retail sales of diesel fuel in Monterey County were 30 million gallons (CEC, 2016e), suggesting that the total diesel sales in the county were approximately 68 million gallons given that approximately 44 percent of total diesel sales in California are associated with retail sales. The total 2012 sales of gasoline in the county were 147 million gallons (CEC, 2016f).

4.18.2 Regulatory Framework

This section summarizes federal, state, and local environmental laws, policies, plans, regulations, and/or guidelines (hereafter referred to generally as "regulatory requirements") pertaining to energy efficiency and conservation and indicates the project's consistency with those regulatory requirements. The consistency findings are for the project as proposed, without mitigation. In cases where the proposed project would be potentially inconsistent with the applicable regulatory requirement, the reader is referred to a specific impact discussion in Section 4.18.5, Direct and Indirect Effects of the Proposed Project, where the potential inconsistency is addressed further.

4.18.2.1 Federal Regulations

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act required that all vehicles sold in the U.S. meet certain fuel economy goals. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not subject to

fuel economy standards. The project would be consistent with the Act because all passenger cars and light trucks that would be used directly or indirectly associated with the project would be required to comply with the applicable fuel economy standards.

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can obtain federal tax credits for fuel-efficient appliances and products, including buying hybrid vehicles, building energy-efficient buildings, and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment. It is unknown whether or not CalAm will attempt to obtain any federal tax credits associated with the project under the Energy Policy Act of 2005.

4.18.2.2 State Regulations

California Coastal Act

The California Coastal Act (Public Resources Code Section 30000 et seq.) was enacted by the State Legislature in 1976 to provide long-term protection of the State's 1,100-mile coastline for the benefit of current and future generations. The Coastal Act provides for the long-term management of lands within California's coastal zone boundary, as established by the Legislature and defined in Coastal Act (Section 30103). The width of the coastal zone varies across the State, extending inland a couple hundred feet in some locations to 5 miles in others, and offshore out to 3 miles. A map of the coastal zone in the project vicinity is shown in **Figure 4.8-1**.

The Coastal Act includes specific policies for management of natural resources and public access within the coastal zone (see Division 20 of the Public Resources Code). Of primary relevance to energy conservation is a Coastal Act policy concerning minimizing adverse impacts by requiring new development to minimize energy consumption and vehicle miles traveled. A preliminary assessment of project consistency with these priorities is provided below. Final determinations regarding project consistency are reserved for the Coastal Commission.

With respect to minimizing energy consumption and vehicle miles traveled, MPWSP construction will be consistent with Coastal Act policies. The proposed project would be required to comply with State and local regulations regarding energy efficiency and would be designed to maximize energy efficiency and minimize energy consumption. With respect to vehicle miles travelled, the proposed project would result in both short-term and long-term increases in traffic on regional and local roadways. However these increases would be reduced with the implementation of mitigation.

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every 2 years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the state to assist in

the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

The CEC adopted the 2016 Integrated Energy Policy Report in February, 2017. The 2016 Integrated Energy Policy Report provides the results of the CEC's assessment of a variety of issues, and covers a broad range of topics including: initiatives to reduce greenhouse gas emissions; transformation of the electricity system towards renewable energy sources; the management of aging energy infrastructure; the environmental performance of the electricity generation system; landscape-scale planning the response to the leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues; updates on Southern California electricity reliability; methane leakage; climate adaptation activities for the energy sector; climate and sea level rise scenarios; and the California Energy Demand Forecast (CEC, 2016i). Although the integrated energy plan is not directly applicable to the project given that the project would not include utility-scale energy generation or transmission infrastructure, it is applicable to the operations of PG&E, which is the public utility that would provide the required electricity for the project. Given that PG&E is required to comply with the applicable provisions of the integrated energy plan, electricity obtained for the project would be generated in a manner consistent with the spirit of the integrated energy plan.

Title 24 Building Energy Efficiency Standards (California Energy Code)

The California Building Standards Commission first established Energy Efficiency Standards for California in 1978, in response to a legislative mandate to reduce California's energy consumption. The standards, which are contained in the California Code of Regulations, Title 24, Part 6 (also known as the California Energy Code) are updated periodically by the CEC to allow consideration and possible incorporation of new energy efficiency technologies and methods. The standards regulate energy consumed in nonresidential buildings for heating, cooling, ventilation, water heating, and lighting (CEC, 2013b). Title 24 is implemented through the local planning and permit process and therefore project components requiring building permits would be required to comply with Title 24. Title 24 is updated approximately every 3 years. The newest version was adopted in January 2016, and continues to improve upon the standards for new construction of, and additions and alterations to, residential and nonresidential buildings (CEC, 2016f and 2016g). All heating, cooling, ventilation, water heating, and lighting systems in buildings developed as part of the project would be required to incorporate the applicable standards of Title 24. The project would be required to be consistent with Title 24 Building Energy Efficiency Standards.

California Green Building Standards Code (Cal Green)

On January 1, 2014, the California Building Standards Commission adopted the California Green Building Standards Code (Part 11 of the Title 24 Building Standards Code) for all new construction statewide (CBSC, 2014). The code sets targets for energy efficiency, water

consumption, dual plumbing systems for potable and recyclable water, diversion of construction waste from landfills, and use of environmentally sensitive materials in construction and design, including eco-friendly flooring, carpeting, paint, coatings, thermal insulation, and acoustical wall and ceiling panels. The code identifies non-residential mandatory measures regarding site selection, building design, building siting and development to protect, restore, and enhance the environmental quality of the site and respect the integrity of adjacent properties. The proposed project would be required to incorporate the applicable provisions of the California Green Building Standards Code and would therefore be consistent with this set of regulations.

4.18.2.3 Applicable Regional and Local Land Use Plans, Policies, and Regulations

Table 4.18-2 presents the state, regional, and local land use plans, policies, and regulations pertaining to energy conservation that are relevant to the MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect. **Table 4.18-2** also indicates project consistency with such plans, policies, and regulations. The analysis concludes that the proposed project would not conflict with the applicable plans, policies, or regulations, and no further discussion is provided.

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TABLE 4.18-2
APPLICABLE REGIONAL AND LOCAL PLANS AND POLICIES RELEVANT TO ENERGY CONSERVATION

Project Planning Region	Applicable Planning Document	Plan Element/ Section	Project Component(s)	Specific Plan, Policy, or Ordinance	Relationship to Avoiding or Mitigating a Significant Environmental Impact	Project Consistency with Plan, Policy, or Ordinance
County of Monterey and Cities of Marina and Seaside	California Code of Regulations, Title 24, Part 6	Building Energy Efficiency Standards	Subsurface slant wells, MPWSP Desalination Plant, and Carmel Valley Pump Station	Monterey County and the cities of Marina and Seaside have incorporated the California Building Energy Efficiency Standards Code by reference into their municipal codes.	This section of the California Building Code requires compliance with Title 24 through the building permit process.	Consistent: Energy efficiency elements would be incorporated into building support systems, electrical and treatment equipment, and process design associated with the MPWSP Desalination Plant. Building support systems would comply with Title 24 Building Energy Efficiency Standards. The proposed action would be required to comply with State and local regulations regarding energy efficiency and would be designed to maximize energy efficiency and minimize energy consumption. The proposed subsurface slant wells reduce energy demand when compared to open water intakes by providing an initial level of treatment through the beach sand. In addition, the proposed project would incorporate various energy efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand.
County of Monterey (coastal zone and inland areas)	Monterey County Code	Chapter 18.12 – Green Building Standards Code	MPWSP Desalination Plant, Source Water Pipeline, new Desalinated Water Pipeline, Brine Discharge Pipeline, Brine Mixing Box, Pipeline to CSIP Pond, Castroville Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, and Carmel Valley Pump Station	***Section 18.12*** adopts the 2010 California Green Building Standards Code by reference and includes incentives for new construction to incorporate green building practices.	The 2010 California Green Building Standards are designed to reduce energy consumption.	Consistent: The proposed action would be required to comply with State and local regulations regarding energy efficiency.
County of Monterey (coastal zone and inland areas)	Monterey County General Plan	Conservation and Open Space		***Policy OS-9.1:*** The use of solar, wind and other renewable resources for agriculture, residential, commercial, industrial, and public building applications shall be encouraged.	The intent of this policy is to promote efficient energy use.	Consistent: Although the proposed project does not include the use of renewable energy resources, it does include numerous technological design features to reduce operational energy demand and maximize energy efficiency, including the incorporation of various energy efficient design elements into building support systems, electrical and treatment equipment, and process design.

SOURCE: County of Monterey, 2010.

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4.18.3 Evaluation Criteria

Based on Appendix F of the CEQA Guidelines, implementation of the proposed project would have a significant impact related to energy conservation if it would:

- Use large amounts of fuel or energy in an unnecessary, wasteful, or inefficient manner;
- Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand;
- Require or result in the construction of new electrical generation and/or transmission facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Conflict with existing energy standards, including standards for energy conservation.

Based on the nature of the proposed project, the following significance criteria are not addressed further in the EIR/EIS:

> ***Conflict with energy standards, including standards for energy conservation.*** The local government jurisdictions that encompass the project area, including Monterey County and the Cities of Marina, Seaside, Sand City, and Pacific Grove, have incorporated the California Building Standards Code by reference into their municipal codes. As described in Section 4.18.2.2, above, Part 6 of the California Building Standards Code contains the California Energy Code (CCR Title 24, Part 6). The local government building permit application review process would ensure that the proposed project is compliant with all applicable state and local energy conservation standards. In addition, as reflected in Section 4.18.2.3, the plan, policy, and regulation consistency analysis conducted for the project concluded that the proposed project would not conflict with the applicable plans, policies, or regulations. Therefore, no impact related to compliance with applicable energy and energy conservation standards would result, and this criterion is not discussed further in this section.
>
> ***Require or result in the construction of new electrical generation and/or transmission facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects.*** The proposed project would not require or result in the construction of new or expanded electrical generation and/or transmission facilities. As discussed in Chapter 3, Description of the Proposed Project, new underground and aboveground powerlines would be constructed only to connect the proposed facilities to the existing local PG&E power grid.

4.18.4 Approach to Analysis

This analysis is based, in part, on basic assumptions regarding construction-related diesel and gasoline consumption for the proposed project, CalAm's proposed energy efficiency design elements for the MPWSP Desalination Plant (CDM Smith, 2014), and estimates of the operational electricity requirements of the proposed project (CalAm, 2016). The analysis focuses on the anticipated energy demand and energy efficiency of the proposed project as a whole, including during construction, operation, maintenance, and decommissioning of the proposed facilities. This analysis assumes all electrical power needed for project operations would be

provided by the local PG&E electrical power grid. The energy efficiency measures that would be incorporated into MPWSP Desalination Plant design, as well as an alternative energy source that is being pursued by CalAm to support project operations, are summarized below.

4.18.4.1 Fuel Consumption

Off-road equipment inventories and construction and maintenance activity assumptions were used by the CPUC's consultant (Environmental Science Associates [ESA]) to estimate fuel amounts that would consumed by off-road equipment during construction and maintenance of the project. Fuel consumption factors for off-road equipment were derived from equipment inventory data using the California Air Resources Board's off-road emissions inventory database. Fuel use that would be associated with commuting workers and truck hauling during construction and operation of the project were also estimated using trip data projected for the project (see **Appendix G1** for all fuel consumption factors and assumptions).

4.18.4.2 Energy Efficient Design Elements for Desalination Plant

As discussed in Chapter 3, Description of the Proposed Project, the proposed project would use reverse osmosis (RO) technology to remove salts and other minerals from seawater. During the RO process pretreated source water is forced at very high pressures through RO membranes. Generating the necessary high pressure can require a large amount of energy. However, the MPWSP Desalination Plant would incorporate various technological advancements to reduce the operational energy demand as much as possible. These advances include the use of the latest generation of RO membranes that utilize the lowest operating pressure requirements (Pacific Institute, 2013). In addition, the RO system would incorporate an energy recovery system that utilizes pressure exchange technologies to recover energy from the high-pressure waste stream and reduce overall pumping power requirements (and energy consumption) for the RO modules (CDM Smith, 2014).

Energy efficiency elements would also be incorporated into building support systems, electrical and treatment equipment, and process design associated with the MPWSP Desalination Plant. Building support systems would comply with Title 24 Building Energy Efficiency Standards. These standards include the use of motion detectors for lighting, energy-efficient fluorescent lamps for interior lighting, and high pressure sodium vapor lamps for exterior lighting. Heating, ventilation, and insulation systems would be designed to use waste heat from motors and electric equipment to heat certain areas of the treatment and process buildings and reduce the overall energy use of the plant. Piping system materials and sizing would be designed to limit pressure losses and reduce pumping and energy requirements. Electrical and treatment equipment would include variable frequency drives to reduce the operating speed of pumps to match the pump discharge pressure requirements and reduce energy usage (CDM Smith, 2014).

4.18.4.3 Landfill-Gas-to-Energy Option

This EIR/EIS conservatively assumes that all proposed operational power requirements would be met via the existing PG&E power grid.

However, CalAm is actively pursuing a renewable energy source option with Monterey Regional Waste Management District (MRWMD) that would allow CalAm to meet a portion of the MPWSP Desalination Plant operational energy requirements with methane gas from the existing MRWMD landfill-gas-to-energy (LFGTE) facility located adjacent to the MPWSP Desalination Plant site. The MRWMD LFGTE facility produces 5.07 Megawatts (MW) of continuous electricity that is sold to PG&E. MRWMD plans to increase the electric generation capacity of the LFGTE facility by 3.2 MW in two stages; the first phase of improvements would increase the capacity by 1.6 MW, followed by an additional 1.6-MW increase in six to eight years. Once the expansion is complete, the total generation capacity of the LFGTE facility would be 8.27 MW (ESI, 2014).

If this renewable energy source option is implemented, about half of the MPWSP Desalination Plant operational energy requirements could be met with methane gas from the LFGTE facility. Overhead powerlines, electrical transformers, metering devices, and switchgear would be needed to connect the MRWMD LFGTE facility with the MPWSP Desalination Plant. Implementation of this option and the construction of the associated interconnection improvements would require separate environmental review.

4.18.5 Direct and Indirect Effects of the Proposed Project

Table 4.18-3 provides a summary of the proposed project's impacts associated with energy conservation.

TABLE 4.18-3
SUMMARY OF IMPACTS – ENERGY CONSERVATION

Impacts	Significance Determinations
Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning.	LSM
Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations and maintenance.	LS
Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations.	LS
Impact 4.18-C: Cumulative impacts related to energy conservation.	LSM

NOTES:
LSM = Less than Significant impact with Mitigation
LS = Less than Significant

4.18.5.1 Construction Impacts

Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during construction and decommissioning. *(Less than Significant with Mitigation*)

All Project Components

Construction of the proposed project would require the use of fuels (primarily gasoline and diesel) for operation of construction equipment (e.g., dozers, excavators, and trenchers), construction vehicles (e.g., dump and delivery trucks), and construction worker vehicles. Direct energy use would also include the use of electricity required to power construction equipment (e.g., welding machines and electric power tools). In addition, project construction would result in indirect energy use associated with the extraction, manufacturing, and transportation of raw materials to make construction materials. Indirect energy use typically represents about three-quarters of the total construction energy consumed, while direct energy use represents about one-quarter (Hannon et al., 1978).

Although the precise amount of construction-related direct energy consumption that would occur under the proposed project is unknown, it is estimated that off-road construction equipment would operate for a total of approximately 138,126 hours and would consume a total of approximately 387,846 gallons of diesel fuel at an average rate of 2.8 gallons per hour. With regard to vehicle use during construction, workers' personal vehicles would make 154,241 trips and consume approximately 74,512 gallons of gasoline (assuming an average fuel economy of 20.7 miles per gallon) and heavy haul trucks would make 79,884 trips and consume approximately 718,956 gallons of diesel fuel (assuming an average consumption rate of 7.0 miles per gallon) (see **Appendix G1** for all assumptions and fuel use factors). When averaged over the two-year construction period, annual fuel use for off-road construction equipment would be approximately 193,923 gallons of diesel fuel per year, construction workers' personal vehicles would consume approximately 37,256 gallons of gasoline per year, and heavy haul trucks would consume approximately 359,478 gallons of diesel fuel per year. The total average annual fuel use during the two-year construction period would be approximately 37,256 gallons per year of gasoline and approximately 553,401 gallons per year of diesel fuel.

These annual average fuel use amounts are equivalent to less than one percent of the total amounts of gasoline and diesel fuel sold in Monterey County in 2012 (see Section 4.18.1.2, *Local Energy Systems*). With regard to decommissioning of the project, amounts of direct energy consumption that would occur at the end of the useful life of the project (in approximately 40 years) related to decommissioning is unknown; however, it is anticipated that the amounts would be similar to those required for construction, discussed above.

The amount of electricity consumption that would be associated with construction of the project is unknown and cannot be estimated as it would be too speculative given existing data; however, the amount would not be expected to be substantial.

While the overall transportation energy use requirements would not be significant relative to the overall sales of transportation fuels in the county, construction and decommissioning activities

could result in wasteful or inefficient use of energy if construction and decommissioning equipment is not well maintained, if equipment is left to idle when not in use, or if haul trips are not planned efficiently. For all project components, the potential for construction and decommissioning to use large amounts of fuel or energy in a wasteful or inefficient manner is considered a significant impact. However, with implementation of **Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan)** and **4.10-1b (Idling Restrictions)**, which identify several performance standards, would ensure construction activities are conducted in a fuel-efficient manner and minimize idling times for construction equipment and vehicles, the impact would be reduced to a less-than-significant level.

Mitigation Measures

Mitigation Measure 4.18-1 applies to all project components.

> **Mitigation Measure 4.18-1: Construction Equipment and Vehicle Efficiency Plan.**
>
> CalAm shall contract a qualified professional (i.e., construction planner/energy efficiency expert) to prepare a Construction Equipment Efficiency Plan that identifies the specific measures and performance standards that CalAm (and its construction contractors) will implement as part of project construction and decommissioning to increase the efficient use of construction equipment and vehicles to the maximum extent feasible. Such measures shall include, but not necessarily be limited to: procedures to ensure that all construction equipment is properly tuned and maintained at all times; requirement to provide options for worker carpooling; a commitment to utilize existing electricity sources where feasible rather than portable diesel-powered generators; and identification of procedures (including the routing of haul trips) that will be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner. The plan shall be submitted to CPUC and the Sanctuary for review and approval at least 30 days prior to the beginning of construction activities and at least 30 days prior to the beginning of decommissioning activities.

Mitigation Measure 4.10-1b applies to all project components.

> **Mitigation Measure 4.10-1b: Idling Restrictions.**
>
> (See Impact 4.10-1 in Section 4.10, Air Quality, for description.)

4.18.5.2 Operational and Facility Siting Impacts

Impact 4.18-2: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during operations and maintenance. (*Less than Significant*)

All Project Components

Operation of the proposed project would result in the consumption of electricity to operate the subsurface slant wells, MPWSP Desalination Plant (e.g., reverse osmosis [RO] modules, pumps, lighting, process controls, heating, ventilation, and air conditioning [HVAC] systems), and other proposed facilities (e.g., Carmel Valley Pump Station).

In general, desalination plants require large amounts of electricity to operate and, as a result, operation of the MPWSP would result in the long-term consumption of substantial amounts of electricity, including electricity produced from non-renewable resources. CalAm's current electrical power demand associated with its existing water production facilities (primarily Carmel River and Seaside Groundwater Basin production wells) is approximately 11,466,000 kilowatt hours (kWh) per year, which represents the baseline electrical demand for the proposed project. CalAm's operational electrical power demand for water production under the proposed project (including water produced from the MPWSP Desalination Plant, Seaside Groundwater Basin production wells, ASR system, and the Carmel River, as well as conveyance of that water) is estimated to be approximately 63,364,310 kWh per year (CalAm, 2016). Therefore, the net increase in annual electrical power demand for water production would be approximately 51,898,310 kWh per year, which would equal approximately 1.95 percent of the total electrical demand in Monterey County and approximately 0.05 percent of total electricity distributed by PG&E.

In addition to electricity use, consumption of fuel would be required for CalAm staff commute trips to and from the MPWSP Desalination Plant and vehicle trips associated with routine maintenance and operations. The MPWSP Desalination Plant would be operated by approximately 30 CalAm employees, resulting in approximately 60 commuter vehicle trips per day. Approximately six truck trips would occur five days a week for the delivery of materials to the MPWSP Desalination Plant. These vehicle trips would consume an estimated 10,580 gallons of gasoline and 14,040 gallons of diesel fuel annually and would contribute to the energy demand required to support operation of the proposed project. In addition to vehicle use, maintenance of the slant wells would require the use of off-road equipment every five years. When averaged over the five-year period, the equipment required for this maintenance would consume approximately 1,469 gallons of diesel fuel annually (see **Appendix G1** for fuel use assumptions). Overall, the amount of gasoline and diesel required to fuel the vehicles and equipment during operation and maintenance of the project would be relatively small (approximately 10,580 gallons annually and 15,509 gallons annually, respectively). These vehicle trips and equipment use would be necessary to support operation and maintenance of the proposed project and would be equivalent to approximately 0.01 percent of the total amounts of gasoline and 0.02 percent total diesel fuel sold in Monterey County in 2012 (see Section 4.18.1.2, *Local Energy Systems*). The overall transportation energy use requirements during operation and maintenance would not be significant relative to the overall sales of transportation fuels in the county.

Operation of the proposed project would not result in unnecessary consumption of energy. Operation would use fossil fuels and electricity to develop potable water supplies and convey the water to CalAm's Monterey District service area. The MPWSP is needed to replace CalAm's existing supplies that have been constrained by legal decisions affecting diversions from the Carmel River and pumping from the Seaside Groundwater Basin (see Chapter 2, Water Demand, Supplies, Water Rights, and the Existing Water System, for additional information regarding the legal decisions). While the proposed project would require a large amount of electricity each year to operate, it is necessary to provide drinking water to area residents to protect human health and safety. Further, the proposed project would not consume energy wastefully or inefficiently. As summarized above, and described in Chapter 3, Description of the Proposed Project,

Section 3.4.5, Power Demand, the design and construction of the MPWSP Desalination Plant would incorporate various energy-efficient design elements into building support systems, electrical and treatment equipment, and process design that would reduce operational energy demand.

Although the proposed MPWSP Desalination Plant would be designed to use energy as efficiently as possible using the most recent technological advancements available, implementation of the proposed project would result in a substantial increase in electrical power demand. However, the use of energy for operation of the MPWSP Desalination Plant is necessary because it would provide a reliable supply of water to meet existing demand for the Monterey District. Therefore, electricity consumed as a result of project operations would not be unnecessary, wasteful, or inefficient and the impact related to the use of fuel and energy during project operations would be less than significant.

Mitigation Measures

None proposed.

Impact 4.18-3: Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during operations. (*Less than Significant*)

As discussed above, implementation of the proposed project would increase CalAm's total electrical demand by approximately 51,898,310 kWh per year, which would represent approximately 1.95 percent of the County's electricity usage in 2015 (2,666 million kWh) and approximately 0.05 percent of electricity distributed by PG&E in 2015 (102,538 million kWh) (CalAm, 2016; CEC, 2016b).

The proposed project's impact on local and regional energy supplies depends on several factors; however, the primary energy source of concern associated with project operation is electrical power provided by PG&E. Based on PG&E's preliminary review of the proposed project's maximum electrical demand, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed project (PG&E, 2016c). Therefore, implementation of the proposed project could be accommodated by the existing local and regional energy supplies and transmission facilities and the impact would be less than significant. Further, implementation of Mitigation Measure 4.11-1 described in Section 4.11, Greenhouse Gas Emissions, would improve the energy efficiency of the proposed project if feasible.

Mitigation Measures

Mitigation Measure 4.11-1 is relevant to energy conservation because it would reduce energy consumption; however, it is not required in order to reduce Impact 4.18-3 to a less-than-significant level. As described above, Impact 4.18-3 is less than significant even without implementation of this measure.

Mitigation Measure 4.11-1 applies to the project as a whole.

> **Mitigation Measure 4.11-1: GHG Emissions Reduction Plan.**
>
> (See Impact 4.11-1 in Section 4.11, Greenhouse Gas Emissions, for description.)

4.18.6 Cumulative Effects of the Proposed Project

The cumulative scenario and cumulative impacts methodology are described in Section 4.1.7. Table 4.1-2 lists potential cumulative projects.

Impact 4.18-C: Cumulative impacts related to energy conservation. (*Less than Significant with Mitigation*)

As described in Section 4.18.3, the proposed project would have no impact related to conflicting with energy standards or the construction or expansion of new electrical generation and/or transmission facilities. Therefore, it would not contribute to cumulative impacts related to these topics.

Cumulative impacts associated with energy and energy conservation are considered in the context of both local and regional energy supply and demand. As described in Section 4.18.5.1, above, project construction could use large amounts of fuel or energy in a wasteful or inefficient manner, which in the context of local and regional energy supplies, in combination with the energy demands of the projects described in Table 4.1-2 in Section 4.1, could result in a significant cumulative impact. **Mitigation Measures 4.18-1 (Construction Equipment and Vehicle Efficiency Plan)** and **4.10-1b (Idling Restrictions)** would be implemented to ensure construction activities would be conducted in a fuel-efficient manner. Idling times would be limited for construction equipment and vehicles to ensure that energy waste and inefficiency would be minimized. Energy used during construction would primarily be in the form of gasoline and diesel fuel. Even if project construction was to occur simultaneously with other cumulative projects, the cumulative use of energy resources during construction would be consistent with normal construction practices and would comply with efficiency- and conservation-related policies intended to address cumulative energy consumption statewide. Therefore, after mitigation, project construction would have a less than significant contribution to a significant cumulative impact on the supply and/or availability of these fuel sources during construction.

During project operation, various energy conservation measures would be implemented (see Section 4.18.4) as part of the proposed project to reduce energy waste, ensuring that operational

impacts associated with energy use would not be unnecessary, wasteful, or inefficient. In addition, Mitigation Measure 4.11-1, GHG Emissions Reductions Plan, (see Impact 4.11-1 in Section 4.11.5) ensures that the project's operational electricity use results in net zero GHG emissions via the following loading order: on-site and/or locally secured renewable energy; off-site purchases of renewable energy; Renewable Energy Certificates (RECs); and Carbon Offsets. Although project operation would result in long-term consumption of substantial amounts of electricity, PG&E, who would be the electrical supplier, has indicated that it has adequate capacity and infrastructure to support the proposed project (PG&E, 2016c). As discussed above under Impact 4.18-3, the anticipated increase in electricity consumption for the proposed project would represent approximately 2 percent of Monterey County's annual usage, and an even smaller percentage of PG&E's overall service area usage (0.05 percent). It should be noted that PG&E purchases wholesale electric energy and capacity from generators and suppliers and periodically conducts solicitations / requests for offers (RFO) for additional supplies of conventional and renewable electricity. Therefore, in the event that many other cumulative projects listed in **Table 4.1-2** that would be high demand electricity users, such as the Monterey Bay Regional Water Project (DeepWater Desal, No. 34), request electrical service from PG&E, additional wholesale electric energy may need to be purchased by PG&E. In addition, some reinforcement or upgrades of the existing distribution system may also be required, but this would not substantially constrain local or regional energy supplies. Therefore, the proposed project would have a less than significant contribution to a significant cumulative impact associated with the unnecessary, wasteful, or inefficient use of energy, or with energy supply, either at a local or regional level, during operation.

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