# 4.18 Energy Conservation

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CEQA section 21100(b) requires that EIRs evaluate the potential energy impacts of a proposed project, and consider mitigation measures that would avoid or reduce the wasteful, inefficient, and unnecessary consumption of energy. 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.

This section addresses the impacts of the Monterey Peninsula Water Supply Project (MPWSP or proposed project) related to energy conservation. Existing energy supply sources and energy use in California as a whole and in the Monterey region are discussed. Regulatory requirements pertaining to energy conservation are described. Mitigation measures are prescribed to avoid or reduce the inefficient, wasteful, and unnecessary energy consumption during project construction and operations.

## 4.18.1 Setting

### 4.18.1.1 Energy Production and Distribution in California

#### *California's Energy Supplies*

Forms of energy generated or obtained within California include electricity, natural gas, and petroleum. California's energy system generates 71 percent of the electricity, 12 percent of the natural gas, and 38 percent of the petroleum consumed or used in the state. According to the California Energy Commission (CEC), the rest of the state's energy is imported, and includes electricity from the Pacific Northwest and the Southwest; natural gas purchases from Canada, the Rocky Mountain states, and the southwest; and crude oil imported from Alaska and foreign sources (CEC, 2011).

#### *Electricity*

The production of electricity requires the consumption or conversion of energy resources including water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in-state in 2013, 44 percent was generated by natural gas-fired power plants, 8 percent was generated by coal-fired power plants, 8 percent came from large hydroelectric dams, and

9 percent came from nuclear power plants. The remaining in-state electrical power generation (19 percent) was supplied by renewable sources (PG&E, 2014b).

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 15 million people throughout a 70,000 square mile service area in Northern and Central California, including Monterey County (PG&E, 2013). 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, which travel through its electric transmission and distribution systems to reach customers. **Table 4.18-1** shows the electric power mix that PG&E delivered to its retail customers in California in 2013.

**TABLE 4.18-1**
**PG&E'S 2013 ELECTRIC POWER MIX DELIVERED TO RETAIL CUSTOMERS**

| Power Source | Percentage of Total |
|---|---|
| Nuclear | 22% |
| Natural Gas | 28% |
| Large Hydroelectric | 10% |
| Coal | >0% |
| Other[a] | >0% |
| Unspecified Sources[b] | 18% |
| Eligible Renewables | 22% |
| *Geothermal* | *23% of Eligible Renewables* |
| *Biomass and Waste* | *18% of Eligible Renewables* |
| *Wind* | *27% of Eligible Renewables* |
| *Small Hydroelectric* | *9% of Eligible Renewables* |
| *Solar* | *23% of Eligible Renewables* |

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, 2014b.

### *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, 2011). Although contractually California can receive natural gas from any producing region in North America, it can only import physical supplies from the three producing regions referenced above due to the current pipeline configurations. 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.

In 2006, California consumed 6,032 million cubic feet of natural gas per day. Of this, the majority (43 percent) was used for California's electricity market. Other end users of natural gas include the residential (22 percent), industrial (23 percent), and commercial (10 percent) sectors. Transportation, storage, and transmission losses account for the remaining natural gas consumption (2 percent) (CEC, 2011).

### 4.18.1.2 Energy Production and Distribution in Monterey County

Energy consumers within the county are also served by regional generation sources linked to the county by the transmission grid. Electricity is distributed within the county through local lines owned and operated by PG&E. The most recent year for annual electrical energy consumption data (2012) shows that the amount of electrical energy consumed within Monterey County totaled 2,642 million kilowatt-hours, which represents about 3 percent of PG&E's total electricity consumed in 2012 (CEC, 2012).

Natural gas is delivered to Monterey County through a regional natural gas transmission system owned and operated by PG&E. Within the county, PG&E also owns and maintains a network of smaller transmission, distribution, and service lines. The most recent year of annual natural gas consumption data (2012) shows that the amount of natural gas consumed within Monterey County totaled 111.96 million therms of natural gas, which represents about 2.4 percent of PG&E's total natural gas consumed in 2011 (CEC, 2012).

## 4.18.2 Regulatory Framework

### 4.18.2.1 Federal Regulations

#### *Energy Policy Act of 2005*

The Energy Policy Act of 2005 (the Act) 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 purchasing 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.

### 4.18.2.2 State Regulations

#### *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 two 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 2013 Integrated Energy Policy Report on February 20, 2014. The 2013 Integrated Energy Policy Report provides the results of the CEC's assessment of a variety of issues, including: ensuring that the state has sufficient, reliable, and safe energy infrastructure to meet current and future energy demands; monitoring publicly-owned utilities' progress toward achieving 10-year energy efficiency targets; defining and including zero-net-energy goals in state building standards; overcoming challenges to increased use of geothermal heat pump/ground loop technologies and procurement of biomethane; using demand response to meet California's energy needs and integrate renewable technologies; removing barriers to bioenergy development; planning for California's electricity infrastructure needs given potential retirement of power plants and the closure of the San Onofre Nuclear Generating Station; estimating new generation costs for utility-scale renewable and fossil-fueled generation; planning for new or upgraded transmission infrastructure; monitoring utilities' progress in implementing past recommendations related to nuclear power plants; tracking natural gas market trends; implementing the Alternative and Renewable Fuel and Vehicle Technology Program; addressing the vulnerability of California's energy supply and demand infrastructure to the effects of climate change; and planning for potential electricity system needs in 2030 (CEC, 2014a).

### *Title 24 Building Energy Efficiency Standards*

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, 2008). 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 three years. The newest version was adopted in July 2014 and continues to improve upon the standards for new construction of, and additions and alterations to, residential and nonresidential buildings (CEC, 2014b).

### *California Green Building Standards Code (Cal Green)*

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 on July 17, 2008. Originally a voluntary measure, the code became mandatory in 2010. 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.

### 4.18.2.3 Local Regulations

**Table 4.18-2** describes the energy-related state, regional, and local land use plans, policies, and ordinances relevant to the MPWSP and that were adopted for the purpose of avoiding or mitigating an environmental effect. Also included in **Table 4.18-2** is an analysis of proposed project consistency with such plans, policies, and ordinances. Where the analysis concludes the project would not conflict with the applicable plan, policy, or ordinance, the finding is noted and no further discussion is provided. Where the analysis concludes the proposed project may conflict with the applicable plan, policy, or ordinance, the reader is referred to Section 4.18.3, Impacts and Mitigation Measures, for additional discussion.

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**TABLE 4.18-2**
**APPLICABLE STATE, 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, ASR Pump Station, ASR-5 and ASR-6 Wells, Valley Greens Pump Station (both site options) | 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: Project plans would need to demonstrate conformance with the 2013 Building Energy Efficiency Standards, as adopted and/or modified by the local jurisdiction. Project plan conformity would be evaluated during the local jurisdiction's building permit application review process. Compliance with these standards is mandatory. |
| Cities of Marina and Monterey (coastal zone) | California Coastal Act | Article 6, Development | Subsurface Slant Wells and Monterey Pipeline | ***Section 30253: Minimization of Adverse Impacts.*** New development shall do all of the following:<br>d. Minimize energy consumption and vehicle miles traveled. | This policy is intended to minimize adverse impacts related to energy consumption and vehicle miles travelled. | Potentially Inconsistent: Short-term construction activities in the cities of Marina and Monterey that would be associated with the proposed project could result in wasteful or inefficient use of energy unless appropriate mitigation is incorporated. This issue is addressed further under Impact 4.18-1, which identifies mitigation measures whose implementation would minimize or avoid this potential inconsistency.<br>The use of fuel and energy during project operations would not be unnecessary, wasteful, or inefficient. |
| County of Monterey (coastal zone and inland areas) | Monterey County Code | Chapter 18.12 – Green Building Standards Code | MPWSP Desalination Plant, Source Water Pipeline, Desalinated Water Pipeline, Salinas Valley Return Pipeline, Brine Discharge Pipeline, Ryan Ranch-Bishop Interconnection Improvements, Main System-Hidden Hills Interconnection Improvements, Valley Greens Pump Station (site Options 1 & 2) | ***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 project would be constructed in a manner that would be consistent with the 2010 California Green Building Standards, the implementation of which are mandatory. |
| 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: This policy obligates the County to encourage the use of renewable resources, but does not obligate project sponsors to incorporate renewable resources into their projects. As discussed below in Section 4.18.3.2, CalAm is pursuing a landfill gas-to-energy option with Monterey Peninsula Waste Management District (MPWMD) to decrease the project's regional energy demand. |

SOURCE: County of Monterey, 2013.

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# 4.18.3 Impacts and Mitigation Measures

## 4.18.3.1 Significance Criteria

The significance criteria for this analysis are based on the guidance provided in Appendix F of the CEQA Guidelines. For the purpose of this EIR, implementation of the proposed project would result in a significant impact associated with 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 section:

> ***Conflict with energy standards, including standards for energy conservation.*** The local government jurisdictions within the project area, including the County of Monterey, and the cities of Marina, Seaside, Sand City, Monterey, and Pacific Grove have each 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. 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.*** As discussed in Chapter 3, Project Description, new underground and aboveground powerlines would be constructed between existing powerlines in the area and the proposed project facilities to connect to the local PG&E power grid. The impacts associated with overhead powerlines are evaluated in this EIR. This chapter (Chapter 4, Environmental Setting, Impacts, and Mitigation Measures) discusses the potential impacts and identified mitigation measures associated with these facilities.

## 4.18.3.2 Approach to Analysis

The energy conservation analysis is based, in part, on estimates of construction-related diesel and gasoline consumption by the proposed project that were prepared for this EIR (see **Appendix G**), proposed energy efficiency design elements for the MPWSP Desalination Plant (CDM Smith, 2014), and estimates of the operational electricity requirements of the proposed project. The

analysis focuses on the anticipated energy demand and energy efficiency of the proposed project as a whole, including construction and operation of the MPWSP Desalination Plant, pump stations, aquifer storage and recovery (ASR) improvements, and all other proposed facilities. The analysis is based on the assumption that all electrical power needed for project operations would be provided by the local PG&E electrical power grid. Information regarding 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, is provided below.

### *Energy Efficient Design Elements for MPWSP Desalination Plant*

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. 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).

As discussed in Chapter 3, Project Description, 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. 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).

### *Landfill-Gas-to-Energy Option*

Information regarding the potential use of methane gas as an alternative energy source is provided here for informational purposes only; this EIR conservatively assumes that all operational power requirements would be met via the existing PG&E power grid.

Although not evaluated in this EIR, 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 currently 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, with the first phase increasing the capacity by 1.6 MW within the next two years and another 1.6-MW increase within the next 6 to 8 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; the remainder would come from the local PG&E grid. 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 and are not evaluated in this EIR.

## 4.18.3.3 Summary of Impacts

**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 project construction. | LSM |
| **Impact 4.18-2:** Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during project operations. | LS |
| **Impact 4.18-3:** Constrain local or regional energy supplies, require additional capacity, or affect peak and base periods of electrical demand during project operations. | LS |

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

## 4.18.3.4 Construction Impacts and Mitigation Measures

### Impact 4.18-1: Use large amounts of fuel and energy in an unnecessary, wasteful, or inefficient manner during project construction. *(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 also 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 is unknown, it is estimated that off-road construction equipment would consume a total of approximately 455,850 gallons of diesel fuel, construction workers' personal vehicles would consume approximately 17,000 gallons of gasoline (assuming an average of 15 miles per gallon), and construction vehicles would consume approximately 14,000 gallons of gasoline or diesel fuel (assuming an average of 10 miles per gallon) (ESA, 2015; see **Appendix G**). The amount of electricity and indirect energy 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 amounts would not be expected to be substantial.

Construction activities could result in wasteful or inefficient use of energy if construction equipment is not well maintained, if equipment is left to idle when not in use, or if haul trips are not planned efficiently. The potential for project construction 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 Efficiency Plan)** and **4.10-1c (Idling Restrictions)**, which would ensure construction activities are conducted in an fuel-efficient manner and minimize idling times for construction equipment and vehicles, respectively, 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 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 that CalAm (and its construction contractors) will implement as part of project construction to increase the efficient use of construction equipment 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; 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 for review and approval at least 30 days prior to the beginning of construction activities.

*Mitigation Measure 4.10-1c applies to all project components.*

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

## 4.18.3.5 Operational Impacts and Mitigation Measures

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

### All Project Components

Operation of the proposed project would result in the consumption of fuel for CalAm staff commute trips to and from the MPWSP Desalination Plant, vehicle trips associated with routine maintenance and operations, and the consumption of electricity to operate the MPWSP Desalination Plant (i.e., reverse osmosis [RO] modules, pumps, lighting, process controls, heating, ventilation, and air conditioning [HVAC] systems) and other proposed facilities (i.e., ASR Pump Station, Valley Greens Pump Station, etc).

Operation of the MPWSP Desalination Plant would be supported by approximately 30 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 (see **Appendix G** for trip mileage assumptions). These vehicle trips would consume fossil fuels and would contribute to the energy demand required to support operation of the proposed project. Overall, the amount of fossil fuel required to fuel these vehicle trips would be relatively small (approximately 34,000 gallons annually over the life of the project, assuming an average fuel economy of 15 miles per gallon for employee vehicles and 5 miles per gallon for delivery trucks) compared to the electricity use that would be associated with operation of the MPWSP Desalination Plant (discussed below). These vehicle trips would be necessary to support operation of the proposed project.

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 7,700 megawatt hours (MWh) 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) is estimated to be approximately 48,200 MWh per year. Therefore, the net increase in annual electrical power demand for water production would be approximately 40,500 MWh per year (CalAm, 2014).

Operation of the proposed project would use fossil fuels and electricity to support the desalination of seawater and the production of potable water supplies for 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, and Water Rights, for additional information regarding the legal decisions). CalAm's reduced entitlements to Carmel River and Seaside Groundwater Basin water supplies cannot reliably meet existing demand, and opportunities to develop other water supply sources in this region are extremely limited. As

discussed in Section 7.4, Alternatives Previously Considered and Dismissed, the proposed project is the result of a multi-year planning effort that has entailed consideration of a wide range of alternatives to provide replacement water supplies to CalAm customers. Through that process, desalination was determined to be the most viable option for augmenting CalAm's existing water supply. 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 described in Section 4.18.3.2, above, and in Chapter 3, Project Description, Section 3.6.5, 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. These include an energy recovery system that would utilize pressure-exchange technology[1] to transfer energy from the high-pressure brine stream to the source water stream to reduce energy demand and operating costs as well as source water pumping requirements. Additionally, the use of modern RO technology would also ensure that the energy would be used efficiently. These recent technological advancements include less energy intensive membrane materials and more efficient pumps (Pacific Institute, 2013).

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 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 required.

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

As discussed above, implementation of the proposed project would increase CalAm's total electrical demand by approximately 40,500 MWh per year, which would represent approximately 1.5 percent of the County's electricity usage in 2012 (2,643,000 MWh) (CalAm, 2014; PG&E, 2012). PG&E provides electrical power to Monterey County, including the project area.

[1] Additional information on pressure-exchanger energy recovery systems is available at www.energyrecovery.com.

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 annual and maximum electrical demand, PG&E has indicated that it has adequate capacity and infrastructure to support the proposed project (PG&E, 2014a). Therefore, implementation of the proposed project could be accommodated by the existing local and regional energy supplies and the impact would be less than significant.

### *Mitigation Measures*

None required.

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# References – Energy Conservation

California American Water Company (CalAm), 2014. Proposed Water Portfolio Data plus energy spreadsheet provided to CPUC by John T. Kilpatrick on March 12, 2014.

California Energy Commission (CEC), 2008. Building Energy Efficiency Standards for Residential and Nonresidential Buildings, Regulations and Standards (CEC-400-2008-001-CMF), Effective January 1, 2010. Available online at: http://www.energy.ca.gov/2008publications/CEC-400-2008-001/CEC-400-2008-001-CMF.PDF. Accessed March 19, 2013.

California Energy Commission (CEC), 2011. *California's Major Sources of Energy*. Last updated April 7, 2011. Available online at: http://energyalmanac.ca.gov/overview/energy_sources.html. Accessed February 24, 2014.

California Energy Commission (CEC), 2012. *California Energy Consumption Database*. Available online at: http://www.ecdms.energy.ca.gov/. Accessed April 3, 2014.

California Energy Commission (CEC), 2014a. 2013 Integrated Energy Policy Report, CEC-100-2013-001-CMF. Available online at: http://www.energy.ca.gov/2013_energypolicy/. Accessed February 20, 2014.

California Energy Commission (CEC), 2014b. Building Energy Efficiency Program. Available online at: http://www.energy.ca.gov/title24/. Accessed September 25, 2014.

County of Monterey, 2013. Draft Ordinance Amending MCC Section 18.12. January, 15. Available online at: https://monterey.legistar.com/LegislationDetail.aspx?ID=1268482&GUID=BD59DBB6-83AC-41C5-A833-974E1D1633B8. Accessed March 4, 2014.

CDM Smith, 2014. *Monterey Peninsula Water Supply Project Desalination Infrastructure Design Basis of Design Draft Report Rev 1 – 30% Design*. June 20, 2014.

ENERGYneering Solutions, Inc (ESI), 2014. *"Over the Fence" Power Sales Feasibility Study for the Monterey LFGTE Facility*. Prepared for Monterey Regional Waste Management District and California American Water. April 16, 2014.

Environmental Science Associates (ESA), 2015. Air Quality and Greenhouse Gas Emissions Estimates for the Monterey Peninsula Water Supply Project. March 2015 *[See **Appendix G** of this EIR]*

Hannon et al., 1978. Energy and Labor in the Construction Sector. Article in Science Magazine. November 24, 1978.

Pacific Gas and Electric Company (PG&E), 2012. California's Clean Energy Future– PG&E 2012 Corporate Responsibility and Sustainability Report, PG&E's 2012 Electric Power Mix. Available online at: http://www.pgecorp.com/corp_responsibility/reports/2012/bu04_energy_future.jsp. Accessed April 2, 2014.

PG&E, 2013. Company Profile. Available online at: http://www.pge.com/en/about/company/profile/index.page?. Accessed March 18, 2013.

PG&E, 2014a. Personal communication with Daniel Waters, Electrical Distribution Engineer via email. April 3, 2014.

PG&E, 2014b. PG&E's 2013 Power Mix and Power Content Label [mailer included in November 2014 monthly bill packet].

Pacific Institute, 2013. Key Issues for Seawater Desalination in California: Energy and Greenhouse Gas Emissions. Available online at: http://www2.pacinst.org/reports/desalination_2013/energy/. Accessed March 3, 2014.