

# CHAPTER 4.6 Energy

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## 4.6.1 Introduction

This chapter describes the existing conditions relating to energy within the area of the Proposed Project. Section 4.6.2, “Environmental Setting” describes the regional and project area environmental setting as it relates to energy resources. Section 4.6.3, “Regulatory Framework” details the federal, state, and local laws related to energy. Potential impacts to these resources resulting from the Proposed Project are analyzed in Section 4.6.4, “Impact Analysis” in accordance with the California Environmental Quality Act (CEQA) significance criteria (CEQA Guidelines, Appendix G) and mitigation measures are proposed that could reduce, eliminate, or avoid such impacts.

Other impacts related to energy include those associated with greenhouse gas emissions (GHG) discussed in Chapter 4.8, Greenhouse Gas Emissions and Climate Change.

## 4.6.2 Environmental Setting

### Sonoma County Water Agency Energy Programs

As the water provider to more than 600,000 residents in Sonoma and Marin counties, operator of wastewater treatment facilities, manager of flood protection in many areas throughout Sonoma County, and generator of electric power, the Water Agency is one of the largest electricity users in Sonoma County. In response to its large carbon footprint, in 2006, the Water Agency began working to achieve a carbon-neutral electricity supply by the year 2015.

### Energy Policy and “Carbon Free Water” Campaign

The Board of Directors adopted the Water Agency’s Energy Policy in March 2011, which sets the guidelines for the Water Agency’s energy-related projects and regional, collaborative innovations and lays the groundwork for a comprehensive program of water-use efficiency, system efficiency, and development and purchase of renewable energy sources.

Energy use can be decreased by reducing demand for water and reducing the volume of wastewater generated. By increasing water conservation, the Water Agency can pump less water and wastewater and use less energy. Ongoing water conservation initiatives have helped reduce water deliveries throughout the region by approximately 20.7% since 2006 (Sonoma County Water Agency 2015). Water conservation initiatives include public awareness campaigns, programs targeting conversion to low water-use landscaping, and rebates and direct install programs for low water-use fixtures.

The Water Agency also continues efforts to reduce energy use throughout the water system through the implementation of efficiency upgrades. Energy efficiency measures include replacing old electric motors and fine-tuning system operations. Additionally the Operations and Maintenance Building and Services Center were retrofitted with highly efficient heating,

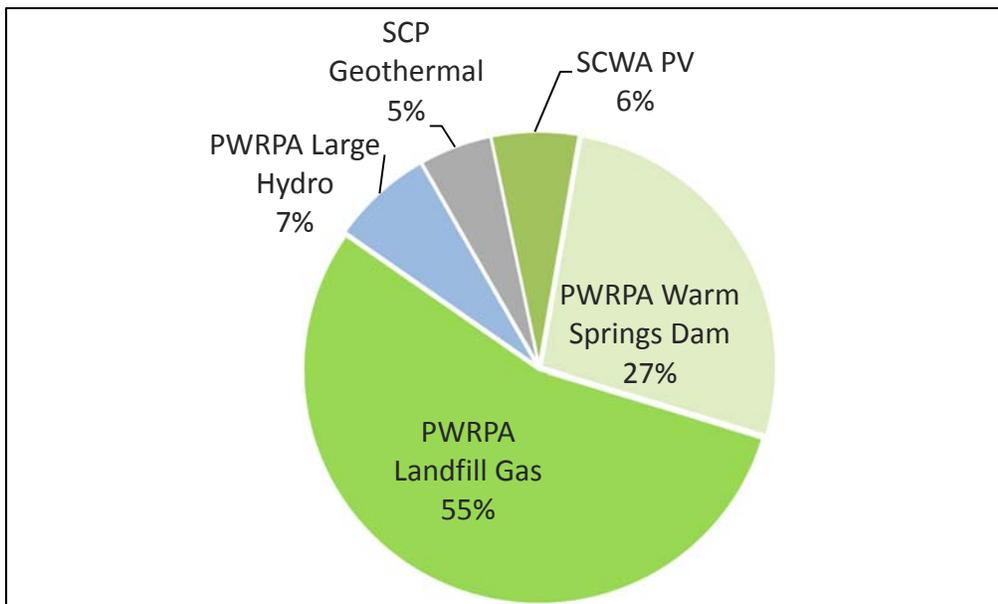
## Energy

ventilation and air conditioning (HVAC) supplied by ground-source and pond-loop heat pump systems which reduce HVAC energy use by 50 percent.

In addition to reducing energy use through conservation and efficiency, the Water Agency pursued expansion of its energy production facilities. In 2006, the Water Agency initiated the installation of a 500kW photovoltaic system at its administrative building.

The following year, another 500kW photovoltaic system was installed at the Airport-Larkfield-Wikiup Sanitation Zone Treatment Plant and a 930 kW system was installed at the Sonoma Valley County Sanitation District Treatment Plant. In 2009, the Water Agency began using electricity generated by the existing hydroelectric facilities at Warm Springs Dam rather than selling it to Pacific Gas and Electric (PG&E) (Sonoma County Water Agency 2015). Two years later, the Water Agency contracted to use all of the electricity produced by the 2005 Landfill Gas Power Plant, approximately 3 MW (Sonoma County Waste Management District 2016). The Water Agency is actively planning additional photovoltaic systems, including up to 12.5 MW of floating solar on recycled water storage ponds. The majority of the power produced by this network of floating solar will be purchased by Sonoma Clean Power, reducing emissions for the region as a whole (Sonoma County Water Agency 2015).

Additionally, in 2015, the Water Agency contracted to procure 100 percent of its electricity needs through renewable and carbon-free resources such as hydroelectric and landfill gas from the Power and Water Resources Pooling Authority (PWRPA), geothermal from Sonoma Clean Power (SCP) and its own solar photovoltaic sources, achieving a carbon neutral electricity supply for all its power accounts, including its water supply system, wastewater systems, and buildings. Figure 4.6.1 illustrates energy sources for Water Agency operations in 2015 (Sonoma County Water Agency 2016).



**Figure 4.6.1. Sonoma County Water Agency Electric Energy Sources, 2015 (Source: SCWA 2015)**

### *Hydroelectric Facilities at Warm Springs Dam*

A hydroelectric turbine was installed in Warm Springs Dam in the late 1980s, a few years after the dam was completed. The turbine is capable of generating 2.6 MW but generally averages approximately 1.3 MW. Energy production varies according to the flow of water through the dam. Average annual energy production totals approximately 13.55 Gigawatt hours (GWh). The Water Agency collaborates with the U.S. Army Corps of Engineers in the operation of the hydroelectric facility at the dam (SCWA 2016). Prior to 2009, electricity produced at the dam was sold to Pacific Gas & Electric. Starting in 2009, however, the Water Agency began selling this hydroelectricity to PWRPA and, thereby, contributing it to the pool of renewable energy provided by PWRPA for Water Agency operations (Roberts March 7, 2016).

### *Hydroelectric Facilities at Coyote Valley Dam*

The Lake Mendocino Hydroelectric Plant was completed in 1986 (National Marine Fisheries Service September 24, 2008), nearly three decades after the completion of Coyote Valley Dam in 1958 (U.S. Army Corps of Engineers site updated 23 Feb 2015). The hydroelectric facility became dormant in 1998 due to various design and operational restrictions but was upgraded with more modern equipment (Source California Energy Services 2016) and became operational again in 2007 (Grandi, Mel pers. comm. June 28, 2016 n.d.). Owned and operated by the City of Ukiah, the powerhouse can generate up to 3.5 MW with two turbine/generator units, with capacities of 2.5 and 1 MW. The power plant has a maximum flowrate of 450-500 cfs and can generate power for a maximum release of 1,500 cfs without a significant reduction in power generation from Coyote Valley Dam. All water diverted by the power plant is returned to the river immediately downstream of the power plant (Bond June 10, 2016). The facility operates under a 50-year license issued by the Federal Energy Regulatory Commission (FERC) on April 1, 1982 (National Marine Fisheries Service September 24, 2008).

The City of Ukiah is a member of the Northern California Power Agency (NCPA), a joint powers agency which owns and operates various power generation plants and provides power to its members. In conjunction with the other NCPA members, the City of Ukiah's Electric Department co-owns generation plants throughout Northern California and, through that ownership, approximately 57 percent of the energy Ukiah supplied in 2014 was carbon free. These carbon free generation plants include geothermal plants, the Calaveras Hydro Project, and hydroelectric power contracts with the Western Area Power Administration. The hydroelectric facility at Coyote Valley Dam supplements the City's energy resources with renewable energy. The plant's electricity is routed directly into the City's power distribution system and is not restricted by transmission congestion or high voltage line restrictions. Rather, power output is determined by minimum instream flow requirements as well as water supply and flood control needs (Grandi, Mel. pers. comm. July 6, 2016 n.d.). Approximately 50 percent of NCPA power is supplied by sources that do not emit GHGs (Northern California Power Agency 2016).

## **Sonoma Clean Power**

In 2011, the Water Agency Board of Directors directed Water Agency staff to investigate forming a community choice aggregation entity in response to Sonoma County's desire for local autonomy, lower rates and cleaner power. In 2012, a joint powers authority was approved by the Board, and Sonoma Clean Power (SCP) was launched. SCP is the new, locally controlled

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electricity provider in Sonoma County that provides the option of using power generated by renewable sources at competitive rates. SCP offers an “EverGreen” electricity purchase program which allows customers to choose 100% renewable energy from local geothermal sources. Approximately 37 percent of power provided by Sonoma Clean Power’s default service, CleanStart, originates from renewable sources like geothermal, wind and biomass. This power remains competitively priced compared to power available through PG&E.

### **Electric Vehicles Fleet**

The Water Agency is part of a Bay Area coalition receiving funding for fleet electric vehicles and charging infrastructure through the Local Government Electric Vehicle Fleet Demonstration Project, a Metropolitan Transportation Commission grant project. Currently, the Water Agency has nearly 30 hybrid, plug-in hybrid and electric vehicles, which comprise almost 20 percent of the Water Agency’s fleet.

### **Legislative Efforts**

The Water Agency actively advocates and works with other cities and counties across the country to generate state and federal support for renewable energy, energy efficiency and sustainable resource management programs.

### **Applied Solutions**

The Water Agency is a founding member of Applied Solutions, a non-profit organization that provides a shared forum for local governments to advance local and regional energy independence, economic stability, job creation and resilient infrastructure systems. The group includes over 170 local government affiliates (Sonoma County Water Agency 2015).

## **4.6.3 Regulatory Framework**

### **Federal**

#### **The Energy Policy Act of 2005**

The Energy Policy Act of 2005, amended in 2009, addresses various types of energy production, including energy efficiency, renewable energy, oil and gas, coal, Tribal energy, nuclear matters and security, vehicles and motor fuels, including ethanol and biofuels, hydrogen, electricity, energy tax incentives, hydropower and geothermal energy, and climate change technology. One provision of the Act increases the amount of biofuel that must be mixed with gasoline sold in the United States (U.S. Environmental Protection Agency 2015).

### **State**

#### **2014 Integrated Energy Policy Report Update**

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the California Energy Commission (CEC) to prepare a biennial report discussing California’s electricity, natural gas, and transportation fuel sectors. The report also provides policy recommendations to conserve

resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code 25301a). The report highlights vehicle use as a major contributor to air pollution, such as NOx, and climate change and discusses the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP), created by Assembly Bill 118 (Nunez, Chapter 750, Statutes of 2007) and recently extended to 2024 with the passage of Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013). The ARFVTP authorizes the CEC to develop and deploy alternative and renewable fuels and advanced technologies for transportation to help meet California's climate change goals. This program includes programs to support improved heavy-duty vehicle technologies that could reduce emissions related to construction and other similar activities (California Energy Commission 2015).

### Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act, signed into law in October of 2015 as Senate Bill No. 350, increases the target for the existing California Renewables Portfolio Standards (RPS) Program from 33 percent to 50 percent by December 31, 2020 (California Legislative Information 2016). The RPS Program, established in 2002 by Senate Bill 1078, requires investor-owned utilities (IOUs), electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources. The California Public Utilities Commission (CPUC) implements and administers RPS compliance rules while the California Energy Commission certifies eligible renewable energy resources as adopts regulations for the enforcement of RPS procurement requirements of Publicly Owned Utilities (POUs) (California Public Utilities Commission 2016).

## Local

### Mendocino County General Plan

The Resource Management Element of Mendocino County General Plan includes several policies intended to promote renewable energy and energy efficiency, including:

**Policy RM-52:** Identify, map and protect resources and areas that may provide opportunities for energy production, such as geothermal reserves and solar easements.

**Policy RM-54:** Encourage research and development of distributed, renewable energy sources to meet current and increasing energy demands.

### Ukiah Valley Area Plan

The County of Mendocino completed an area plan for the Ukiah Valley in August 2011. Section 7, Energy and Air Quality includes the following goal, policy, and related implementation measure related to renewable energy:

**Implementation Measure EA1.1e:** Preserve opportunities for development of renewable energy resources. Promote renewable energy.

## City of Ukiah General Plan

The City of Ukiah completed its current General Plan in 1995. Section IV.4, Energy, includes the following goal, policies, and implementation measures related to renewable energy:

**Goal EG-8:** Manage existing energy resources to meet increased demands and explore the new use of new energy efficient technologies.

**Policy EG-8.1:** Develop a load management program whereby existing electrical supplies can accommodate, to the extent, feasible, future growth and development.

## Sonoma County General Plan 2020

The Open Space and Resource Conservation Element of the Sonoma County General Plan 2020 contains goals and policies related to energy conservation and demand reduction as well as energy production and supply, including:

**GOAL OSRC-15:** Contribute to the supply of energy in the County primarily by increased reliance on renewable energy sources.

**Objective OSRC-15.1:** Increase the development of renewable energy and distributed energy generation systems and facilities for County operations.

**Policy OSRC-15b:** Encourage and promote the development of renewable energy and distributed energy generation systems and facilities for County operations.

## 4.6.4 Impact Analysis

This section describes the impact analysis relating to energy resources for the Proposed Project. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, where applicable.

### Methodology

CEQA requires that EIRs discuss the potential energy impacts of projects, including avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (Public Resources Code section 21100(b)(3)). *Appendix F: Energy Conservation* of the *State CEQA Guidelines* states that the goal of conserving energy includes the wise and efficient use of energy. This goal may be achieved through:

- Decreasing overall per capita consumption;
- Decreasing reliance on fossil fuels such as natural gas and oil; and
- Increasing reliance on renewable energy sources.

The Water Agency's Energy Policy, adopted by the Board of Directors in 2011 and described in section 4.6.2 *Environmental Setting* above, sets the goal of achieving a net carbon neutral

energy supply by 2015. Having achieved this goal, the Water Agency seeks to maintain this status.

This energy analysis uses criteria adapted from the *State CEQA Guidelines, Appendix F: Energy Conservation* and from the Water Agency's Energy Policy, which are identified below in "Significance Criteria."

## Modeling

Hydroelectric power production at Coyote Valley and Warm Springs dams was calculated ResSim modeling. Please refer to Appendix G for more information on the ResSim model and its results. For the Coyote Valley Dam facility, the model assumptions include:

- Two generator units produce power, rated at 1 MW and 2.5 MW, respectively;
- Generator output varies as a function of head behind the dam (i.e. depth of water) (Grandi, Mel pers. comm. June 28, 2016 n.d.);
- Because there are two turbines, power production may continue at one turbine during maintenance of the other;
- Power production occurs when releases are greater than 22 cfs and less than 1,500 cfs (Bond June 10, 2016); and
- Maximum flow through the 1 MW unit is 116 cfs and 282 cfs through the 2.5 MW unit (United States Army Corps of Engineers, Sacramento District August 1986).

**Table 4.6-1. Power production values for the 1 MW generator unit in the hydroelectric facility at Coyote Valley Dam at varying head.**

| CVD Power (kW) for 1 MW Unit |             |     |     |     |     |     |     |      |      |      |      |      |      |      |      |
|------------------------------|-------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|
|                              | Head (feet) |     |     |     |     |     |     |      |      |      |      |      |      |      |      |
| Flow (cfs)                   | 80          | 85  | 90  | 95  | 100 | 105 | 110 | 115  | 120  | 125  | 130  | 135  | 140  | 145  | 150  |
| 25                           | 50          | 100 | 150 | 200 | 200 | 225 | 230 | 240  | 260  | 260  | 260  | 260  | 260  | 260  | 260  |
| 40                           | 100         | 150 | 200 | 250 | 250 | 275 | 280 | 290  | 310  | 310  | 310  | 310  | 310  | 310  | 310  |
| 50                           | 150         | 200 | 250 | 300 | 325 | 350 | 375 | 390  | 410  | 430  | 440  | 450  | 460  | 490  | 500  |
| 60                           | 240         | 290 | 340 | 390 | 410 | 430 | 460 | 490  | 510  | 530  | 550  | 570  | 590  | 610  | 630  |
| 70                           | 320         | 370 | 420 | 470 | 500 | 520 | 550 | 590  | 610  | 640  | 660  | 690  | 710  | 730  | 750  |
| 80                           | 400         | 450 | 500 | 550 | 580 | 610 | 640 | 690  | 710  | 745  | 770  | 800  | 830  | 860  | 880  |
| 90                           | 470         | 520 | 570 | 620 | 650 | 700 | 740 | 780  | 810  | 850  | 880  | 910  | 950  | 980  | 1010 |
| 100                          | 530         | 580 | 630 | 680 | 725 | 775 | 820 | 860  | 905  | 950  | 980  | 1020 | 1050 | 1100 | 1130 |
| 110                          | 550         | 600 | 650 | 700 | 770 | 830 | 880 | 940  | 970  | 1020 | 1060 | 1110 | 1150 | 1205 | 1240 |
| 120                          | 600         | 650 | 700 | 750 | 800 | 870 | 930 | 1000 | 1040 | 1090 | 1140 | 1190 | 1240 | 1280 | 1330 |
| 130                          | 520         | 570 | 620 | 670 | 720 | 790 | 850 | 920  | 960  | 1010 | 1060 | 1110 | 1160 | 1350 | 1420 |

**Table 4.6-2. Power production values for the 2.5 MW generator unit in the hydroelectric facility at Coyote Valley Dam at varying head.**

| CVD Power (kW) for 2.5 MW Unit |             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Flow (cfs)                     | Head (feet) |      |      |      |      |      |      |      |      |      |      |      |      |
|                                | 80          | 85   | 90   | 95   | 100  | 105  | 110  | 115  | 120  | 125  | 130  | 135  | 140  |
| 100                            | 570         | 610  | 650  | 680  | 740  | 800  | 860  | 910  | 960  | 1000 | 1040 | 1090 | 1090 |
| 120                            | 650         | 690  | 730  | 760  | 820  | 880  | 940  | 990  | 1040 | 1080 | 1120 | 1170 | 1170 |
| 140                            | 810         | 850  | 890  | 920  | 990  | 1030 | 1090 | 1140 | 1190 | 1230 | 1270 | 1320 | 1320 |
| 160                            | 960         | 1000 | 1040 | 1070 | 1140 | 1200 | 1260 | 1320 | 1390 | 1450 | 1500 | 1550 | 1550 |
| 180                            | 1120        | 1160 | 1200 | 1230 | 1300 | 1370 | 1450 | 1520 | 1590 | 1670 | 1710 | 1790 | 1790 |
| 200                            | 1290        | 1330 | 1370 | 1400 | 1470 | 1550 | 1640 | 1710 | 1800 | 1880 | 1960 | 2010 | 2010 |
| 220                            | 1450        | 1490 | 1530 | 1560 | 1650 | 1730 | 1830 | 1900 | 2000 | 2090 | 2180 | 2250 | 2250 |
| 240                            | 1610        | 1650 | 1690 | 1720 | 1840 | 1910 | 2020 | 2110 | 2210 | 2300 | 2400 | 2500 | 2500 |
| 260                            | 1710        | 1750 | 1790 | 1820 | 1950 | 2060 | 2180 | 2270 | 2390 | 2495 | 2595 | 2680 | 2680 |
| 280                            | 1840        | 1880 | 1920 | 1950 | 2070 | 2190 | 2310 | 2440 | 2520 | 2700 | 2760 | 2860 | 2860 |
| 300                            | 1910        | 1950 | 1990 | 2020 | 2180 | 2300 | 2420 | 2550 | 2680 | 2800 | 2900 | 3000 | 3000 |

For the Warm Springs Dam facility, the model assumptions include:

- One generator unit produces power, rated at 2.6 MW;
- Generator output varies as function of head behind the dam and flow through the turbine;
- The turbine is shut down for maintenance for up to three days each March and September;
- The turbine is capable of generating power for flows ranging from 60 to 190 cfs through the turbine, flows beyond 190 cfs do not generate additional power; and
- Once outlet flows exceed 300 cfs, flow must bypass the turbine and no power is generated.

**Table 4.6-3. Power Production values for the 2.6 MW generator unit in the hydroelectric facility at Warm Springs Dam at varying head.**

| Warm Springs Dam Hydropower Turbine Efficiencies (%) |             |      |      |      |      |      |      |
|--|-------------|------|------|------|------|------|------|
| Flow (cfs)   | Head (feet) |      |      |      |      |      |      |
|  | 140         | 160  | 180  | 200  | 220  | 240  | 260  |
| 60   | 66.6        | 69.5 | 72.0 | 72.0 | 72.4 | 72.0 | 71.0 |
| 70   | 75.8        | 78.0 | 78.4 | 77.8 | 76.6 | 76.2 | 75.7 |
| 80   | 78.8        | 81.8 | 82.2 | 81.6 | 80.8 | 79.6 | 79.0 |
| 90   | 80.7        | 88.4 | 84.5 | 83.8 | 83.0 | 82.2 | 81.5 |
| 100  | 82.6        | 84.9 | 86.0 | 85.7 | 84.8 | 84.0 | 83.1 |
| 110  | 84.4        | 86.4 | 86.6 | 87.6 | 86.6 | 85.6 | 84.7 |
| 120  | 86.0        | 88.2 | 89.0 | 89.3 | 88.3 | 87.0 | 86.0 |
| 130  | 87.5        | 89.8 | 90.5 | 90.8 | 90.1 | 88.6 | 87.5 |
| 140  | 88.5        | 91.4 | 91.9 | 92.2 | 91.7 | 90.2 | 88.9 |
| 150  | 88.8        | 92.0 | 92.8 | 93.0 | 92.7 | 91.5 | 90.0 |
| 160  | 87.0        | 91.4 | 93.0 | 93.4 | 93.0 | 92.4 | 90.8 |
| 170  | 0.0         | 87.0 | 91.7 | 92.6 | 92.8 | 92.5 | 91.0 |
| 180  | 0.0         | 0.0  | 89.6 | 91.2 | 91.9 | 91.8 | 91.0 |
| 190  | 0.0         | 0.0  | 0.0  | 89.5 | 90.4 | 90.8 | 90.6 |

## Significance Criteria

Based on the *State CEQA Guidelines, Appendix F: Energy Conservation* and the Water Agency's Energy Policy, the Proposed Project would have a significant energy resources impact if it would:

- Substantially increase overall per capita consumption;
- Result in the inefficient, wasteful, and unnecessary consumption of energy;
- Substantially increase reliance on fossil fuels;
- Conflict with existing energy policies and standards intended to protect the environment;  
or
- Conflict with or impede the Water Agency's ability to provide carbon-free water.

### *Issues Not Discussed Further*

Substantially increase overall per capita consumption.

Neither the Proposed Project, No Project 1 Alternative, nor the No Project 2 Alternative would increase per capita energy consumption because it would not change energy consumption for government or private entities. Therefore, this issue is not discussed further.

Result in the inefficient, wasteful, and unnecessary consumption of energy.

Neither the Proposed Project, No Project 1 Alternative, nor the No Project 2 Alternative would require the consumption of energy for construction-, operation-, or maintenance-related

activities. Consequently, energy cannot be used in an inefficient, wasteful, or unnecessary way and this issue is not discussed further.

## Impacts and Mitigation Measures

The following section presents a detailed discussion of potential impacts associated within energy resources resulting from the Proposed Project. Impacts are summarized and categorized as either “less than significant,” “less than significant with mitigation,” or “significant and unavoidable.”

### Impact 4.6-1: The Fish Habitat Flows and Water Rights Project could substantially increase reliance on fossil fuels. (Less than Significant)

The Proposed Project would not require construction, operation, or maintenance of new facilities and, therefore, would not require energy to implement.

The Proposed Project would, however, alter the timing and volume of releases at two existing reservoirs, Lake Mendocino and Lake Sonoma, and, consequently, the timing and amount of power produced at their associated hydroelectric power production facilities.

### Coyote Valley Dam at Lake Mendocino

Figures 4.6-2 and 4.6-3 below illustrate the average monthly power production and average annual power production at Lake Mendocino, respectively, under Baseline Conditions, No Project 1 and No Project 2 alternatives, as well as under the Proposed Project.

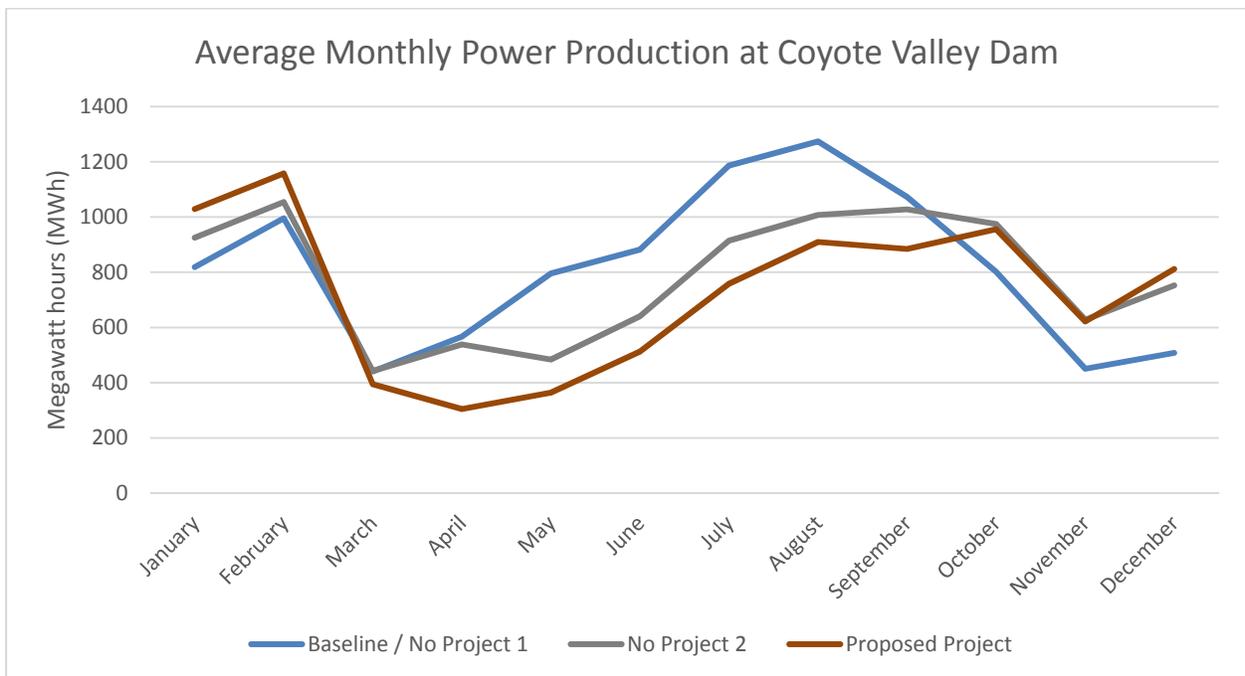
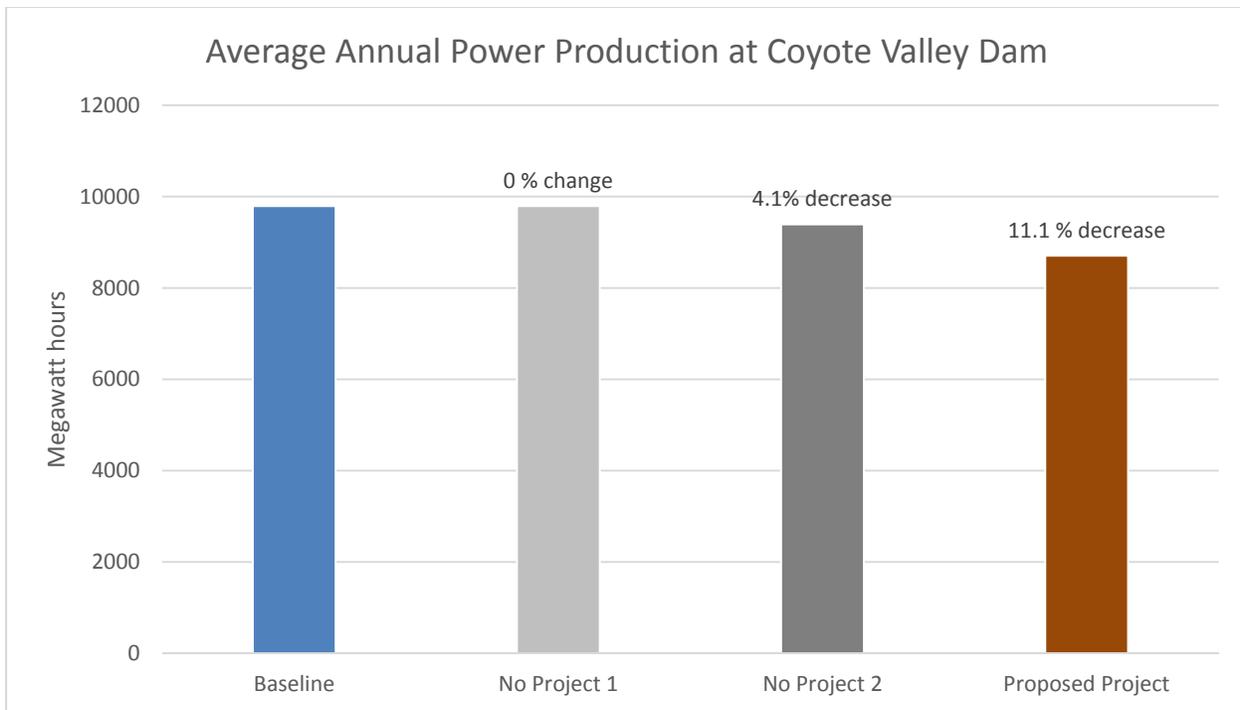


Figure 4.6-2 Average monthly power production at Coyote Valley Dam, Lake Mendocino



**Figure 4.6-3 Average annual power production at Coyote Valley Dam, Lake Mendocino**

At the Lake Mendocino Hydroelectric Plant, power production would be reduced during some portions of the year and increased during other times of the year. Specifically, power production would be reduced from March through September and increased from October through February under both the No Project 2 Alternative and the Proposed Project. Monthly power production would be the same as Baseline for the No Project 1 Alternative. Average annual power production would remain the same as Baseline under the No Project 1 Alternative (9,974 MWh), but annual power production would be reduced by 4.1 percent under the No Project 2 Alternative (9,390 MWh) and by 11.1 percent under the Proposed Project (8,705 MWh).

While the NCPA meets the majority of the City of Ukiah's power needs, which totaled 108,041 MWh in 2014 (State of California 2016), energy produced at Coyote Valley Dam directly supplements the City of Ukiah's power supply. As detailed in Table 4.6-4, the No Project 1 Alternative would not affect the City of Ukiah's energy supply. The reduction in energy supply resulting from the No Project 2 Alternative would represent 0.4 percent of the City of Ukiah's total energy needs, and the reduction in energy supply resulting from the Proposed Project would represent 1.0 percent of the City of Ukiah's energy needs.

**Table 4.6-4. Coyote Valley Dam energy supply changes as a resulting from the No Project 1 Alternative, No Project 2 Alternative, and the Proposed Project for the City of Ukiah.**

|                  | Average Annual Power Production at Coyote Valley Dam (MWh) | Reduction in Annual Power Production Below Baseline (MWh) | Reduction in Annual Power Production Below Baseline (Percent) | Portion of City of Ukiah's Energy Supply* (Percent) | Reduction in City of Ukiah's Energy Supply* (Percent) |
|------------------|--|---|---|---|---|
| Baseline         | 9,794  | -   | -   | 9.1   | -   |
| No Project 1     | 9,794  | 0   | 0   | 9.1   | 0   |
| No Project 2     | 9,390  | 404   | 4.1   | 8.7   | 0.4   |
| Proposed Project | 8,705  | 1,089   | 11.1  | 8.1   | 1.0   |

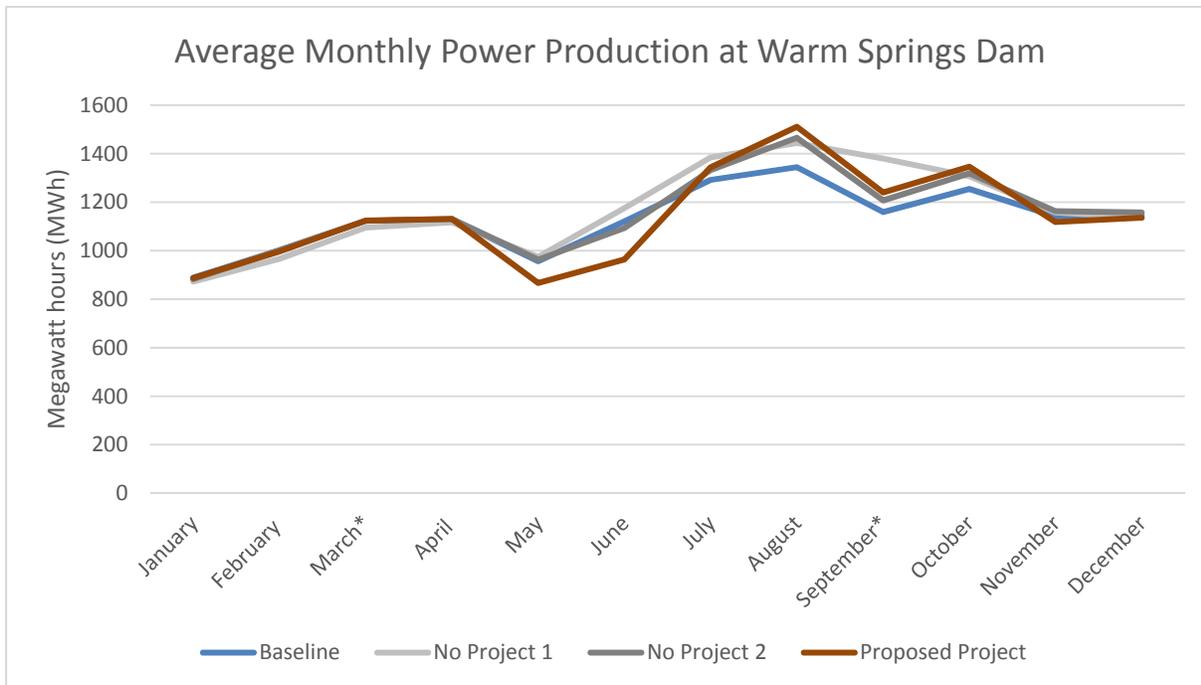
\*Using the City of Ukiah's 2014 energy demands (State of California 2016).

The Proposed Project and No Project 2 Alternative would slightly reduce the amount of hydroelectric energy available to the City of Ukiah. The additional need would be supplemented through existing agreements with the NCPA (Grandi, Mel. pers. comm. July 6, 2016 n.d.). Energy supplied through the NCPA is approximately 50 percent free of GHG emissions (Northern California Power Agency 2016). Approximately 62 percent of the City of Ukiah's power supply was renewable and/or hydroelectric in origin in 2013 (California Energy Commission 2016) and 57 percent was renewable and/or hydroelectric in origin in 2014 (California Energy Commission 2016). This reduction in renewable energy from 2013 to 2014 was a result of the drought and associated reduction in hydroelectric power generation at Coyote Valley Dam and other NCPA hydroelectric facilities (Grandi, Mel. pers. comm. July 6, 2016 n.d.). The electricity currently supplied by the Lake Mendocino Hydroelectric Plant is highly variable and may vary from approximately 3,000 MWh to 10,000 MWh in annual energy production depending on the water year (Grandi, Mel pers. comm. June 28, 2016 n.d.), which represents approximately 2.8 to 9.3 percent of the City of Ukiah's electricity needs.

The reduction in renewable energy production resulting from the No Project 2 Alternative and the Proposed Project would not result in a substantial increase in reliance on fossil fuels by the City of Ukiah because (1) the proportion of electricity supplied to the City of Ukiah by the Lake Mendocino Hydroelectric Facility is very small relative to other sources; (2) the energy supplied by the Lake Mendocino Hydroelectric Facility under the No Project 1 Alternative, No Project 2 Alternative, and Proposed Project falls within the range of historic production, which is highly variable and may decline to as little as 3,000 MWh (a reduction of nearly 60 percent below average annual production) in some years; and (3) the reduced hydroelectric production would be remedied through existing agreements with the NCPA, which supplies electricity that is approximately 50 percent free of GHG emissions. Therefore, this potential impact would be less than significant and no mitigation is required.

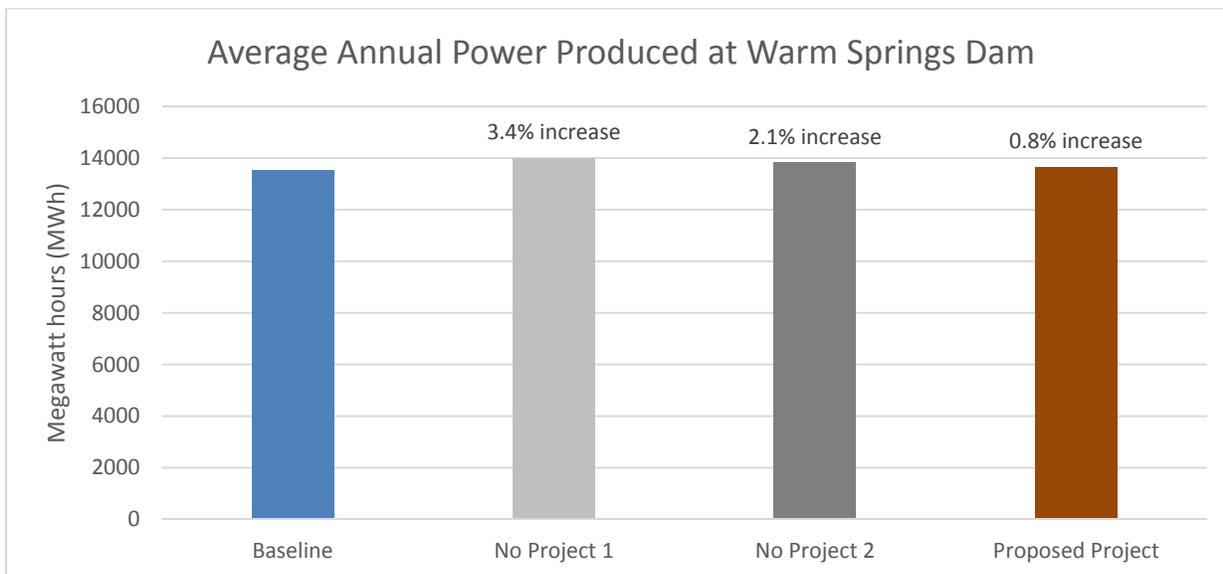
### Warm Springs Dam at Lake Sonoma

Figures 4.6-4 and 4.6-5 below illustrate the average monthly power production and average annual power production at Lake Sonoma under Baseline Conditions, No Project 1 and No Project 2 alternatives, as well as under the Proposed Project.



\* Calculations account for regular maintenance of the hydroelectric facility at Warm Springs Dam which, unlike the hydroelectric facility at Coyote Valley Dam, generates no power during maintenance activities for up to 3 days each March and September.

**Figure 4.6-4 Average Monthly Power Production at Warm Springs Dam, Lake Sonoma**



**Figure 4.6-5 Average Annual Power Production at Warm Springs Dam, Lake Sonoma**

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At Lake Sonoma, while energy production would be slightly reduced in May and June under the Proposed Project, overall annual energy production would increase by 3.4 percent under the No Project 1 Alternative (456 MWh), 2.1 percent under the No Project 2 alternative (284 MWh), and 0.8 percent under the Proposed Project (109 MWh). Therefore, neither the No Project 1 Alternative, No Project 2 Alternative, nor Proposed Project would contribute to an increased reliance on fossil fuels and there would be no potential for impact and no mitigation is required.

### Russian River and Dry Creek

No hydroelectric facilities exist on the Russian River or Dry Creek outside of the facilities located at Coyote Valley Dam and Warm Springs Dam, therefore neither No Project 1 Alternative, No Project 2 Alternative, nor Proposed Project would contribute to an increased reliance on fossil fuels there would be no potential for impact and no mitigation is required.

**Impact 4.6-2: The Fish Habitat Flows and Water Rights Project could conflict with existing energy policies and standards intended to protect the environment. (Less than Significant)**

As discussed in Impact 4.8-2 of Chapter 4.8, Greenhouse Gas Emissions and Climate Change, the City of Ukiah has approved an RPS Procurement Plan. According to this plan, the City of Ukiah must demonstrate that it is making reasonable progress toward ensuring that it meets the 25 percent RPS target by 2016 and 33 percent by 2020. As of 2015, the City of Ukiah derives 49 percent of the electricity it supplies from RPS-qualified renewable resources, consisting of geothermal power plants and small hydroelectric sources, including the Lake Mendocino Hydroelectric Plant (California Energy Commission 2016).

Implementation of the No Project 1 Alternative would not alter hydroelectric power generation at the Lake Mendocino Hydroelectric Plant. Therefore, there would be no change to the City of Ukiah's ability to meet its RPS Requirements and no impact is anticipated and no mitigation is required.

Power production at the Lake Mendocino Hydroelectric Plant would be reduced from March through September under the No Project 2 Alternative and the Proposed Project, but would be increased during October through February. Average annual power production would be reduced by 4.1 percent under the No Project 2 Alternative and by 11.1 percent under the Proposed Project. This reduction represents 0.4 percent and 1 percent of the City of Ukiah's annual electricity demand, respectively. Because the City of Ukiah has met and substantially exceeded its RPS requirements, and because the City of Ukiah has other options for attaining renewable power through its membership in the NCPA, the decrease in electricity generation at Coyote Valley Dam would not inhibit its ability to continue to meet its RPS requirements. Therefore, the potential impact would be less than significant and no mitigation is required.

**Impact 4.6-3: The Fish Habitat Flows and Water Rights Project could conflict with or impede the Water Agency's ability to provide carbon-free water. (No Impact)**

While the hydroelectric facility at Coyote Valley Dam does not supply electricity to the Water Agency, the hydroelectric facility at Warm Springs Dam provided approximately 27 percent of

the Water Agency's energy in 2015. The No Project 1 Alternative, No Project 2 Alternative, and Proposed Project would increase power production at Warm Springs Dam by 3.4, 2.1, and 0.8 percent, respectively. Implementation of the Proposed Project or either alternative would slightly improve the Water Agency's ability to provide carbon-free water, although not to a substantial degree. Additionally, because the Water Agency has other options for attaining renewable power through its membership in the PWRPA, any variation in electricity generation at the Warm Springs Dam hydroelectric facility would not impede the Water Agency's ability to continue to meet its carbon free water goal. Therefore neither the No Project 1 Alternative, No Project 2 Alternative, nor the Proposed Project would conflict with or impede the Water Agency's ability to provide carbon-free water. No impact is anticipated and no mitigation is required.

### 4.6.5 General Plan Consistency

The Proposed Project, No Project 1 Alternative, and No Project 2 Alternative would not negatively affect the hydroelectric facility at Coyote Valley Dam and would not conflict with efforts to promote renewable energy in Mendocino County or the City of Ukiah. Therefore, the Proposed Project and its alternatives would be consistent with Mendocino County General Plan Policy RM-52, Ukiah Valley Area Plan Implementation Measure EA1.1e, and City of Ukiah General Plan Goal EG-8 and Policy EG-8.1 listed above in Section 4.6.3 Regulatory Framework.

The Proposed Project, No Project 1 Alternative, and No Project 2 Alternative would not negatively affect the hydroelectric facility at Warm Springs Dam and would not conflict with efforts to promote renewable energy in Sonoma County. Therefore, the Proposed Project and its alternatives would be consistent with Sonoma County General Plan 2020 Goal OSRC-15, Objective OSRC-15.1, and Policy OSRC-15b listed above in Section 4.6.3 Regulatory Framework.

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