

RECLAMATION

Managing Water in the West

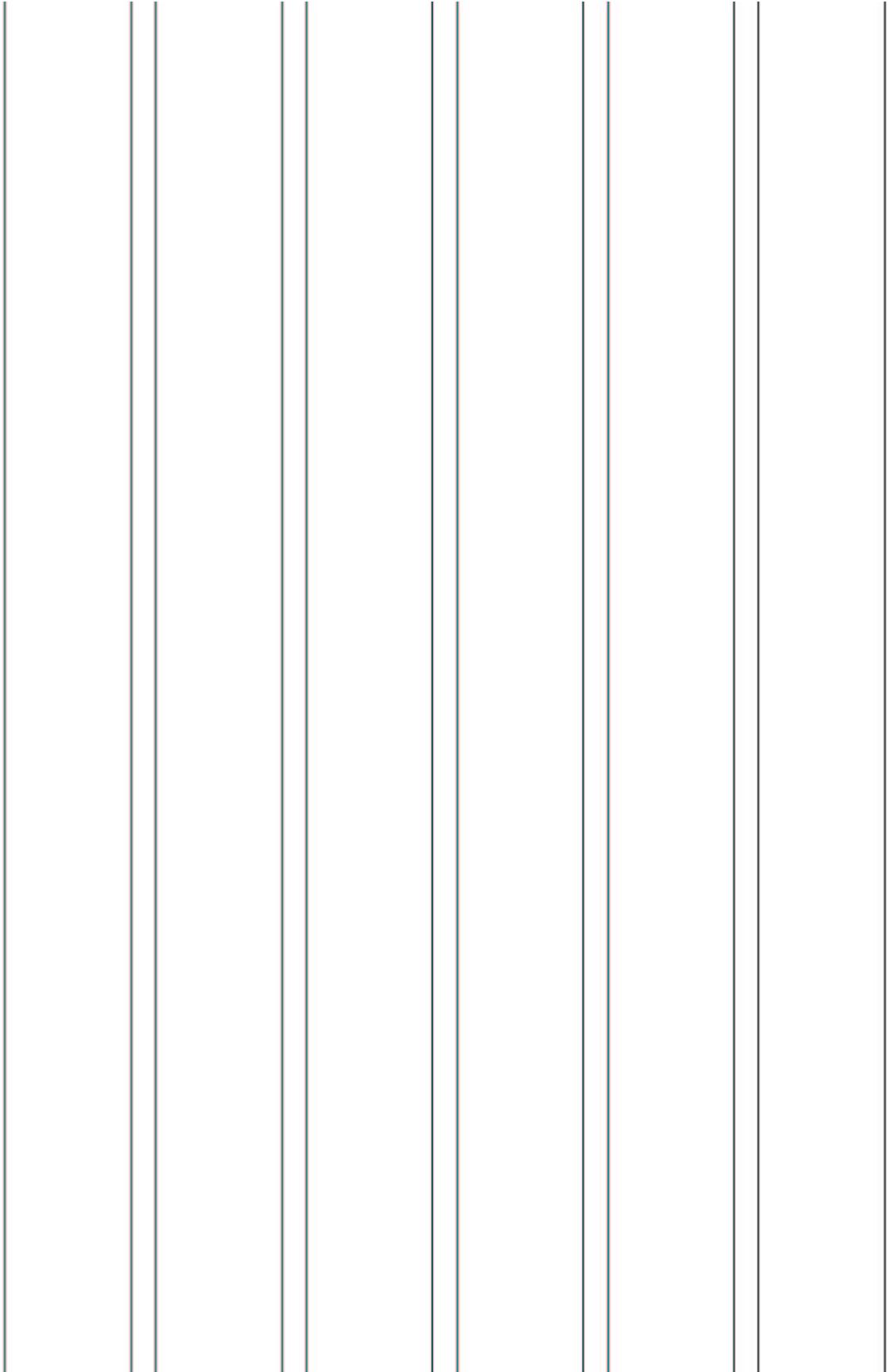
Klamath Comprehensive Agricultural Power Plan

Regulatory Framework



**U.S. Department of the Interior
Bureau of Reclamation
Klamath Basin**

February 2015



Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Klamath Comprehensive Agricultural Power Plan

Regulatory Framework

Prepared by

**United States Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
Klamath Basin Area Office**

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**U.S. Department of the Interior
Bureau of Reclamation
Klamath Basin**

February 2015

Executive Summary

ES.1 Introduction

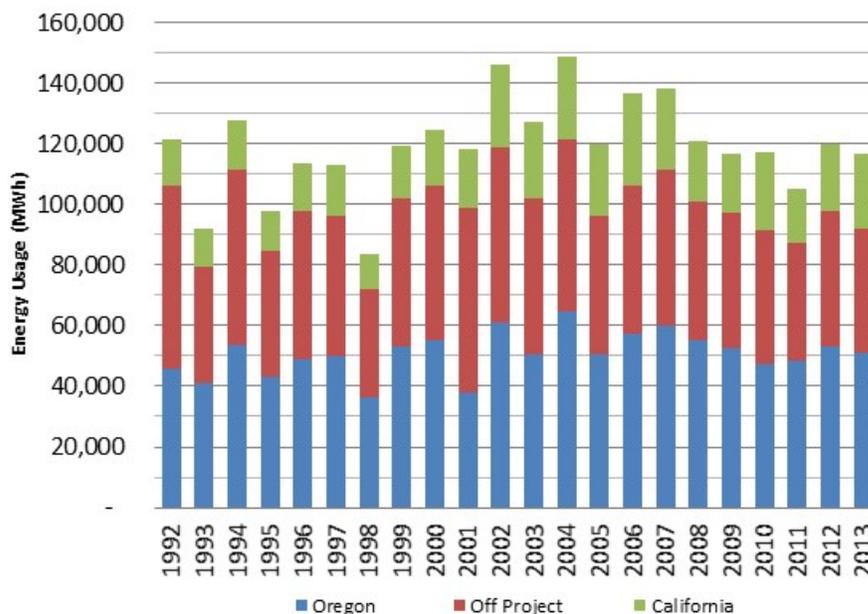
The Klamath Comprehensive Agricultural Power Plan (CAPP) Regulatory Framework Report identifies the regulatory framework under which PacifiCorp operates to provide Klamath Basin power in Oregon and California and potential programs that PacifiCorp or a utility district such as Klamath Water and Power Agency (KWAPA) could institute to lower energy costs to the Basin irrigators. To frame an understanding of the energy needs, a summary of Basin energy usage from 1992-2013 was evaluated.

The expiration of the 1956 power contract with PacifiCorp resulted in a large power rate increase through new California and Oregon tariffs approved by the California Public Utilities Commission (CPUC) and the Oregon Public Utility Commission (OPUC). New tariff rates have affected approximately 1,900 power users on the Bureau of Reclamation's (Reclamation's) Klamath Project (On-Project users) and 600 irrigators in Oregon not associated with the Klamath Project (Off-Project users). Within the Klamath Basin Restoration Agreement (KBRA), the Power for Water Management Program identified several areas of study to provide affordable power to agricultural water users affected by the new power rates. Reclamation, on behalf of the Secretary of the Interior, initiated a process to develop the CAPP to identify and evaluate potential alternatives for lowering the energy costs for On-Project and Off-Project Basin irrigators, as outlined in the KBRA Power for Water Management Program.

The CAPP is intended to provide a general roadmap for the Basin stakeholders to implement a program to reduce energy costs. An important foundation of the CAPP is the regulatory framework of electrical power transmission, distribution, and development.

ES.2 Basin Energy Use and Power Demand

Reclamation reviewed Basin energy use through data provided by PacifiCorp from 1992-2013. As shown in Figure ES-1, energy use peaked in 2004 at approximately 150,000 megawatt hours (MWh) with the lowest period of use recorded in 1998 at 82,000 MWh. For the purpose of identifying how regulatory programs may apply to the CAPP, Table ES-1 identifies a future energy and power baseline for the three sectors of the Basin.



Source: PacifiCorp

Figure ES-1. Basin Energy Use from 1992-2013

Table ES-1. CAPP Baseline Energy Use and Power Demand

Sector	Energy Use (MWh)	Power Demand (megawatts [MW])
Oregon On-Project	52,000	47
Oregon Off- Project	44,000	30
California On-Project	22,000	29
Total	118,000	106

Source: PacifiCorp

ES.3 Regulatory Framework for Power Development, Transmission and Distribution

PacifiCorp is the owner and operator of the power distribution network in the Klamath Basin and is organized as an investor-owned utility (IOU). IOUs are regulated by the PUCs in Oregon and California, and are subject to other state and federal agencies, including the Federal Energy Regulatory Commission (FERC). Provided below is a description of the major energy regulatory entities affecting the CAPP and their roles.

Definition of Power and Energy

Power and energy are related, but not synonymous. Power is the instantaneous ability to do work and is measured in watts. Energy is the amount of work done over a period of time and is measured in watt-hours. A useful analogy is that a 60-watt light bulb uses 60 watts of power and 1,440 watt-hours of energy over a 24-hour period. Energy use and power demand are important factors for considering the different regulations and programs that may help reduce energy costs to Basin irrigators.

ES.3.1 OPUC

OPUC regulates consumer rates and services including rates IOUs charge customers in Oregon. The OPUC's Utility Program "ensures consumers receive utility service at fair and reasonable rates, while allowing regulated companies the opportunity to earn an adequate return on their investment". The OPUC evaluates many components of cost and decides the structure of customer rates. The OPUC does not regulate the rates of people's utility districts (PUDs), cooperatives, or municipal utilities. OPUC requires its large IOUs, including PacifiCorp, to procure 15 percent of their power through renewables by 2015, 20 percent by 2020, and 25 percent by 2025.

ES.3.2 Energy Trust of Oregon

Energy Trust of Oregon (EnergyTrust) is an independent, non-profit organization that offers cash incentives and energy solutions to PacifiCorp customers in Oregon to reduce energy costs. Energy Trust is funded by the customers of certain Oregon IOUs (Portland General Electric, PacifiCorp, NW Natural, and Cascade Natural Gas) that pay a percentage of their utility bills to support the energy efficiency and renewable energy programs offered by Energy Trust.

ES.3.3 CPUC

CPUC has authority over the operations of the California IOUs and sets their retail rates through General Rate Cases. California's municipal electric utilities are not subject to the rate-setting requirements of the CPUC. The CPUC serves the public interest by protecting the IOU's consumers and ensuring the provision of safe, reliable utility service and infrastructure at reasonable rates. The CPUC is responsible for ensuring that IOUs meet the state's Renewables Portfolio Standard by procuring 20 percent of its power through renewables by 2010 and 33 percent by 2020.

ES.3.4 California Independent System Operator

The California Independent System Operator (ISO) is an independent, non-profit grid operator overseeing the operation of California's bulk electric power system, transmission lines, and electricity market generated and transmitted by its member utilities. The ISO operates both a day-ahead and real-time energy market to ensure that adequate power is available at the lowest price to meet demand in its power Balancing Authority Area.

Unlike other IOUs operating in California, PacifiCorp is not an ISO member utility. PacifiCorp operates its own Balancing Authority Area, and is not required to follow other ISO policies required of full ISO member utilities, including Direct Access competition where the consumer can choose their energy provider. Pursuant to an agreement between the ISO and PacifiCorp, which was approved by FERC in July 2013, PacifiCorp and the ISO recently implemented an Energy Imbalance Market (EIM), which facilitates PacifiCorp's participation in an extension of the ISO's real-time balancing market that optimizes generation and transmission between the two service areas of ISO and

PacifiCorp. PacifiCorp's transmission interconnection with ISO occurs through its major transmission lines that run through Klamath Falls and Malin (the California-Oregon Intertie). The EIM is expected to reduce costs to serve customers through more efficient dispatch of a larger and more diverse pool of resources, more effectively integrate renewables, and enhance reliability through improved situational awareness and responsiveness.

ES.3.5 FERC

FERC requires all public utilities that own, control, or operate facilities used for transmitting electric energy in interstate commerce to provide Open Access Transmission Tariffs (OATTs) that contain the terms and conditions of non-discriminatory transmission service to all transmission customers, including independent power developers. Open access transmission facilitates competition in the wholesale power marketplace resulting in lower cost power to electricity consumers. FERC's Department of Energy is responsible for the Public Utility Regulatory Policy Act (PURPA) which creates a market for power from non-utility power producers referred to as "Qualifying Facilities." PURPA requires utilities such as PacifiCorp to buy power from independent qualifying generation facilities that can produce power for less than what it would cost for the utility to generate the power itself, referred to as the "avoided cost." PURPA provides the mechanism whereby Qualifying Facilities, if developed in the Basin, would sell power to PacifiCorp at its avoided cost.

PacifiCorp maintains OATTs for generator interconnections and transmission services. Requests for generator interconnections or transmission services are managed through PacifiCorp Transmission Service's Generation Interconnection Queue. PacifiCorp maintains a formalized process to study and construct new power development under this OATT, including any new Qualifying Facilities developed in the Klamath Basin.

The OATT defines the terms and conditions governing access to PacifiCorp's transmission system. A request for transmission service would result in a study to determine available transmission capacity and to determine applicable costs for any potential system upgrades necessary to transmit power from a resource developed in the Basin that utilizes PacifiCorp's transmission system.

ES.4 PacifiCorp Operations

PacifiCorp's operating requirements and programs under the OPUC and CPUC vary substantially between the two states. A summary of PacifiCorp's operations in Oregon and California is provided below, with major power cost reduction opportunities shown in Table ES-2.

ES.4.1 Oregon

In Oregon, PacifiCorp currently offers irrigators several rate schedules. Schedule 41 is the primary irrigation rate schedule with a combined effective summer rate of 9.674 cents per kilowatt-hour (¢/kWh) for all services and OPUC charges. Schedule 741 is PacifiCorp's Direct Access competitive rate schedule which removes 3.181 ¢/kWh from Schedule 41, since energy is supplied by an Electricity Service Supplier (ESS). The ESS would need to offer a rate lower than 3.181 ¢/kWh for the consumer to see a reduction in their power rate. For all schedules, a load charge of \$1,210 is annually charged to loads exceeding 300 kW (approximately a 400-horsepower pump).

PacifiCorp also provides tariff schedules for off-peak power and net metering programs. The off-peak programs provide a credit for energy used during off-peak hours and an additional charge for energy used during on-peak hours. PacifiCorp's net metering program offsets energy costs by generating renewable energy on-site but does not compensate a generator for excess annual energy production. The current cap on photovoltaic (PV) solar incentives through Energy Trust is \$80,000 per facility. Energy Trust provides PacifiCorp customers with energy efficiency incentives for irrigation system upgrades.

PacifiCorp provides schedules for the pricing of new power generation from qualifying facilities that feed into PacifiCorp's transmission and delivery system, paying the generator its avoided cost rate (2015 rates are 2.86 ¢/kWh off-peak and 3.94 ¢/kWh on-peak). Oregon also runs a pilot Volumetric Incentive Rate (VIR) program that uses competitive bidding to establish power rates from independent developers of solar PV. VIRs are currently slightly lower than 11 ¢/kWh for facilities greater than 100 kW. The future of the Oregon VIR pilot program is uncertain.

ES.4.2 California

In California, PacifiCorp currently offers irrigators one primary rate schedule (Schedule PA-20) with a combined effective rate of 12.933 ¢/kWh for all services charges. PA-20 includes an annual load charge of \$149.31 plus \$15.63/kW for large loads over 300 kW.

PacifiCorp offers a net metering program capped at 1,000 kW, under which customers with renewable generation systems are compensated for excess electricity generated at a rate equal to the simple rolling average of Pacific Gas and Electric Company's default load aggregation point price. This price changes from month-to-month, but was 4.99 ¢/kWh in December 2014.

PacifiCorp also offers the California Solar Incentive Program (CSIP), which provides a rebate to customers that install a solar energy system in California. CSIP was a limited program with 3.5 MW of total capacity that began in 2011. As of December 3, 2014, the program had 938 kW of available capacity and ends in April 2015.

PacifiCorp does not have any programs for new power development in California. Any new power development that does not participate in the net metering program would fall under the general requirements of PURPA as a Qualifying Facility (discussed above), requiring PacifiCorp to compensate the generator for power at its avoided cost rate (2015 rates are 2.86¢/kWh off-peak and 3.94¢/kWh on-peak).

Table ES-2. Available Programs with Potential to Reduce Energy Costs

Program	Oregon	California
Net Metering	Yes	Yes
Community Choice Aggregation ^{1,2}	No	No
Off-Site Shared Renewables ²	No	No
Direct Access Competition ^{1,2}	Yes	No
Time-of-Use	Yes	No
Solar Volumetric Pricing	Yes	No
Qualifying Facility	Yes	Yes

¹ Under Direct Access an ESS can aggregate loads

² California program not subject to PacifiCorp

ES.5 KWAPA Authority and Capacity as a Utility District

KWAPA, by charter, established itself as a PUD under Oregon law and as an irrigation district (ID) under California law. Covering two states, KWAPA is an interstate, intergovernmental agency, allowing KWAPA the joint exercise of power in Oregon and California. Specific to the CAPP, KWAPA is authorized to do all things necessary or incidental to purchase, generate, and distribute electric power as a PUD in Oregon and an ID in California.

Although granted the authority as an Oregon PUD with complementary joint powers in California, KWAPA’s current capacity is limited by PacifiCorp’s ownership of the power transmission and distribution network in the Basin. As an example, the Bonneville Power Administration (BPA) will not enter into a power agreement with KWAPA unless KWAPA meets BPA’s Standards of Service. One of those standards requires that KWAPA own the distribution system through which federal power would be distributed to retail loads, which would prohibit KWAPA serving loads already served by PacifiCorp. Potential options available to KWAPA to increase its capacity to provide energy cost reduction to Basin irrigators include:

- **Power Development** – Subject to PURPA requirement, KWAPA has the authority to develop new electrical power generation up to 80,000 kW and sell this power directly to PacifiCorp at its avoided cost rate.
- **Electricity Service Supplier** – KWAPA can seek certification as an ESS in Oregon under Direct Access regulations from the OPUC. The

Direct Access regulations require PacifiCorp to allow competition for energy service providers over its transmission and distribution system. As an ESS, KWAPA must demonstrate to the OPUC technical competence in energy procurement and delivery and it would be responsible for the forecasting and scheduling of direct access loads and point-to-point transmission services. KWAPA would also be required to execute an ESS Service Agreement with PacifiCorp. KWAPA as an Oregon ESS could not service California loads.

- **ESS Aggregator** – KWAPA can aggregate all or a portion of the On- and Off-Project Oregon loads for the purpose of negotiating a price and service arrangement with an ESS provider approved to operate in Oregon. Aggregating the Oregon load would provide bargaining power with the ESS. KWAPA as an Oregon ESS Aggregator could not service California loads.
- **Distribution System Ownership** – KWAPA could seek the purchase, lease, or another ownership/operational mechanism of the distribution system from PacifiCorp. Distribution system ownership/leasing would provide greater autonomy in setting Basin electricity rates. By way of example, there are six PUDs operating in Oregon all of which own their electrical distribution systems. Most PUDs generate a portion of their power and are also customers of the BPA.

ES.6 Energy Cost Reduction Opportunities and Constraints

There are numerous opportunities to reduce energy costs to Basin irrigators however, many have associated constraints. Constraints are generally related to state regulations in which PacifiCorp operates. Table ES-3 presents the power rate reduction opportunities and their associated constraints applicable to Oregon, California, and the two states collectively.

One substantial challenge to a Basin-wide energy cost reduction program is the differing Oregon and California regulations. As Tables ES-2 and ES-3 show, there are substantial differences between Oregon and California programs that could reduce power rates or energy costs. Promising programs in one state are not available or differ in the other state. A uniform set of policies that govern the Oregon and California portions of the Klamath Project would be ideal. Further engagement is recommended with PacifiCorp, OPUC, and CPUC to identify a framework for a more uniform set of operating regulations to equitably distribute any potential KBRA-related benefits to California and Oregon irrigators and to define cost reduction strategies that encompass the entire Klamath Project and Off-Project irrigators.

Table ES-3. Cost Reduction and Power Development Opportunities and Constraints

Oregon Opportunities	Constraints
<p>Net metering allows customers to generate up to 2,000 kW and send excess generation back onto PacifiCorp's power grid. Energy Trust provides incentives up to \$80,000 for new solar installations.</p>	<ul style="list-style-type: none"> • Does not allow virtual metering • Restricted to one property owner or entity (ID) • No reimbursement for annual overproduction
<p>Off-Peak rate programs offer customers lower rates during off-peak hours and additional charges during on-peak hours. Pilot programs provide a 2.5¢/kWh reduction in base rate and a 1.2¢/kWh reduction for the existing program.</p>	<ul style="list-style-type: none"> • On-peak pilot rate adds 18¢/kWh • Pilot is limited to 3 meters per owner • Pilot future and rates are uncertain
<p>VIRs for solar projects up to 500 kW allow generators to sell all generated energy to PacifiCorp at a fixed rate. Current VIR bid price is 11¢/kWh.</p>	<ul style="list-style-type: none"> • Program future after 2015 is uncertain • VIR bid pricing shows strong downward trend • Participants are ineligible for state tax credits and Energy Trust rebates
<p>Federal power provided through BPA supplies energy to Oregon load with usage >17,000 kWh annually (approximately 50% of meters) or load to select meters with future price stability</p>	<ul style="list-style-type: none"> • Cost is comparable to the current Schedule 41 rate • Energy Trust incentives are suspended • Requires new metering
<p>ESS or Aggregator provides energy to its customers over PacifiCorp's distribution system while offering competitive pricing to current PacifiCorp rates</p>	<ul style="list-style-type: none"> • Requires separate billing for supply (ESS) and distribution (PacifiCorp) • KWAPA could not purchase Federal power from BPA
California Opportunities	Constraints
<p>Net metering allows customers to generate up to 1,000 kW and send excess generation back through PacifiCorp's power grid. Customers can receive reimbursement for annual overproduction.</p>	<ul style="list-style-type: none"> • Does not allow virtual metering • Restricted to one property owner or entity (irrigation district)
<p>Green Tariff Shared Renewables allows individuals to purchase 100% of energy supply from renewables</p>	<ul style="list-style-type: none"> • PacifiCorp is not required to implement Shared Renewables in California.
<p>Local Government Renewable Energy Self-Generation Bill Credit Transfer Program allows local governments to generate renewable energy on-site under one account and transfer excess bill credits to up to fifty different accounts.</p>	<ul style="list-style-type: none"> • Both the Generating Account and the Benefiting Account(s) must be serviced under a time-of-use schedule. • The Generating Account is limited to 5,000 kW. • PacifiCorp is not required to offer this program.
<p>Federal Power provided through Western Area Power Authority (WAPA) supplies California load with future price stability.</p>	<ul style="list-style-type: none"> • Option to purchase base load power from WAPA expired in October 2014; any power purchased from WAPA would be at spot market prices
Opportunities Common to Oregon and California	Constraints
<p>Pump efficiency improvements paid for partially through available cash efficiency incentives from Energy Trust in Oregon and PacifiCorp in California</p>	
<p>PURPA Qualifying Facility development for new power generation sources using the most economical energy source and best technology allows for the generation of up to 80,000 kW to be sold to a utility</p>	<ul style="list-style-type: none"> • Sold to PacifiCorp at avoided cost rate of <4¢/kWh • KBRA funding specifies renewables; most cost efficient use natural gas
<p>Available Funding on a reimbursable basis from Reclamation for On-Project irrigators</p>	<ul style="list-style-type: none"> • Excludes Off-Project irrigators
<p>Distribution System Ownership/operation by a basin PUD or Electrical Cooperative provides greater ability to set rates and generate and distribute power</p>	<ul style="list-style-type: none"> • PacifiCorp has stated that it is not willing to sell its distribution assets in the Klamath Basin. • PUD rates after acquisition and operation are unknown.

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Abbreviations and Acronyms

AF	acre-feet
BPA	Bonneville Power Administration
CA	California
CAPP	Comprehensive Agricultural Power Plan
CCA	Community Choice Aggregator
CPUC	California Public Utilities Commission
CSIP	California Solar Incentive Program
EIM	Energy Imbalance Market
Energy Commission	California Energy Commission
Energy Trust	Energy Trust of Oregon
ESS	Electricity Service Supplier
FERC	Federal Energy Regulatory Commission
IOU	investor-owned utility
ISO	Independent System Operator
KBRA	Klamath Basin Restoration Agreement
kW	kilowatt
KWAPA	Klamath Water and Power Agency
KWUA	Klamath Water Users Association
kWh	kilowatt-hour
MW	megawatt
MWh	megawatt-hour
N	no
N/A	not applicable
NEM	Net Energy Metering
OAR	Oregon Administrative Rules
OASIS	Open Access Same-Time Information System
OATT	Open Access Transmission Tariff
OPUC	Oregon Public Utility Commission
OR	Oregon
ORS	Oregon Revised Statutes
OWID	Oroville Wyandotte Irrigation District
PG&E	Pacific Gas & Electric Company
PGE	Portland General Electric
PUC	Public Utility Commission

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PUD	people's utility district
PURPA	Public Utility Regulatory Policy Act
PV	photovoltaic
REC	Renewable Energy Certificate (or Credit)
Reclamation	Bureau of Reclamation
RPS	Renewables Portfolio Standard
Secretary	Secretary of the Interior
TID	Turlock Irrigation District
U.S.	United States
VIR	Volumetric Incentive Rate
W	watt
WAPA	Western Area Power Administration
Workgroup	Federal Power Delivery Workgroup
Y	yes

Chapter 1

Introduction

Power rates in the Klamath Basin have increased an average 18-fold in a period of less than 10 years for Klamath Basin irrigators as a result of the expiration of the 1956 power contract with PacifiCorp. This power rate increase has affected approximately 1,900 power users on the Bureau of Reclamation's (Reclamation's) Klamath Project (On-Project users) and 600 irrigators in Oregon not associated with the Klamath Project (Off-Project users). This dramatic power cost increase has the potential to impair the Klamath Basin's economy and ecosystem through long-term reductions in agricultural output and water deliveries to the Lower Klamath National Wildlife Refuge.

PacifiCorp is the sole owner and operator of the power distribution network in the Klamath Basin and is organized as an investor-owned utility (IOU). The current regulatory framework governed by the Oregon Public Utility Commission (OPUC) and California Public Utilities Commissions (CPUC) allows PacifiCorp's electricity rates to be charged to the Basin irrigators through approved tariffs.

The Klamath Basin Restoration Agreement (KBRA) and Klamath Hydroelectric Settlement Agreement were developed to address multiple water, power, and environmental issues that have resulted in long-standing resource conflicts in the Klamath Basin. Within the KBRA, the "Power for Water Management Program" identified several programs and areas of study to provide affordable power to agricultural water users affected by the transition to PacifiCorp tariff power rates (see Exhibit 1.1). Reclamation, on behalf of the Secretary of the Interior (Secretary), has initiated a process to develop the Comprehensive Agricultural Power Plan (CAPP) to identify and evaluate potential alternatives for lowering the power costs for On-Project and Off-Project Basin irrigators, as outlined in the KBRA Power for Water Management Program. The CAPP is intended to provide a general roadmap for the Basin irrigators to implement a program to achieve the lowest power rates possible. An important foundation of the CAPP is to outline the regulatory framework of electrical power transmission, distribution and development.

This Klamath CAPP Regulatory Framework Report identifies the regulatory framework under which PacifiCorp operates to provide Basin power in Oregon and California and potential programs that PacifiCorp or a utility district such as Klamath Water and Power Agency (KWAPA) could institute to lower energy costs to the Basin irrigators. This Report concludes with a summary of the Basin energy cost reduction opportunities and constraints as set forth in Oregon's and California's regulatory framework governing power transmission, distribution and new development.

At the time of this report's development, there were two key uncertainties regarding the Power for Water Management Program that affect potential CAPP alternatives which have the potential to reduce Basin irrigator power costs:

- **Availability of Federal Power:** Reclamation is studying the potential to provide Federal power (Bonneville Power Administration [BPA] in Oregon and Western Area Power Administration [WAPA] in California) to Basin irrigators. The results of this study are ongoing with current results presented in Section 1.1. If Federal power is provided to irrigators, it affects power distribution governance (delivery of Federal power over PacifiCorp's transmission system would require a Federal agency to administer the loads) and access to programs currently offered by Energy Trust of Oregon and PacifiCorp, including access to renewable power incentives.
- **KBRA Legislation and Funding:** Proposed Federal legislation to authorize and fund the KBRA expired at the close of the 113th Congress; KBRA parties are working to resolve obstacles to successful introduction and passage of legislation in the 114th Congress. If Federal appropriations are provided for implementation of the KBRA and the Power for Water Management Program, up to \$50 million may become available for renewable power development to both On-Project and Off-Project irrigators. If Congress fails to act on the legislation, the CAPP would apply only to the On-Project irrigators. Actions taken through the CAPP that require federal funding would potentially be subject to repayment by the On-Project irrigators through a repayment contract with Reclamation; actions not requiring federal funding, such as private funding or state incentive programs, could still proceed.

1.1 Status of Providing Federal Power to the Basin

To address the goals of the KBRA Power for Water Management Program, the Federal Power Delivery Workgroup (Workgroup) composed of Basin water agencies, Reclamation, PacifiCorp, BPA, and WAPA was formed to identify the process for delivering Federal power to the Basin irrigators. In general, this power would be supplied by BPA and WAPA to Reclamation and distributed to its customers by PacifiCorp through its distribution system. Although this work is continuing, preliminary information provided in the Workgroup's May 31, 2014 *Status Memorandum on Klamath Power Issues* (Appendix A) have identified the following:

- **Basin Federal Agency Power Lead.** Distributing Federal power to Basin loads would require Reclamation to take the contractual program lead with BPA and WAPA. Reclamation would accept the responsibility of billing irrigation loads and payment to PacifiCorp,

BPA, and WAPA among other administrative responsibilities. Some of these activities could be carried out by KWAPA.

- **BPA Power to Oregon.** Federal power delivered from BPA is available to the Oregon portion of the Basin in its service area and after delivery could save on the order of 7-10 percent of power costs currently paid to PacifiCorp on loads greater than approximately 17,000 kilowatt-hours (kWh) annually. BPA requires that all loads use a BPA meter, the purchase and installation of which costs approximately \$1,500. PacifiCorp estimates that 50 percent of loads (approximately 1,045 meters) use greater than 17,000 kWh annually and thus might save on energy costs by switching to BPA power.
- **WAPA Power to California.** Federal power delivered from WAPA is available to the California portion of the Project in its service area and after delivery could again save on the order of 7-10 percent of power cost currently paid to PacifiCorp (see Appendix A). However, the Workgroup found that WAPA had only sufficient long-term firm power to provide approximately six percent of the load. The remainder of the load (94 percent) would be purchased on the spot market and subject to future price instability and uncertainty. The Klamath Basin's option to purchase base load power from WAPA expired in October 2014; any power purchased from WAPA would be at prevailing market rates.
- **PUC Approval and Cost Shifting.** Providing Federal power to either the Oregon or California loads will require approval from the respective state's PUC. In making their determination, the PUCs would evaluate whether cost shifting is occurring to other PacifiCorp customers in either state for PacifiCorp's fixed costs serving the switched loads. If cost shifting is discovered, a temporary transition charge could be placed on the Federal power loads affecting the end-user rates.
- **Off-Project loads.** Passage of authorizing legislation for the KBRA would be necessary to serve any Off-Project loads.

The Workgroup continues to meet on a regular basis to define methods, opportunities, and constraints for delivering Federal power to the Basin. Consequently, this report does not address the regulatory or policy requirements for Federal power deliveries to the Basin.

Exhibit 1.1 KBRA Power for Water Management Program

The Power for Water Management Program (KBRA Section 17) included provision by the KBRA signatories to address electricity power needs of the Basin irrigators. When instituted, the program will provide power for the Klamath Project, refuges, and movement of water for the On-Project Plan. The program goals include providing power cost security for sustainable agriculture (On and Off-Project) at rates equal to or lower than other Reclamation irrigation projects. Major program elements include:

- Interim power sustainability prior to implementation of the KBRA power program;
- Study of Federal (BPA and WAPA) power supplies;
- Conservation and efficiency measures; and
- Renewable power.

KBRA Section 17 specified that the program be developed through a financial and engineering plan (now titled the Comprehensive Agricultural Power Plan) for the equitable expenditure of any future Federal appropriations for the KBRA.

Chapter 2

Basin Energy Use

This chapter provides information on Basin energy use for the purpose of understanding how various regulations and programs that have power development or energy use thresholds can be applied to reduce energy costs to Basin irrigators.

2.1 Annual Energy Use and Power Demand

This section describes the annual energy use and power demand in the Klamath Basin from 1992 to 2013.

2.1.1 Energy Use

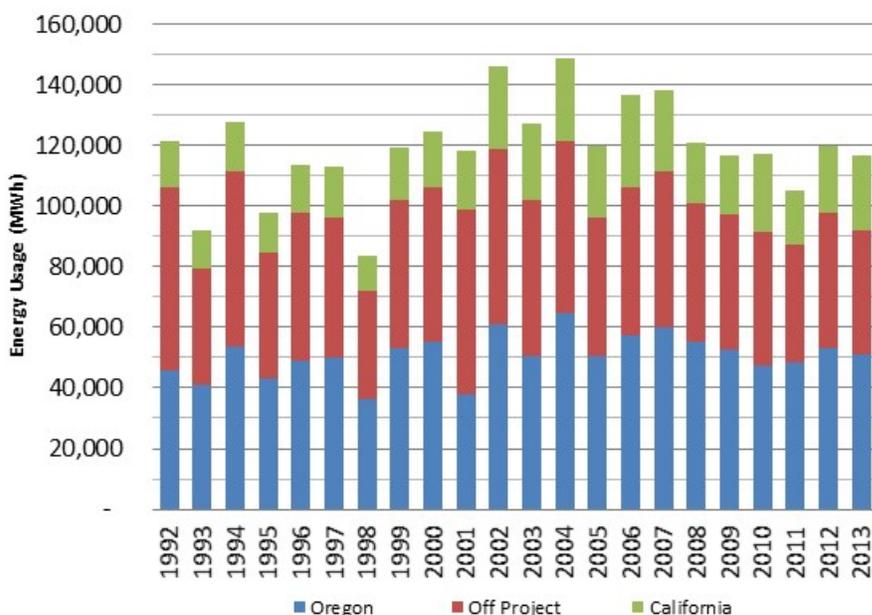
Reclamation reviewed Basin energy use through two sets of data provided by PacifiCorp: 1) a period spanning 1992-2004, prior to the tariff rates; and 2) a period from 2007-2013, representing tariff implementation. As shown in Figure 2-1, energy use peaked in 2004 at approximately 150,000 megawatt hours (MWh), with the lowest period of use recorded in 1998 at 82,000 MWh. Over the 13-year period from 1992 to 2004, prior to the tariff rates, the average annual energy use was approximately 120,000 MWh. Data from post tariff rates (2007-2013) also indicate an annual energy usage of approximately 120,000 MWh, as shown in Figure 2-1. Some observations can be drawn from the historical energy use data:

- It is uncertain how power rate increases have affected energy use. Table 2-1 presents the rate increases imposed on Oregon irrigators starting in 2006, with the full tariff rate occurring in 2013 and 65 percent of the rate increase occurring in the final three years (2011-2013). Energy use decreased during the tariff phase-in period; however, as the 1992-2004 dataset in Figure 2-2 shows, there are other periods of similar and lower energy use so this reduction could be the result of other factors.

Definition of Power and Energy

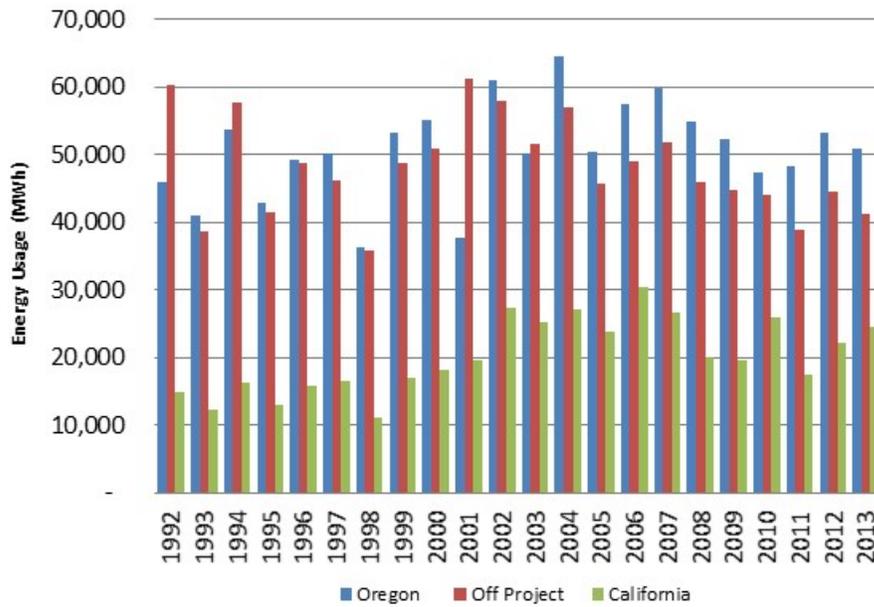
Power and energy are related, but not synonymous. Power is the instantaneous ability to do work and is typically measured in watts (W). Energy is the amount of work done over a period of time (power used over time) and is typically measured in watt-hours. A useful analogy is that a 60-watt light bulb uses 60 watts of power and 1,440 watt-hours of energy over a 24-hour period. Another key difference is that energy is delivered and power is the rate at which the energy is delivered. Because energy costs are a function of both power (for example, demand charges and peak load) and energy (total energy consumption), both energy use and power demand are important factors for considering the different regulations and programs that may help reduce energy costs to Basin irrigators.

- A steady decline in energy use by Oregon Off-Project and On-Project irrigators is apparent in Figure 2-2 from 2004 to 2013. Again, it is not certain that energy use reductions were the result of new tariffs, reductions in irrigation water, or other factors.
- From the reviewed data set, lowest periods of energy use correlate with wet water years and highest periods of energy use correlate with dry water years. Figure 2-3 presents the net historical inflow to Upper Klamath Lake, with the 50 percent exceedance inflow reported at 1.2 million acre-feet (AF) (KWAPA 2012). High energy use years including 1992, 1994, 2002-2004, and 2007 all occurred in water years with inflow to Upper Klamath Lake below 1 million AF. Correspondingly, water years 1993 and 1995-1999 were all water years well above the 50 percent exceedance inflow and all show lower energy usage when compared to drier years.



Source: PacifiCorp

Figure 2-1. Basin Energy Use for 1992-2013



Source: PacifiCorp

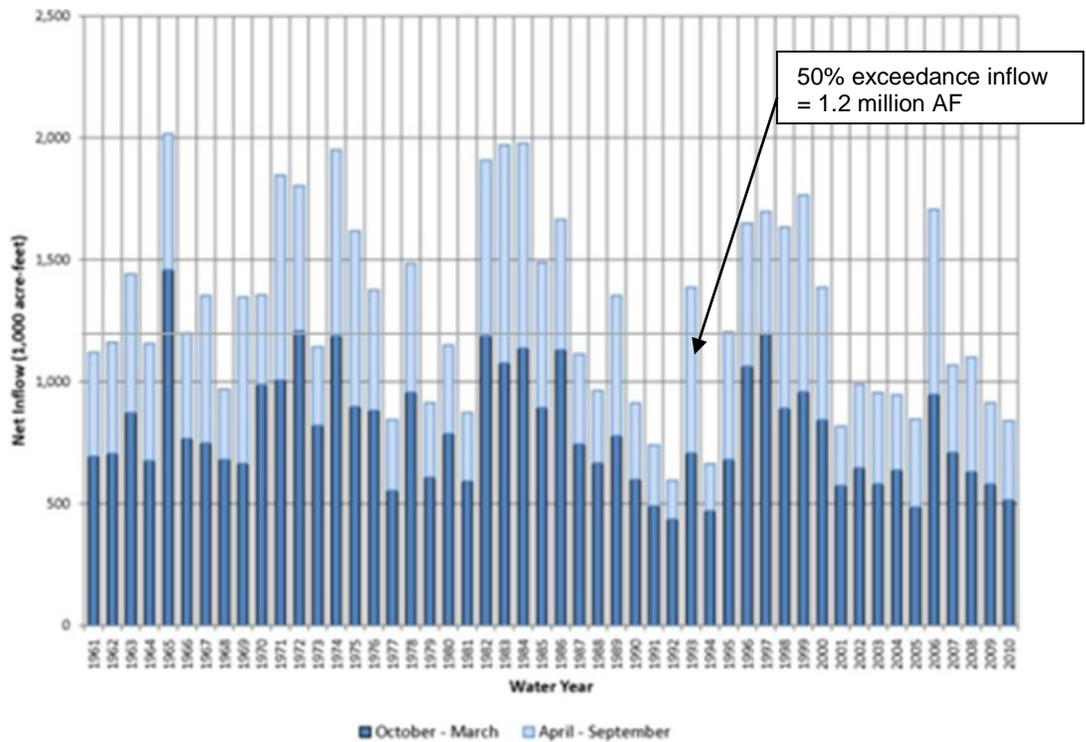
Figure 2-2. Basin Energy Use for 1992-2013, by Irrigation Sector

Table 2-1. Oregon Tariff Rate Phase-in Schedule (cents per kWh [¢/kWh])

Year ¹	On-Project	Off-Project	Reclamation On-Peak	Reclamation Off-Peak
Pre- Tariff	0.600	0.750	0.500	0.300
2006	0.815	0.991	0.695	0.445
2007	1.126	1.331	0.982	0.668
2008	1.561	1.794	1.392	1.002
2009	2.164	2.419	1.974	1.503
2010	3.035	3.300	2.833	2.255
2011	4.447	4.702	4.247	3.383
2012	6.671	6.914	6.371	5.075
2013 ²	10.254	10.254	10.254	10.254

¹ Table excludes credit from BPA Columbia River Benefits.

² 2013 rates calculated as an average of all charges under standard irrigation tariff.

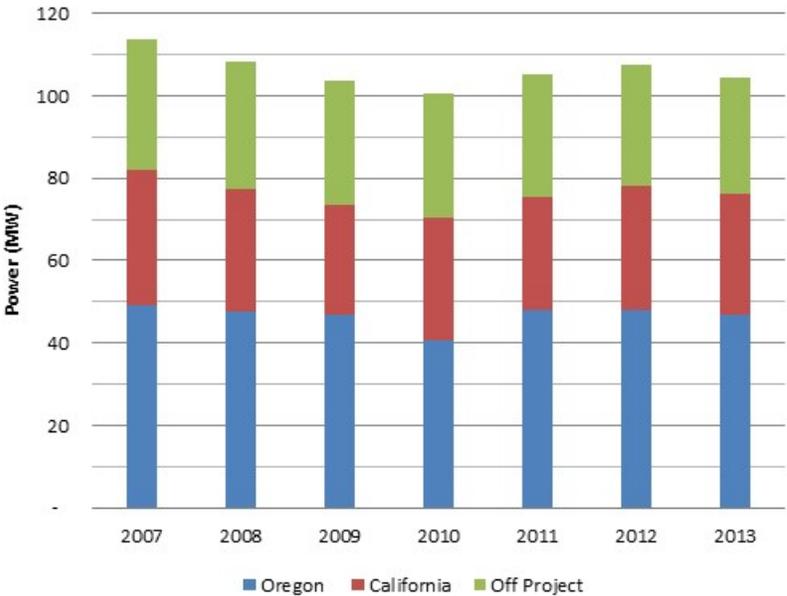


Source: KWAPA 2012

Figure 2-3. Upper Klamath Lake Net Water Year Inflow 1961-2010

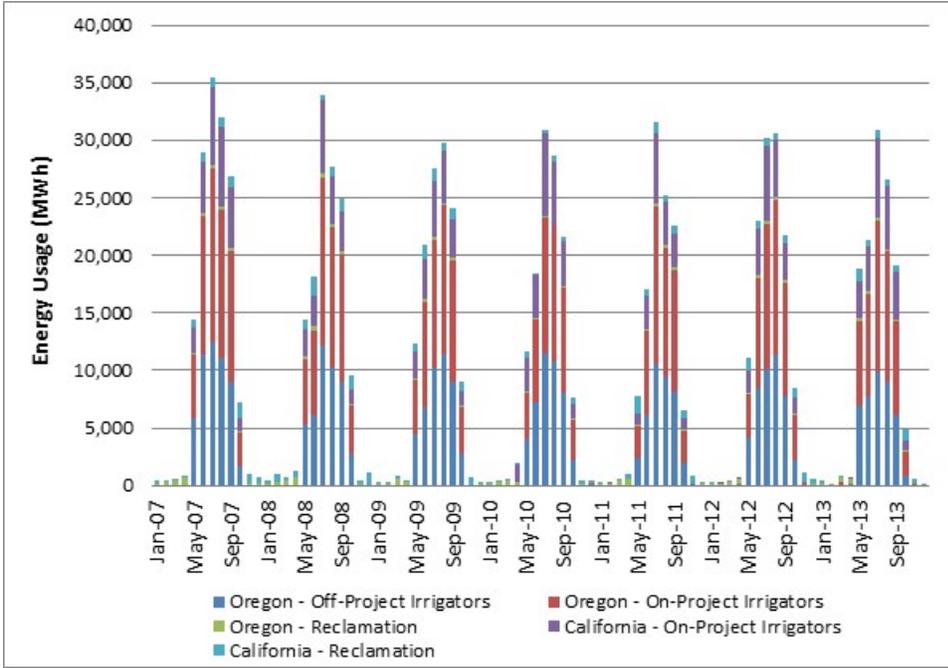
2.1.2 Power Demand

Total power demand (megawatts [MW]) in the Basin averaged approximately 110 MW from 2007 through 2013, with Oregon On-Project demand at approximately 50 MW, and California On-Project and Oregon Off-Project each at approximately 30 MW each, as shown in Figure 2-4. Figure 2-5 shows that the demand for power peaks during the irrigation season in June through August. The power peaks do not precisely coincide for Oregon and California loads, so 110 MW is provided as a general assessment of overall power needs.



Source: PacifiCorp

Figure 2-4. Total Basin Power Demand 2007-2013



Source: PacifiCorp

Figure 2-5. Monthly Energy Usage by Irrigation Sector for 2007-2013

2.1.3 CAPP Energy Use and Power Demand Baseline

It is important to develop baseline energy use for California and Oregon On-Project and Oregon Off-Project sectors of the Basin for the purposes of identifying which regulations apply and developing alternatives under the CAPP. Over the period where energy data is available (1992-2013), several factors have changed the way water and power are used, including reduced agricultural water diversions through the Biological Opinions that now require more water to remain in the Klamath River.

For the CAPP alternatives, a baseline is proposed that averages energy use from 2007 to 2013 and removes high energy use years prior to 2007 when greater diversions were allowed. This period includes several dry years with groundwater pumping and any voluntary energy use reduction that may have occurred from new tariff rates. Table 2-2 presents the proposed baseline energy use assumptions for Oregon and California On-Project irrigators and the Off-Project irrigators.

Table 2-2. CAPP Baseline Energy Use and Power Demand

Sector	Energy Use (MWh)	Power Demand (MW)
Oregon On-Project	52,000	47
Oregon Off- Project	44,000	30
California On-Project	22,000	29
Total	118,000	106

Source: PacifiCorp

Chapter 3

Regulatory Framework for Power Development, Transmission, and Distribution

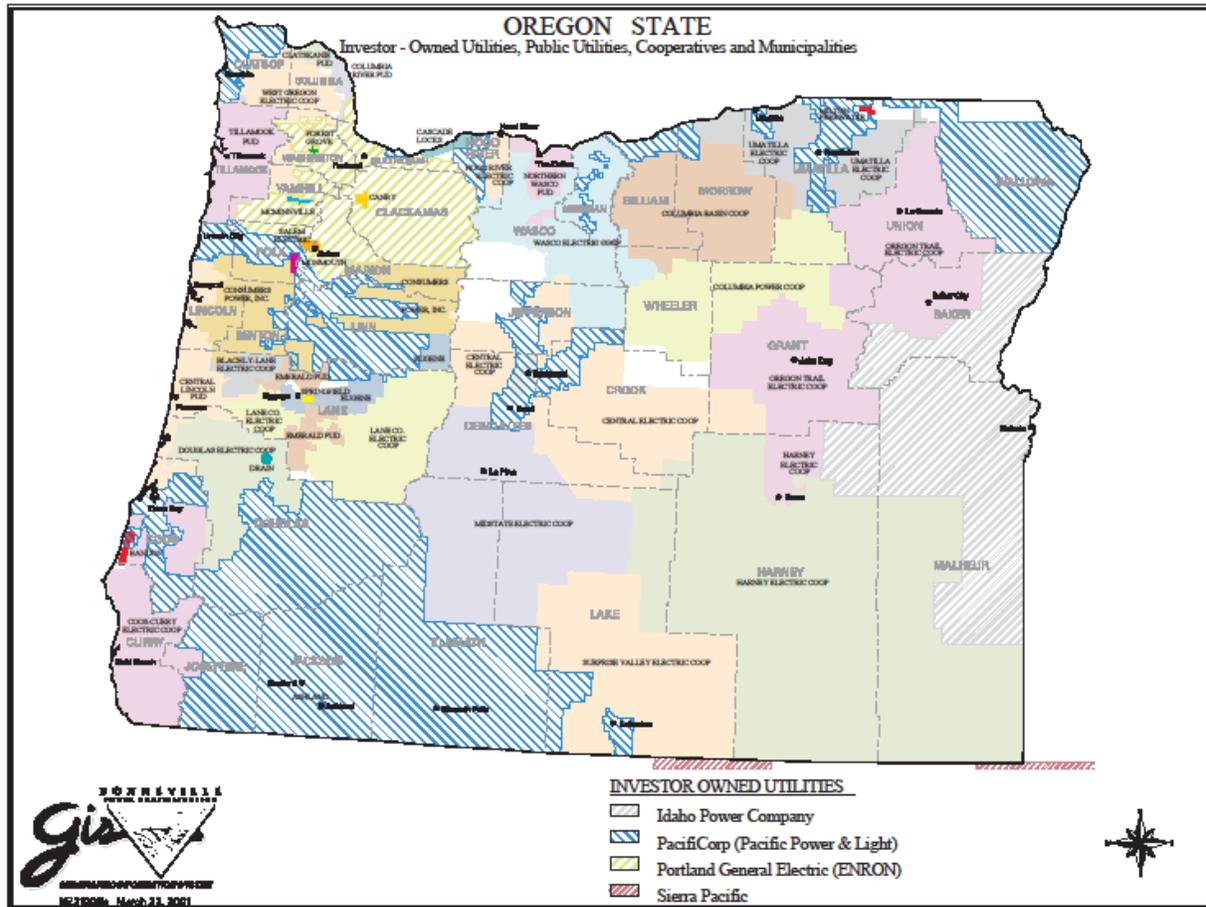
PacifiCorp is regulated by the CPUC and OPUC and is subject to the regulations of other state and federal agencies, including the Federal Energy Regulatory Commission (FERC). This chapter discusses the various state and Federal agencies with a role in power development, transmission, and distribution regulation and how they relate to the CAPP.

3.1 Oregon

The OPUC regulates prices charged to retail customers, standards to ensure safety and reliability of power delivery, and other matters related to a utility's accounting and business operations.

3.1.1 OPUC

OPUC regulates consumer rates and services including rates that PacifiCorp charges customers in Oregon. The OPUC's Utility Program "ensures consumers receive utility service at fair and reasonable rates, while allowing regulated companies the opportunity to earn an adequate return on their investment." The OPUC also has programs designed to set and enforce price and has service rules that protect consumers. In addition, the OPUC evaluates many components of cost and decides the structure of customer rates. Per Oregon Revised Statutes (ORS) 756 and 757, the OPUC is not responsible for the regulation of the people's utility districts, numerous energy cooperatives, and the IOUs operating in Oregon, which are shown in Figure 3-1.



Source: BPA 2001

Figure 3-1. Oregon Utilities

3.1.2 Energy Trust of Oregon

Energy Trust of Oregon (Energy Trust) is an independent, non-profit organization that offers cash incentives and energy solutions to PacifiCorp customers to reduce energy costs. Energy Trust is funded by the customers of PacifiCorp, Portland General Electric (PGE), NW Natural, and Cascade Natural Gas. Customers of all four utilities pay a percentage of their utility bills to support the energy efficiency and renewable energy programs offered by Energy Trust. Energy Trust is overseen by the OPUC, who sets their electric efficiency performance targets in regions of the state. Energy Trust has demonstrated an active interest in the Basin and in promoting its programs to serve the goals of the CAPP.

3.2 California

There are three public agencies in California responsible for power policy and regulation. The main regulatory agency is the CPUC which regulates all consumer-related power development and use. The Independent System Operator (ISO) dispatches bulk energy from sellers to buyers and the California Energy Commission (Energy Commission) is the policy arm for energy development and use. These agencies are further described below.

3.2.1 CPUC

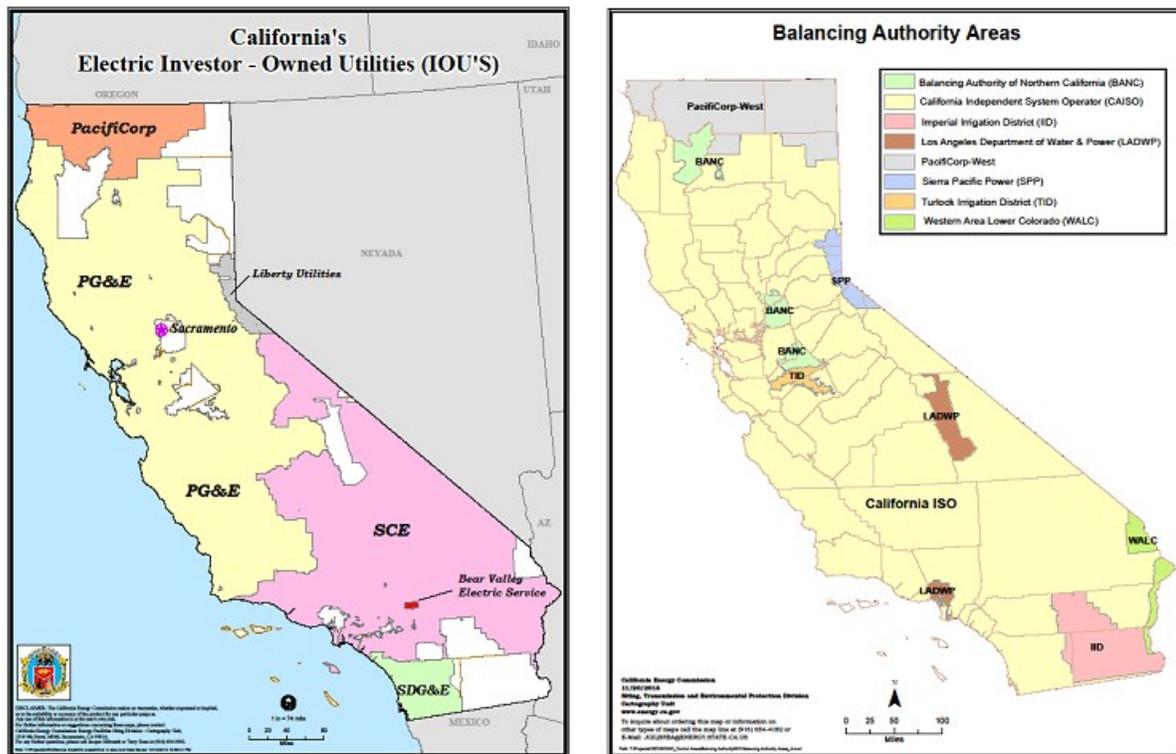
The CPUC has authority over the operations of the California IOUs (Pacific Gas and Electric Company [PG&E], San Diego Gas & Electric [SDG&E], and Southern California Edison [SCE]), as well as the operations of PacifiCorp in California, and the CPUC sets their retail rates through General Rate Cases. California's municipal electric utilities and associated Balancing Authorities, shown in Figure 3-2, are not subject to the rate-setting requirements of the CPUC. The CPUC is responsible for ensuring that PacifiCorp meets the State's Renewables Portfolio Standard (RPS) by procuring 20 percent of its power through renewables by 2010, and 33 percent by 2020. The CPUC serves the public interest by protecting the IOU consumers and ensuring the provision of safe, reliable utility service and infrastructure at reasonable rates.

3.2.2 Independent System Operator

The ISO is an independent, non-profit grid operator overseeing the operation of California's bulk electric power system, transmission lines, and electricity market generated and transmitted by its member utilities. The ISO operates both a day-ahead and real-time energy market to ensure that adequate power is available at the lowest price to meet demand in its power Balancing Authority Area.

Unlike other IOUs operating in California, PacifiCorp is not an ISO member utility. PacifiCorp operates its own Balancing Authority Area and is not required to follow other ISO policies required of full ISO member utilities, including Direct Access competition where the consumer can choose their energy provider. Pursuant to an agreement between the ISO and PacifiCorp, which was approved by FERC in July 2013, PacifiCorp and the ISO recently implemented an Energy Imbalance Market (EIM), which facilitates PacifiCorp's participation in an extension of the ISO's real-time balancing market that optimizes generation and transmission between the two service areas of ISO and PacifiCorp. PacifiCorp's transmission interconnection with ISO occurs through its major transmission lines that run through Klamath Falls and Malin (the California-Oregon Intertie). The EIM is expected to reduce costs to serve customers through more efficient dispatch of a larger and more diverse pool of resources, more effectively integrate renewables, and enhance reliability through improved situational awareness and responsiveness. The EIM is conservatively projected to provide PacifiCorp annual benefits of between \$10

million to \$54 million starting in 2017 (Energy and Environmental Economics 2013).



Source: Energy Commission 2013

Figure 3-2. California IOU service areas and Balancing Authority Areas

3.2.3 Energy Commission

The Energy Commission is the State’s primary energy policy-making and planning agency. The Energy Commission’s mission is to ensure a safe and reliable supply of energy while reducing energy costs and environmental impacts of energy use. It is responsible for: forecasting future energy needs; setting the California appliance and building energy efficiency standards; conducting energy research, development, and demonstration projects; developing renewable energy resources; and licensing of all thermal power plants with 50 MW and greater capacity. In addition to its technical staff, the Energy Commission is composed of five Commissioners appointed by the Governor and confirmed by the State Senate.

Specific to the CAPP planning process, the Energy Commission supports the State’s 33 percent RPS, certifies renewable power facilities, enforces RPS compliance for the State’s publicly-owned utilities. The Energy Commission also provides incentives for renewable energy demonstration projects, planning, and geothermal resources. Under recent legislation, the Energy Commission has

also prepared guidelines for Certification of Combined Heat and Power Systems.

3.3 FERC

FERC is responsible for the interstate transmission of power and large power development.

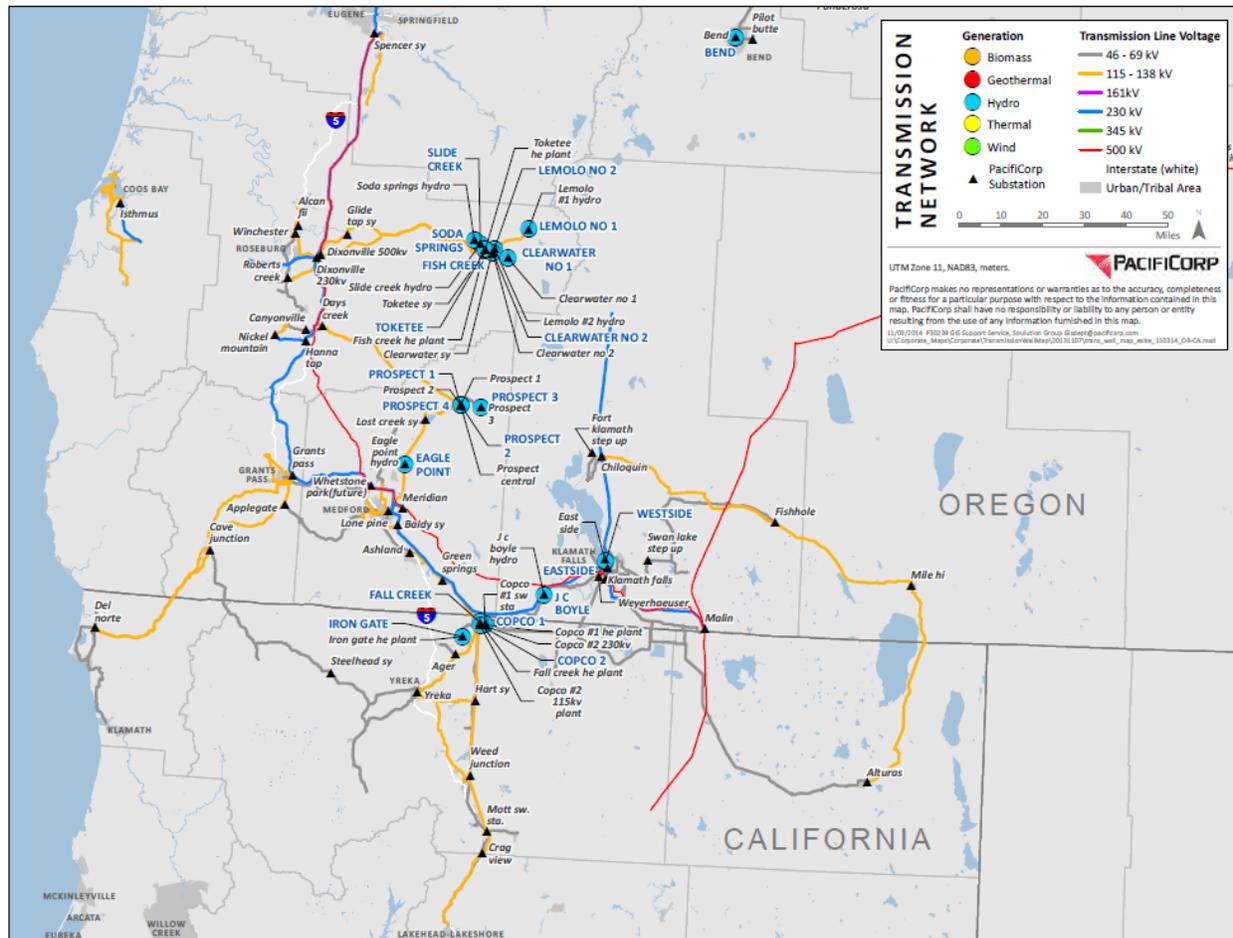
3.3.1 Open Access Transmission Tariffs (OATTs)

The FERC requires all public utilities that own, control, or operate facilities used for transmitting electric energy in interstate commerce to provide OATTs that contain the terms and conditions of non-discriminatory transmission service to all transmission customers, including independent power developers. Open access transmission facilitates competition in the wholesale power marketplace resulting in lower cost power to electricity consumers.

PacifiCorp maintains OATTs for both generator interconnections and transmission services. Requests for generator interconnections or transmission services are managed through PacifiCorp Transmission Service's Generation Interconnection Queue. OATTs define the terms and conditions governing access to PacifiCorp's transmission system. A request for transmission service would result in a study to determine available transmission capacity and applicable costs for any potential system upgrades necessary to transmit power from a resource developed in the Basin that utilizes PacifiCorp's transmission system. See Figure 3-3 for PacifiCorp's transmission network in Oregon and California.

3.3.2 FERC's Role in the New Tariff Rates

In 1954, FERC granted PacifiCorp its project license with a stipulation that PacifiCorp amend or extend its 1917 contract with the Department of the Interior that provided electricity at fixed rates for pumping irrigation and drainage water. The resulting 1956 contract was approved by both the CPUC and OPUC. In anticipation of the April 16, 2006 expiration of the 50-year agreement, PacifiCorp filed an application for a general rate increase for Klamath Basin irrigators in 2004 with the Oregon PUC and requested authority for a rate increase in 2006 from the California PUC. In both cases, PacifiCorp requested that Klamath Basin irrigators be charged, starting at the contract expiration, at regular tariff rates. Irrigators and other entities protested the increase.



Source: PacifiCorp 2013

Figure 3-3. PacifiCorp Transmission Network in Oregon and California

The Department of the Interior sought a ruling by FERC that the 1956 contract that provided favorable power rates to On-Project irrigators and Reclamation was a required component of PacifiCorp’s Klamath Hydroelectric Project license, and that FERC must require PacifiCorp to provide service at those rates under any subsequent annual licenses (and therefore following the expiration of the power rate contract). FERC stated that it had no jurisdiction regarding PacifiCorp’s retail rates, which are determined by the OPUC and CPUC. The Klamath Water Users Association (KWUA) sought rehearing of FERC’s order, which FERC denied. KWUA then petitioned for review of FERC’s order in the D.C. Circuit Court of Appeals, which dismissed the petition. The rate issue was subsequently addressed by the OPUC and CPUC.

In OPUC Order No. 06-172, OPUC rejected the argument that Klamath Basin irrigators deserved their own separate rate class based on greater electricity usage than other PacifiCorp customers, but it did recognize the historical link between irrigators and PacifiCorp. OPUC stated that irrigators should be given

the opportunity to establish that a mutually beneficial relationship continues to exist due to the irrigators' water management practices providing operational benefits to the hydroelectric system. OPUC's decision was to transition the irrigators to Section 41 tariff rates over a four-year period, while providing the irrigators an opportunity to provide a reasonable methodology for quantifying the monetary benefits into a rate credit. That particular issue would be handled through separate proceedings.

In California, CPUC Decision 06-04-034 adopted a four-year plan to transition Klamath Basin irrigators to full tariff rates, authorized PacifiCorp to track revenue shortfalls (for recovery at some point in the future), and authorized KWUA and DOI to seek a separate rate classification, also through separate proceedings. In Decision 06-12-011, the petition for a special rate credit was denied due to insufficient evidence that the PacifiCorp benefited from additional flow provided by the return flows from the irrigators.

3.4 Department of Energy

The Department of Energy is responsible for administering components of the Public Utility Regulatory Policy Act (PURPA), although the implementation of PURPA is largely left to states. PURPA creates a mandatory purchase obligation for utilities to purchase power from non-utility power producers that develop generation resources that meet the definition of a "*Qualifying Facility*" under PURPA. Under the mandatory purchase obligation, the purchasing utility must buy the output from the Qualifying Facility at a rate that reflects the purchasing utility's avoided cost – the costs the utility would have incurred to produce the power itself. In general, individual state utility commissions oversee the determination of a utility's avoided cost. If qualifying facilities are developed in the Basin, PURPA provides a mechanism for selling the output of the qualifying facilities to PacifiCorp at its avoided cost.

3.5 RPS

The RPS is a regulatory mandate that requires IOUs, multi-jurisdictional utilities, electric service providers, and community choice aggregators (CCAs) to increase production of energy from renewable sources. Oregon and California have RPSs that PacifiCorp must meet. As a result, PacifiCorp has brought more renewable energy facilities on-line to increase the amount of renewable energy in their portfolio. These facilities include those owned and operated by PacifiCorp and those operated by third-party generators, who generate electricity using renewable resources.

3.5.1 Oregon

The Oregon RPS requires its large utilities to procure 15 percent of their power through renewables by 2015, 20 percent by 2020, and 25 percent by 2025. According to PacifiCorp's Renewable Portfolio Standard Oregon Compliance Report¹ for 2013, PacifiCorp met its 2013 target (five percent²), which keeps them on track for Oregon's 2015 RPS target (PacifiCorp 2014a). PacifiCorp also reported that through acquiring bundled renewable energy certificates (REC) from eligible renewables resources in Oregon they have enough renewable resources to comply with the Oregon RPS targets through 2017 (PacifiCorp 2011).

3.5.2 California

The California RPS requires utilities to procure 20 percent of their power through renewables by 2010 and 33 percent by 2020. According to PacifiCorp's 2013 Annual 33 Percent RPS Compliance Report, PacifiCorp has met the RPS requirements in California in 2010, met its 2013 targets, and is on track to meet California's RPS requirements in 2020 (PacifiCorp 2014b).

¹ PacifiCorp's Oregon RPS Reports can be found on the [PacifiCorp Website](#).

² The OPUC-set 2011 RPS target of 5% applies for all subsequent years up to the next target, 15% by 2015.

Chapter 4

PacifiCorp Operations

This chapter discusses the current programs offered by PacifiCorp in Oregon and California and the programs that govern new power development and sales by a third party in the Basin.

4.1 Oregon

4.1.1 Current PacifiCorp Power Services

PacifiCorp is the sole energy provider to the Oregon On-Project and Off-Project irrigators. Energy efficiency and renewable energy incentives and rebates are provided through the Energy Trust of Oregon.

4.1.1.1 Agricultural Power Services

PacifiCorp offers four applicable rate schedules for energy use in the Basin: Schedule 41, Agricultural Pumping Delivery Service; Schedule 741, Agricultural Pumping Direct Access Delivery Service; Schedule 210, Portfolio Time-Of-Use Supply Service; and Schedule 215, Irrigation Time-Of-Use Pilot Supply Service.

Schedule 41, Agricultural Pumping Delivery Service

Schedule 41 is provided for agricultural irrigation or soil drainage pumping installations for loads not exceeding 1,000 kilowatts (kW) in the preceding 18-month period. If an agricultural pumping load exceeds 1,000 kW once during an 18-month period, PacifiCorp requires the load to follow Schedule 47 or 48. Because there are no Basin irrigation loads that exceed 1,000 kW, these schedules are not discussed further in this report.

An irrigator using Schedule 41 is also required to take Supply Service by PacifiCorp including Schedule 200 for Base Supply Service, and either Schedule 201 (Normal Cost-of-Service Energy Supply), Schedule 210 (Portfolio Time-Of-Use Supply Service), or Schedule 215 (Irrigation Time-Of-Use Pilot Supply Service) for supply service.

As shown in Table 4-1, PacifiCorp's delivery and supply service charge rate is 9.363¢/kWh³. In total, Oregon irrigators pay a combined effective rate of 9.674¢/kWh in the summer. The 9.674¢/kWh rate represents the sum of the summer energy charge rate and all OPUC set surcharges and rate adjustments for irrigators using secondary voltage, including a three percent public purpose

³ This rate represents summer, secondary voltage charges.

charge, an energy conservation charge, BPA Columbia River Benefits credit, dam removal surcharges, and a low-income surcharge. See Appendix B for the specific charge breakdown of this schedule.

Schedule 41 also includes an annual load charge of \$1,210 plus \$6.00/kW for loads exceeding 300 kW. For reference, a running 400-horsepower pump uses approximately 300kW.

Table 4-1. Current Energy Charge Rates

	Schedule	Load Limit	Total Rate (¢/kWh)	Annual Basic Load Charge	Comment
OR	41/741	<1,000 kW	9.674	≤50 kW: No Charge 51-300 kW: \$310 >300 kW: \$1,210	Summer with secondary voltage. Direct Access Competitive rate is 3.181¢/kWh
	210	<1,000 kW	On-Peak Summer: 8.004 On-Peak Winter: 3.737 Off-Peak: -1.231	See Schedule 41/741	Rates are added or subtracted from the Schedule 41 rates.
	215	<1,000 kW	On-Peak: 17.951 Off-Peak: -2.479	See Schedule 41/741	Rates are added or subtracted from the Schedule 41 rates.
CA	PA-20	<500 kW	12.933	≤50 kW: \$72.28 >50 kW: \$149.31	Includes the 8.216¢/kWh tariff rate and PUC surcharges.

Note: Rates do not include all PUC-required charges.

Schedule 741, Agricultural Pumping Direct Access Delivery Service

Schedule 741 is provided for agricultural customers receiving power from an Electricity Service Supplier (ESS), an entity that offers to sell electricity supply services available pursuant to Direct Access regulations (Oregon Administrative Rule [OAR] 860-038-0001). Direct Access provides electricity consumers a choice in electricity service providers. All other rates, requirements, and charges applicable to Schedule 41 apply to Schedule 741, excluding Schedule 201, Cost Based Supply Service. A Direct Access competitive energy rate of 3.181¢/kWh was calculated by taking the difference of the total energy charges from Schedules 41 and 741 (i.e., an ESS would need to provide energy service below 3.181¢/kWh to reduce overall energy rates).

There are three ESSs that are currently authorized to provide power to PacifiCorp customers in Oregon: Constellation NewEnergy; Iberdrola Renewables LLC; and Noble America Energy Solutions. In November of each year, a Schedule 41 customer can opt into ESS service for its loads. The cost of electricity transmission, base load, and other OPUC charges equivalent to 6.493¢/kWh⁴ is still recovered by PacifiCorp through their OATT (see Section 3.3.1). Relative to the CAPP, an entity or individual can aggregate all or a

⁴ Rate represents the difference between the cost based rate of 9.674¢/kWh and direct access rate of 3.181¢/kWh.

portion of the Oregon loads served under Schedule 41 and negotiate a service price for the load with an ESS.

Schedule 210, Portfolio Time-of-Use Supply Service

PacifiCorp's time-of-use (off-peak power) program combines with Schedule 41 and provides a credit for energy used during off-peak hours and an additional charge for energy used during on-peak hours. The rates are also dependent on the time of year (winter or summer). Winter is defined as November 1 through March 31. Summer is defined as April 1 through October 31. See Table 4-1 for the current energy charge rate under this schedule.

Schedule 215, Irrigation Time-Of-Use Pilot Supply Service

Schedule 215 is a two-year off-peak pilot program developed in 2014 for Schedule 41 customers that elected to participate in the pilot. PacifiCorp accepted pilot applicants in 2014 and will open the pilot program again in 2015 to a limited number of applicants. Schedule 215 is run from June 1 through August 31 with no adjustments applied in other months. Customers electing to participate in this pilot may not use Schedule 210 during the other months (September to May). A combined effective rate of 7.145¢/kWh is offered to customers who switch over to off-peak hours. See Table 4-1 for the rates under this schedule. Participation by Basin irrigators in the Schedule 215 program is unknown.

4.1.2 New Power Development

PacifiCorp provides five schedules that govern new power development for any future entity that wants to develop power in PacifiCorp's service area.

4.1.2.1 Qualifying Facilities

Schedules 37 and 38, Avoided Cost Purchases from Qualifying Facilities

Schedule 37 applies to Qualifying Facilities (further described below and in Section 3.3.2) with a nameplate capacity of 10,000 kW or less. The owner of the facility is required to enter into a written power sales contract with PacifiCorp. PacifiCorp has four power pricing options including on-peak and off-peak pricing.

Schedule 38 applies to Qualifying Facilities with a capacity of more than 10,000 kW. The facility owner is required to enter into a negotiated power purchase agreement with PacifiCorp. Similar to Schedule 37, this schedule allows an owner to sell all or a portion of generated energy to PacifiCorp.

Schedules 37 and 38 are offered in accordance with the PURPA, described in Section 3.3.2, which requires PacifiCorp to purchase power from and interconnect with Qualifying Facilities. A Qualifying Facility must meet FERC and state rules for operation and generate less than 80,000 kW. The purchase price that PacifiCorp would pay for produced power is its power generation avoided cost (the cost PacifiCorp avoids as a result of the Qualifying Facility's power production).

PacifiCorp's projected 2015 Oregon avoided cost is 2.86¢/kWh off-peak and 3.94¢/kWh on-peak (described further in Appendix C). Relative to the CAPP, if new power supplies were developed in Oregon by a Basin generator, PacifiCorp would be obligated to purchase this power at its avoided cost.

4.1.2.2 Net Metering

Net metering is the difference between the electricity supplied through the electric grid and electricity generated by an eligible generator then fed back to grid. PacifiCorp offers a net metering program to its Oregon customers who generate all or a portion of their own electricity using renewable energy sources.

Schedule 135, Net Metering Service Optional for Qualifying Customers

Schedule 135 is available to any PacifiCorp customer with a renewable generation source. Generation capacity is limited to less than 25 kW for residential and 2,000 kW for nonresidential customers. This schedule is intended to offset part or all of the generator's own electrical requirements. If the generator produces more power than supplied, the excess power is credited and applied to the next billing period. Oregon law prohibits customers from receiving credit for any annual generation produced in excess of use. Any annual excess generation credits are donated to PacifiCorp's low-income assistance program (OPUC 2014a).

OPUC is authorized, under Oregon law, to limit the generating capacity of net metered systems in PacifiCorp's service area to one-half of one percent of PacifiCorp's peak load. PacifiCorp's current net metered systems already exceed this limit. It is unknown as to whether OPUC will cap the total capacity of net metered systems (OPUC 2014a).

Schedule 136, Net Metering Option Volumetric Incentive Rate (VIR) Pilot

Schedule 136 is an Oregon pilot solar development program for small (5-10 kW) and medium (10-100 kW) solar installations. This VIR pilot program started in 2010 and will run yearly through 2015, or until PacifiCorp has reached 100 percent of its allocated solar pilot capacity limit. A solar generator is paid an approved VIR for all generated energy. Rates for small generators are subject to OPUC approval and adjustment. Rates for medium-sized installations are made during a bidding process where generators offer a bid price to PacifiCorp for the generated power. VIRs for small generators are currently at 25¢/kWh in Eastern and Southern Oregon. The current VIR for medium installations is 16¢/kWh in Eastern and Southern Oregon (OPUC 2014a). VIR

pilot participants are ineligible for state tax credits and rebates from Energy Trust, but remain eligible for federal tax credits. According to OPUC staff, the continuation of this program in the future is uncertain. A statewide capacity limit of 27,500 kW was set by the OPUC in 2013 and was divided between PacifiCorp, PGE, and Idaho Power. PacifiCorp was allocated 1,617 kW for the April 2014 pilot year (OPUC 2014b). The total available capacity remaining for the May 2015 pilot year is unknown. The Renewable Energy Credits (RECs) for all associated customer installations will go to PacifiCorp, contributing to their 2025 RPS goals (PacifiCorp 2014c).

Schedule 137, Competitive Bid Option Volumetric Incentive Rate Pilot

Schedule 137 is a pilot solar development program for large (100-500 kW) solar installations. This VIR pilot program started in 2010 and will run yearly through 2015, or until PacifiCorp has reached 100 percent of its allocated solar pilot capacity limit. To enter into the program, a photovoltaic solar generator must propose a bid price and sign a 15-year contract with PacifiCorp. The most recent winning bids for large installations have VIRs slightly lower than 11¢/kWh (OPUC 2014a). VIR pilot participants are ineligible for state tax credits and rebates from Energy Trust, but remain eligible for federal tax credits (OPUC 2014a, PacifiCorp 2014c). According to OPUC staff, the continuation of this pilot program in the future is uncertain. A statewide capacity limit of 27,500 kW was set by the OPUC in 2013 and was divided between PacifiCorp, PGE, and Idaho Power. Only 77 kW remained after the 2013 pilot year, which was then added to the medium capacity allocation for the April 2014 pilot year (OPUC 2014b). It is unknown if the OPUC will allow additional capacity for large installations. The RECs for all associated customer installations will go to PacifiCorp, contributing to their 2025 RPS goals (PacifiCorp 2014c).

4.1.3 Energy Efficiency and Renewables Incentives

Energy Trust offers rebate incentives for PacifiCorp customers on irrigation and pump equipment and new renewables development. These incentives are briefly described below in Table 4-2.

Table 4-2. Energy Trust Incentives

Type	Incentive ¹
Solar Incentives	<ul style="list-style-type: none"> • 90¢/W incentive for 0-35 kW installations • 90¢-40¢/W² incentive for 36-200 kW installations • \$80,000 maximum per year per project
Commercial Scale Wind Incentives	<ul style="list-style-type: none"> • Power ranging from 100 kW to 20,000 kW • Each project receives a unique incentive • Up to 50% of planning and engineering costs (capped at \$40,000)

Type	Incentive ¹
Cash Incentives for Irrigation Equipment	Linear, pivot, wheel, and hand-line improvement: <ul style="list-style-type: none"> • \$3 per low-pressure regulator • \$3 per flow controlling type nozzle for impact sprinklers • \$10 per section of cut and pipe press repair for line leaks Upgrading or replacing old equipment: <ul style="list-style-type: none"> • \$5 per low-pressure regulator • \$175 per new center pivot base boot gasket • \$2.75 per gasket for wheel-lines, hand-lines or pivots • 50% cash back on Variable Frequency Drives
Custom Option for Efficiency Measures	<ul style="list-style-type: none"> • \$0.25/kWh for first year savings (capped at 50% of project cost) • Projects must be approved prior to installation

¹ Values listed in this table are subject to change throughout the year. Visit the [Energy Trust of Oregon website](#) for the most up-to-date offers.

² Based on non-linear incentive rate calculation.

4.2 California

4.2.1 Current PacifiCorp Power Services

PacifiCorp is the sole energy provider to the California On-Project irrigators providing power services, energy efficiency rebates, incentives, and opportunities to net-meter renewables. Since PacifiCorp is not party to the ISO, some programs enacted in California to encourage renewable resources are not applicable to PacifiCorp’s service area.

4.2.1.1 Agricultural Power Services

PacifiCorp uses one rate schedule for California irrigators, Schedule PA-20. This schedule describes the rates and charges customers will receive based on their demand and load size. In addition to this schedule, PacifiCorp offers energy efficiency incentives and provides opportunities for net metering.

Schedule PA-20, Agricultural Pumping Service

Schedule PA-20 provides the service specific to California irrigators and differs substantially from Oregon’s Schedule 41. In total, California irrigators pay a combined effective rate of 12.933¢/kWh plus a monthly demand charge of \$2.52/kW. This rate includes adjustments set by the CPUC, Solar Incentive Program, low income assistance charge, and charges for the Klamath Dam Removal. See Appendix D for the specific charge breakdown of this schedule.

PA-20 also includes an annual charge of \$149.31 plus \$15.63/kW for loads exceeding 300 kW. Because Direct Assess competition is not required in California, it is unknown what portion of the rate is set by the CPUC as a system operational requirement and what portion is specifically the delivered energy charge, as determined in Oregon.

California irrigation customers over 500 kW would be served under Schedule 48, Large General Service. Customers serviced under this schedule would pay a

combined effective rate of 9.267¢/kWh, including adjustments set by the CPUC and charges for the Klamath Dam Removal, plus a basic charge of \$455.84 per month. It is unknown whether any irrigators take Large General Service under Schedule 28.

4.2.2 New Power Development

PacifiCorp does not have any specific schedule aside from net-metering for new power development in California. New power development would be subject to the general requirements of PURPA, as discussed previously. There are other power development programs available in California; however, as discussed in Chapter 3, PacifiCorp is not obligated to accommodate ISO policies.

4.2.2.1 Qualifying Facilities

As discussed in Section 4.1.2.1, PacifiCorp as an electric utility is required to purchase power from, and interconnect with, Qualifying Facilities. PURPA is implemented through rules established by FERC and CPUC. PacifiCorp would pay for produced power at its avoided cost, currently reported as 2.86¢/kWh off-peak and 3.94¢/kWh on-peak in 2015 for Qualifying Facilities in California (see Appendix C). Due to PacifiCorp's small footprint in California, California avoided costs are the same as those in Oregon.

4.2.2.2 Other California Power Development of the ISO

California has three programs available that could provide the Basin with opportunities for power generation and distribution if adopted by PacifiCorp.

Community Choice Aggregation

CCAs provide cities and counties the ability to aggregate electric loads of residents, businesses, and public facilities to facilitate the purchase and sale of renewable energy and also allow customers who do not want to participate to opt-out. Under this system there is greater control locally, but transmission tariffs would still apply to any utility owning the transmission and delivery system. As an example, Sonoma County in California created a CCA (Sonoma Clean Power) that offers locally sourced, renewable power to the entire county at a lower cost than PG&E (the county's regulated utility).

It is possible that PacifiCorp could submit a request to the CPUC to add CCA to the company's renewables portfolio program.

Green Tariff Shared Renewables Program

The Green Tariff Shared Renewables Program was established in 2013 and provides businesses and individuals the ability to purchase 100 percent renewables through their utility. The program also requires the three major California utilities (PG&E, SCE, and SDG&E) to develop the 600,000 kW of renewable energy to be made available to customers. The program makes it possible for customers who cannot generate their own renewable energy on site to contribute and use virtual renewable energy sources guaranteed through the

utility. The initial costs of the programs are equal to or greater than current utility rates.

Local Government Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) Program

The RES-BCT Program was established in 2008 and authorizes local governments, such as cities, counties, special districts, or other local public agencies, to generate renewable energy on-site under one account (Generating Account) and transfer excess bill credits to another account (Benefitting Account) in the same geographical boundary that is owned or operated by the same local government. The program has a statewide capacity of 250,000 kW, which is allocated between the three major California utilities (PG&E, SCE, and SDG&E). A local government may own multiple Generating Accounts; however, each Generating Account has a limited capacity of 5,000 kW and can designate no more than 50 Benefitting Accounts. Both the generating and benefitting accounts must be on a time-of-use schedule and the interconnection of the generation facility with the utility provider's distribution system is required. Interconnection can be established directly through the utility's interconnection tariff or under Rule 21. Rule 21 is the CPUC's interconnection policy compliant with OATT (see Section 3.3.1) which enables eligible generators to connect generation facilities to a utility's distribution system.

Utilities are only required to offer this program until their allocated capacity is met. Currently, the RES-BCT programs offered by PG&E and SCE have a combined eight customers operating with a total of 18,255 kW, and five more awaiting permission to operate 3,272 kW (PG&E 2015, SCE 2015). Participation with SDG&E is unknown; although its total allocation is only 8.1 percent of the statewide total. PacifiCorp is not currently required to offer this program.

4.2.2.3 Net Metering

Schedule NEM-35, Net Metering Service

Schedule NEM-35 is used for on-site renewable electricity generation of less than 1,000 kW. California requires utilities to compensate net metering customers for electricity produced in excess of their on-site load over a 12-month period. The rate paid for the excess generation is equal to the simple rolling average of PG&E's default load aggregation point price. This price changes from month to month, and was 4.99¢/kWh in December 2014. PacifiCorp reported low participation in the net metering service in California, with no participating customers generating an annual net surplus (CPUC 2011).

4.2.3 Energy Efficiency and Renewables Incentives

PacifiCorp offers irrigation customers incentives to lower energy costs through their Energy FinAnswer program and the FinAnswer Express program.

The Energy FinAnswer program currently provides customers with a no-cost irrigation system analysis and custom incentives of 12¢/kWh annual energy savings plus \$50/kW average monthly demand savings. These incentives are determined by adding the energy savings incentive (the product of the project's savings, in kWh/year, and 12¢/kWh) and the demand savings incentive (the product of the project's demand savings, in kW, and \$50/kW). The program caps incentives at 50 percent of project cost and requires the payback of the project to be greater than one year. The payback is calculated by subtracting the incentive from the project cost and dividing it by the annual electric cost savings. If the simple payback is less than one year, the incentive will be reduced until the payback equals one year. See Exhibit 4.1 for an example of the calculation.

The FinAnswer Express program improves energy efficiency through cash incentives for irrigators who upgrade components of their existing irrigation systems. Incentive amounts under this program are based on the equipment that is purchased and installed. Custom incentives are also available, and are the product of PacifiCorp's estimate of annual electric savings for the project and 10¢/kWh.

The California Solar Incentive Program is currently available to PacifiCorp customers in California.

This program is an upfront cash incentive for the initial cost of installing a photovoltaic (PV) system. It also provides an after installation incentive starting at \$2/W. This program is scheduled to end in April 2015. According to PacifiCorp, the program has 866 kW of available capacity remaining from an initial capacity of 3,542 kW.

Exhibit 4.1 Energy FinAnswer Program Incentive Calculation Example

What is the incentive for a project that costs \$50,000 and saves 250,000 kWh/year and 40 kW/month (\$14,100/year)?

Incentive = energy savings incentive + demand savings incentive

$$= (250,000 \text{ kWh/year} \times \$0.12/\text{kWh}) + (40 \text{ kW} \times \$50/\text{kW}) = 30,000 + 2,000 = \$32,000$$

Incentive capped at 50% of project cost = Project cost x 0.5

$$= 50,000 \times 0.5 = \$25,000$$

Incentive is \$25,000, due to the incentive cap.

Payback = (project cost - incentive) / annual electric cost savings

$$= (\$50,000 - \$25,000) / \$14,100/\text{year} = 1.7 \text{ years}$$

4.3 Summary of Available Programs

This section provides a brief summary of the programs available from PacifiCorp under the OPUC and CPUC operating requirements. Table 4-3 displays which programs are available in each state and Table 4-4 provides a comparison of rates and details of the PacifiCorp requirements and programs.

Table 4-3. Available State Programs with Potential to Reduce Energy Costs

Program	Oregon	California
Net Metering	Y	Y
Community Choice Aggregation ^{1,2}	N	N
Off-Site Shared Renewables ²	N	N
Direct Access Competition ^{1,2}	Y	N
Time-of-Use	Y	N
Solar Volumetric Pricing	Y	N
Qualifying Facility	Y	Y

¹ Under Direct Access an ESS can aggregate loads

² California program not subject to PacifiCorp

Table 4-4. Comparison of Oregon and California Rates and Programs

Program	Oregon Rate (¢/kWh)	Facility Size	California Rate (¢/kWh)	Facility Size
Basic Supply (Schedule 41 and PA-20)	9.674	< 1,000 kW	12.933	< 500 kW
Net Metering	No buy back	≤ 2,000 kW	Buy back at PG&E rolling average ¹	≤ 1,000 kW
Time-of-Use (Schedule 210)	On-Peak Summer: 8.004 On-Peak Winter: 3.737 Off-Peak: -1.231	N/A	N/A	
Time-of-Use (Schedule 215 Pilot)	On-Peak: 17.951 Off-Peak: -2.479	≤ 3 meters per consumer	N/A	
Medium Volumetric Pricing w/ Net Metering	Set by competitive bid (recent bid 16¢)	≤ 100 kW	N/A	
Volumetric Pricing	Set by a competitive bid (recent bid 11¢)	≤ 500 kW	N/A	
Qualifying Facility	Off-Peak: 2.86 On-Peak: 3.94	10,000 kW-80,000 kW	Off-Peak: 2.86 On-Peak: 3.94 ²	≤80,000 kW

¹ The simple rolling average of PG&E's default load aggregation point price changes from month to month, and was 4.99¢/kWh in December 2014.

² PacifiCorp 2015 avoided cost rates for California are based on schedules in Oregon, due to the company's small California footprint.

4.3.1 Oregon

In Oregon, PacifiCorp currently offers irrigators several rate schedules. Schedule 41 is the primary rate schedule with a combined effective summer rate of 9.674¢/kWh for all services and OPUC charges. Schedule 741 is PacifiCorp's Direct Access competitive rate schedule which removes 3.181¢/kWh from Schedule 41, since energy is supplied by an ESS. The ESS would need to offer a rate lower than 3.181¢/kWh for the consumer to see a reduction in their power rate. For all schedules a load charge of \$1,210 is annually charged to loads exceeding 300kW (approximately a 400-horsepower pump).

PacifiCorp also provides tariff schedules for off-peak power and net metering programs. The off-peak programs provide a credit for energy used during off-peak hours and an additional charge for energy used during on-peak hours. PacifiCorp's net metering program offsets energy costs by generating renewable energy on-site but does not compensate a generator for excess annual energy production. The current cap on solar PV incentives through Energy Trust is \$80,000 per facility. Energy Trust provides PacifiCorp customers with energy efficiency incentives for irrigation systems upgrades.

PacifiCorp provides schedules for new power generation that feeds PacifiCorp's transmission and delivery system paying the generator its avoided cost rate (2015 rates reported at 2.86¢/kWh off-peak and 3.94¢/kWh on-peak). Oregon also runs a pilot VIR program that uses competitive bidding to establish power rates from independent developers. VIRs are currently slightly lower than 11¢/kWh for facilities greater than 100 kW. The future of the Oregon VIR pilot program is uncertain.

4.3.2 California

In California, PacifiCorp currently offers irrigators one primary rate schedule (Schedule PA-20) with a combined effective rate of 12.933¢/kWh for all services charges. PA-20 does not include an annual load charge for loads exceeding 300 kW.

PacifiCorp offers a net metering program capped at 1,000 kW, under which customers are compensated for excess electricity generated at a proposed rate equal to the simple rolling average of PG&E's default load aggregation point price. This price changes from month to month and was 4.99¢/kWh in December 2014.

PacifiCorp does not have any programs for new power development in California. Any new power development would fall under the general requirements of PURPA as a Qualifying Facility, requiring PacifiCorp to compensate the generator for power at its avoided cost rate (2015 rates reported at 2.86¢/kWh off-peak and 3.94¢/kWh on-peak).

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Chapter 5

KWAPA Authority as a Utility District

KWAPA, by charter, established itself as a people's utility district (PUD) under Oregon law and as an irrigation district (ID) under California law. As a PUD and an ID, KWAPA has the authority in Oregon and California to purchase, generate, and distribute electric power and provide programs for the payment of electrical energy from customers. KWAPA also has the authority to construct and operate generation and transmission facilities for the purpose of providing affordable power to its customers (KWAPA 2008).

Covering two states, KWAPA is an interstate, intergovernmental agency formed pursuant to Oregon's Intergovernmental Cooperation Act and California's Joint Exercise of Powers Act. These acts allow KWAPA the joint exercise of power common to its contracting parties in Oregon and California. The powers, privileges, and authority exercised by a public agency in Oregon may be exercised jointly with a public agency in California to the extent permitted by California law (KWAPA 2008). Specific to the CAPP, KWAPA is authorized to do all things necessary or incidental to purchase, generate, and distribute electric power under the terms of ORS Chapter 261 as a PUD (Legislative Counsel Committee 2013). This includes entering into agreement with the BPA to service loads in its service area.

To the extent that KWAPA engages in the generation, transmission, and distribution of power, it would be subject to the regulations of the OPUC and CPUC as a municipal utility; however, neither PUC has the authority to regulate the rates of municipal utilities, only the IOUs.

5.1 KWAPA's Capacity to Function as a PUD and ID

Although granted the authority as an Oregon PUD with complementary joint powers in California, KWAPA's current capacity is limited by PacifiCorp's ownership of the power transmission and distribution network in the Basin and the different regulatory requirements affecting its operation in Oregon and California. As an example, BPA will not enter into an agreement with KWAPA unless KWAPA meets BPA's Standards of Service. One of those standards requires that KWAPA own the distribution system through which Federal power would be distributed to retail loads, which would prohibit KWAPA serving loads already served by PacifiCorp. Options available to KWAPA to provide electrical rate relief to Basin irrigators could occur through the following activities.

5.1.1 Power Developer

KWAPA has the authority to develop new electrical power generation up to 80,000 kW and sell this power directly to PacifiCorp at its avoided cost rate. To distribute this power, KWAPA would be required to become an ESS in Oregon and form a CCA or equivalent in California, if permitted by the CPUC at the request of PacifiCorp.

5.1.2 ESS

KWAPA can seek certification by the OPUC as an ESS in Oregon under Direct Access Regulations (OAR 860-038-0001). The Direct Access Regulations requires PacifiCorp to allow competition for energy service providers over its transmission and distribution system. As an ESS, KWAPA would provide the electrical energy and PacifiCorp would retain distribution and metering services. Schedule 741 provides PacifiCorp's rates under this arrangement. As an ESS, KWAPA must demonstrate to the PUC technical competence in energy procurement and delivery, information systems, and billing. The ESS is responsible for the forecasting and scheduling of direct access loads and point-to-point transmission services.

As a condition for ESS certification, an ESS must “not enter into a Residential Sale and Purchase Agreement with the Bonneville Power Administration pursuant to Section 5(c) of the Pacific Northwest Power Act concerning federal system benefits available to residential and small farm customers receiving distribution from an electric company” (OAR 860-038-0400). Therefore, as it is understood, KWAPA could not function as an ESS under PacifiCorp and also purchase Federal power from BPA.

5.1.3 ESS Aggregator

As an ESS aggregator, KWAPA can aggregate all or a portion of the On- and Off-Project Oregon loads for the purpose of negotiating a price and service arrangement with an ESS provider approved to operate in PacifiCorp's service area (OAR 860-038-0380). Aggregating the Oregon load would provide bargaining power with the ESS.

5.1.4 Distribution System Operation/Ownership

KWAPA could seek the purchase, lease, or another ownership/operational mechanism of the PacifiCorp distribution system. Distribution system ownership/leasing would provide greater autonomy in setting Basin electricity rates.

For ownership, Oregon law provides a PUD with eminent domain authority for the acquisition of private utility's distribution facilities. In seeking ownership of a private utility's distribution facilities, the utility and OPUC must provide a requesting PUD information to accommodate a decision on the economic and operational viability of the acquisition (ORS 261.225 [Legislative Counsel Committee 2013]). This information includes:

- Peak load and monthly variations of load;
- Distribution costs including operation and maintenance;
- Inventory of assets;
- List of customers; and
- Replacement value of the unreimbursed investment in energy efficiency measures and installations within the territory.

For the purpose of comparison, there are six electricity PUDs operating in Oregon. Each of these six PUDs owns and operates their electrical distribution system. Exhibit 5.1 provides a brief summary of four Oregon PUDs.

In California, similar laws allow for the annexation of a private utility by a California ID. A brief description of two IDs and their differing approaches to power generation and distribution are also presented in Exhibit 5.1.

Exhibit 5.1 Example PUDs and IDs

Currently, there are six PUDs operating in Oregon, all of which own their electrical distribution systems. Provided below is a brief description of four Oregon PUDs and two California IDs and their advertised rates for comparison to rates charged by PacifiCorp.

Central Lincoln PUD

Central Lincoln started in 1940 with the purchase of West Coast Power facilities. Central Lincoln self-generates and purchases electricity from BPA. Central Lincoln provides a monthly charge of \$18 to \$40 dollars plus an energy charge of 6.61 to 8.74¢/kWh.

Columbia River PUD

Columbia River began providing energy services in 1984 and services over 13,000 customers. Columbia River purchases all its power from BPA. Columbia River provides an annual charge of \$120 plus an energy charge of 6.9¢/kWh.

Emerald PUD

Emerald was established in 1983 with the purchase of Pacific Power and Light's distribution system. Most of Emerald's electrical power is supplied from BPA. Emerald provides a monthly charge of \$15 to \$45 dollars plus 6.7¢/kWh.

Northern Wasco County PUD

Northern Wasco County started service in The Dalles in 1949. Northern Wasco County purchased Pacific Power and Light's distribution system in 1976. Northern Wasco County self-generates and receives power from BPA. Northern Wasco County provides a base monthly charge of \$50 to \$75 and an energy charge of 3.7 to 5¢/kWh.

Turlock ID

The Turlock Irrigation District (TID) was established in 1887 as the first publicly-owned ID in California and is one of California's four IDs that provide electricity. TID operates under the provisions of the California Water Code as a special district and is an independent control area. In 2003, TID purchased electric service territory from PG&E. TID achieved Balancing Authority status from the Western Electricity Coordinating Council in 2005, enabling it to operate independently within the western United States power grid. TID provides electricity directly to its 98,000 customers, including homes, farms, businesses, and industrial and municipal accounts. TID provides its agricultural customers a monthly charge of \$11 plus an energy charge of 10.7 to 12.5¢/kWh.

South Feather Water and Power Agency

South Feather Water and Power Agency was originally named Oroville Wyandotte Irrigation District (OWID) and extends back to the California gold rush. OWID was formed in 1919 by assuming old mining water rights and today serves a large agricultural area and the City of Oroville. South Feather owns and operates a 160-MW hydroelectric system. Hydropower is sold under contract to PG&E at approximately 4.5¢/kWh.

5.2 Electrical Cooperative as an Alternative to an Oregon PUD

An alternative to KWAPA functioning as an Oregon PUD is functioning as an Electrical Cooperative. Electrical Cooperatives received their start in the 1930s with the Rural Electrification Administration. Today, a large portion of Oregon's electricity is provided through 18 Electrical Cooperatives (shown on Figure 3-1). An example Electrical Cooperative is Surprise Valley Electric Cooperative, serving portions of Lake and Klamath counties in Oregon and Modoc and Lassen counties in California. Within its service area, PacifiCorp retains power distribution to the towns of Alturas, Lakeview, Cedarville, and New Pine Creek (Surprise Valley Electric Cooperative 2014).

Like PUDs, Electrical Cooperatives have the authority to function as an interstate agency to purchase, generate, and distribute electric power. Unlike a PUD, Electrical Cooperatives have fewer regulations (including borrowing limitations), require membership, must develop and provide bylaws that may be changed by a vote of the members, must hold annual meetings, and require profit distribution amongst its members. An Electrical Cooperative also has the ability to hold private, member-only meetings that exclude the general public while PUD meetings are open to all.

Electrical Cooperatives, PUDs, and IOUs can all provide service within the same service area, although both Oregon and California law do not allow the duplication of power distribution facilities.

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Chapter 6

Regulatory and Policy Uncertainties

This chapter discusses several uncertainties related to the regulatory framework of the CAPP that could affect its projects, programs, and governance.

KBRA Implementing Legislation: The KBRA Water for Power Management Program has provisions to allocate approximately \$40 million to renewable energy development. The timing of KBRA implementing legislation is unknown. Federal funding supporting renewables development will increase the benefit to cost ratio of new power development. Without KBRA implementing legislation, there is no mechanism to serve Off-Project irrigators with Federal power if desired.

Federal Power: The degree to which loads may be served by Federal power has not been determined. The Federal Power Work Group has estimated that approximately 50 percent of loads in Oregon would see reduced rates through BPA power service and approximately 6 percent of the California load could be served with WAPA long-term firm power, although the agreement with WAPA to service loads expired in October 2014. A factor that might encourage Basin irrigator participation in Federal power is the future stability of PacifiCorp power rates which have not been determined.

Oregon Solar Development: Funding for solar development projects through the Energy Trust is available for projects up to 2 MW. It is uncertain if the Oregon Pilot VIR program will continue past 2015, and whether Oregon will pass legislation in the future allowing community-based solar or virtual metering, as is allowed in California.

California Community Based Solar and Virtual Metering: PacifiCorp is not required to provide community-based solar or virtual metering programs as required of other California IOUs. PacifiCorp would need to amend their renewables portfolio through the CPUC to allow these programs in their California service area.

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Chapter 7

Opportunities and Constraints

This chapter summarizes the regulatory opportunities and constraints for reducing energy costs to Basin irrigators. Opportunities represent potential options or programs discussed in the previous chapters which could be considered in the CAPP alternatives. Constraints are challenges to implementing the opportunities in the Basin and could relate to state regulations, PacifiCorp operations, or other issues. As presented in Chapter 6, there are several uncertainties that affect the CAPP opportunities. Principal among these is authorizing legislation for the KBRA which would provide renewable power development funding. Without the KBRA, the On-Project irrigators could be responsible for any power development measures either through self-funding mechanisms or through a repayment contract with Reclamation. Table 7-1 presents the power rate reduction opportunities and their associated constraints applicable to Oregon, California, and the two states collectively.

Table 7-1. Cost Reduction and Power Development Opportunities and Constraints

Oregon Opportunities	Constraints
Net metering allows customers to generate up to 2,000 kW and send it back onto PacifiCorp's power grid. Energy Trust provides incentives up to \$80,000 for new solar installations.	<ul style="list-style-type: none"> Does not allow virtual metering Restricted to one property owner or entity (ID) No reimbursement for annual overproduction
Off-Peak rate programs offer customers lower rates during off-peak hours and additional charges during on-peak hours. Pilot programs provide a 2.5¢/kWh reduction in base rate and a 1.2¢/kWh reduction for the existing program.	<ul style="list-style-type: none"> On-peak pilot rate adds 18¢/kWh Pilot is limited to 3 meters per owner Pilot future and rates are uncertain
Volumetric Incentive Rates (VIRs) for solar projects up to 500 kW allows generators to sell all generated energy to PacifiCorp at a fixed rate. Current VIR bid price is 11¢/kWh.	<ul style="list-style-type: none"> Program future after 2015 is uncertain VIR bid pricing shows strong downward trend Participants are ineligible for state tax credits and Energy Trust rebates
Federal power provided through BPA supplies 50% of the Oregon load or load to select meters with future price stability	<ul style="list-style-type: none"> Cost is comparable to the current Schedule 41 rate Energy Trust incentives are suspended Requires new metering
ESS or Aggregator provides energy to its customers over PacifiCorp's distribution system while offering competitive pricing to current PacifiCorp rates	<ul style="list-style-type: none"> Requires separate billing for supply (ESS) and distribution (PacifiCorp) KWAPA could not purchase Federal power from BPA
California Opportunities	Constraints
Net metering allows customers to generate up to 1,000 kW and send it back through PacifiCorp's power grid. Customers can receive reimbursement for annual overproduction.	<ul style="list-style-type: none"> Does not allow virtual metering Restricted to one property owner or entity (irrigation district)

CCAs allow power development and virtual metering over an IOU distribution system. Rates are set by the aggregator, but subject to IOU transmission fees.	<ul style="list-style-type: none"> PacifiCorp is not required to implement CCA in California.
Green Tariff Shared Renewables allows individuals to purchase 100 percent of energy supply from renewables	<ul style="list-style-type: none"> PacifiCorp is not required to implement Shared Renewables in California.
RES-BCT Program allows local governments to generate renewable energy on-site under one account and transfer excess bill credits to up to 50 other accounts.	<ul style="list-style-type: none"> Both the Generating Account and the Benefiting Account(s) must be serviced under a time-of-use schedule. The Generating Account is limited to 5,000 kW. PacifiCorp is not required to offer this program.
Federal Power provided through WAPA supplies 6% of the California load with future price stability.	<ul style="list-style-type: none"> Option to purchase base load power from WAPA expired in October 2014. Any power purchased from WAPA would be at spot market prices
Opportunities Common to Oregon and California	Constraints
Pump efficiency improvements paid for partially through available cash efficiency incentives from Energy Trust in Oregon and PacifiCorp in California	
PURPA Qualifying Facility development for new power generation sources using the most economical energy source and best technology allows for the generation of up to 80,000 kW to be sold to a utility	<ul style="list-style-type: none"> Sold to PacifiCorp at avoided cost rate of <4¢/kWh KBRA funding specifies renewables; most cost efficient use natural gas
Available Funding on a reimbursable basis from Reclamation for On-Project irrigators	<ul style="list-style-type: none"> Excludes Off-Projects irrigators
Distribution System Ownership/operation by a basin PUD or Electrical Cooperative provides greater ability to set rates and generate and distribute power	<ul style="list-style-type: none"> PacifiCorp has stated that it is not willing to sell its distribution assets in the Klamath Basin. PUD rates after acquisition and operation are unknown

7.1 Other CAPP Implementation Challenges

This section discusses two implementation challenges associated with reducing power costs to Basin irrigators that are central to many of the opportunities presented above and should be considered when developing CAPP alternatives.

Serving a Large Peak Load - Peak irrigation loads in the Klamath Basin in the summer exceed 100,000 kW and energy consumption during the winter is three orders of magnitude lower than during the irrigation season. Distributed net-metered renewable systems are limited to 2,000 kW per site in Oregon and 1,000 kW California. Aside from net-metered renewables, any new projects (if permitted to directly serve Basin irrigation loads) must demonstrate an ability to provide a financial return with rates that are at or below PacifiCorp’s power generation avoided cost rates. Alternatives that help reduce peak loads should be an objective of future analysis.

Differing Oregon and California Power Regulations - As presented throughout this report, there are substantial differences between Oregon and California regulations for power development and delivery. Promising programs in one state (e.g., Oregon off-peak and California CCA) are not available or differ in the other state. A uniform set of policies that govern the Oregon and

California portions of the Klamath Project would be ideal. Further engagement is recommended with PacifiCorp, OPUC, and CPUC to identify a framework for a more uniform set of operating regulations to equitably distribute any potential KBRA-related benefits to California and Oregon irrigators and to define cost reduction strategies that encompass the entire Klamath Project and Off-Project.

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