

March 28, 2022

VIA ELECTRONIC FILING

Public Utility Commission of Oregon
Attention: Filing Center
201 High Street SE, Suite 100
Salem, OR 97301-3398

RE: Advice No. 22-004
Enable broad demand response tariff, cancel load control pilot program,
expand irrigation demand response program

In compliance with ORS 757.205, OAR 860-022-0025, and OAR 860-022-0030, PacifiCorp, d/b/a Pacific Power (PacifiCorp or the Company), submits for filing the following proposed tariff pages associated with Tariff P.U.C. OR No. 36, which sets forth all rates, tolls, charges, rules, and regulations applicable to electric service in Oregon. Confidential information in this advice letter is provided in accordance with OAR 860-001-0070. The Company requests an effective date of May 6, 2022.

Original Sheet No. 106-1	Schedule 106	Demand Response Programs
CANCELLED Sheet No. 105-1	Schedule 105	Irrigation Load Control Program
CANCELLED Sheet No. 105-2	Schedule 105	Irrigation Load Control Program

Purpose

The filing requests authorization to expand the demand response offerings available to Oregon customers. With this filing, the Company proposes the following changes:

- Introduce a new broadly enabling Schedule 106 for Demand Response Programs.
- Cancel the irrigation load control pilot program, Schedule 105
- Introduce an expanded irrigation demand response program to replace the Schedule 105 pilot using the provisions of Schedule 106.
- Position irrigation costs for recovery through Schedule 291.

Demand Response Background

The filing is part of the continuing implementation of the conditions attached to Action Item No. 4 in Order 20-186 in Docket LC-70 by the Public Utility Commission of Oregon (Commission) which requires, in part, that:

PacifiCorp pursue demand response acquisition with a demand response RFP. PacifiCorp should work with non-bidding stakeholders from Oregon and other interested states to determine whether PacifiCorp should move forward with cost-effective demand response bids, or with a demand response pilot, or both.

The demand response request for proposals (RFP) was issued on February 8, 2021. The Company emphasized its request that bidders include programs in Oregon or Washington service areas and products that achieve at a minimum 3 megawatts (MW) in three years, scalable to 25 MW over five to 10 years.

The Company received bids from 18 firms covering multiple programs for multiple sectors. RFP bids were scored based on cost, volume, and equity criteria and the top bid for each program category were selected for inclusion into the 2021 Integrated Resource Plan (IRP) model.

Each program category represents a discrete set of customer end uses, e.g., irrigation or residential water heating. Modeling in the IRP reflects the top bid because all bids within a program category rely on the same pool of customers. Costs were characterized via RFP bids and the Conservation Potential Assessment (CPA) and compared against supply side resources.

The modeling identified a need for demand response not just in the short term but throughout the planning horizon (2021–2040). The 2021 IRP preferred portfolio included the addition of 33 MW of cost-effective demand response in Oregon for 2022 with additional MWs being brought on in subsequent years. Since the selected resources cover multiple customer types and programs, the Company is proposing to enable a broad demand response tariff that will support multiple programs.

Schedule 106 for Demand Response Programs

Demand response programs are market driven. A regulatory framework that provides a fast and flexible change process while at the same time enabling transparent customer information will benefit all stakeholders. The proposed Schedule 106 outlines the basic program elements including customer eligibility, the possibility of a program administrator for program delivery, incentive levels that may change, and the change process. Specific details such as eligibility requirements, dispatch notifications, change process, and incentive levels for each program will be included on the program website section of the Company website.

Schedule 106 is intended to enable multiple demand response programs. Each new demand response program will be filed with the Commission and include the information found on the

web site, deferral request, cost effectiveness, evaluation and reporting schedule and other details that may be required to support an approval request.

The Company expects to review each program delivered under Schedule 106 annually for performance and the need for any changes. The Company will generally consider changes to its programs annually, though a program that is performing well may not require annual changes. Conversely, the Company may propose changes more frequently than annually if there is compelling market data. To initiate a change using this process, the Company will follow the process outlined in Exhibit E, presenting information to stakeholders, including the Public Utility Commission of Oregon (Commission) Staff, and seek comments prior to making changes. The Company will make use of its demand response mailbox and the Commission's service docket list to notify parties of upcoming changes. The Company will post comments received from stakeholders and the Company's responses, reasoning and any proposed resolution to issued raised in those comments to its program website. The Company will clearly post the notice of change(s) to the program website with at least 45 days advance notice. Proposed changes to program information will include a date and log of changes to help track amendments during the change process. The change process anticipated for program administered under this Schedule is similar to the process utilized by the Energy Trust of Oregon (Energy Trust) for energy efficiency program design and many of its incentive or requirement changes. Energy Trust energy efficiency incentive or measure changes may occur more frequently than the Company's programs under Schedule 106 and may not always utilize the same advance notice. The Company will not use the proposed change process to make changes to Schedule 106, remove or add pilots/programs to Schedule 106, or propose an increase of expenditures greater than 130% of total estimated annual budgets for programs under Schedule 106¹.

Cancel Schedule 105

Schedule 105 was approved in 2016 and updated in 2020 to implement the irrigation load control pilot program. Information in Schedule 105 is specific to the pilot which is going to be replaced by a full-scale program for irrigation customers. The structure and elements of the proposed Schedule 106 are intended to enable multiple demand response programs such as the full-scale irrigation program. With the pilot being replaced by the full-scale program, there is no need for Schedule 105 and the Company is requesting it be cancelled.

Irrigation Program Background and Evolution

PacifiCorp's 2015 IRP selected capacity resources from irrigation load management in Oregon beginning in 2022. The Company requested authorization in 2016 to implement a pilot irrigation load control program for irrigation customers in the Klamath Basin area to investigate whether the existing Idaho and Utah program design would be effective in Oregon. Much of the Klamath Basin irrigation load is subject to water restrictions and/or scheduling challenges not encountered

¹ Beginning in 2023 to allow for a full calendar year to occur

in Utah and Idaho and the Company wanted to test for grower acceptance, barriers to participation, and cost to deliver within the Klamath Basin area prior to 2022.

The Company proposed running the pilot program for five years to allow sufficient time for growers and water districts to work through these scheduling and coordination issues and to investigate changes to pumping operations to facilitate participation. The proposed pilot duration was intended to provide the Company and its irrigation customers the time needed to evaluate the program to identify any necessary modifications before the 2022 resource need from the 2015 IRP.

In the filing, the Company limited maximum availability to 5,000 kilowatts (kW) delivered for the pilot. If the pilot program was successful, and if future IRPs continues to select west-side load control resources, then the Company could propose to extend and/or expand the pilot program during or at the end of the five-year period.

The Commission approved the Company's request to offer a pilot program for irrigation customers on May 3, 2016. In recommending approval, the staff report in Advice No. 16-04 dated April 26, 2016 imposed the following condition:

Given the length of the proposed Pilot Program, Staff recommends that after the third year of the pilot that if the Company anticipates that the program should not be expanded to all of its agricultural customers for the next irrigation season, then it should explain in detail why the pilot program appears to be unsuccessful in that regard and what additional information would be obtained in the remaining years of the pilot that would justify its continuance.

Consistent with the 2016 filing, the Company filed annual reports for each program year by March 31 of the following year. The 2018 (year three) report filed on March 29, 2019, included the review per the staff memo, the highlights of which are summarized below:

- Expanded to include irrigation customers beyond the Klamath Basin, but target areas with potential to defer traditional investments in sub-station upgrades. Stopped short of expanding to all customers as an intentional tactic to help manage delivery costs and provide for a sustainable delivery model for the Company and its third-party delivery partner.
- Expanded the last daily dispatch hour (from 8:00 p.m. to 10:00 p.m.); days were expanded to all days (including weekends and holidays) and weeks (August 15 to September 1) during which events can be called.
- Added an option for a higher incentive for a shorter event notice period.
- Permitted customers with large loads, demonstrated technical challenges to the installation of load control equipment and alternate in-place methods to implement control to participate in events by manually controlling loads and utilize Advanced Metering Infrastructure data to assess availability and performance.

- Extended the pilot end date to 2023. Maintained the pilot status to permit the continued focus on innovation.

On July 22, 2019, PacifiCorp filed Advice No. 19-008 to implement the recommended changes. In addition, the advice filing included the Company's intention to provide a recommendation regarding continuation of the program after the 2021 season (three seasons after the expansion requested had been in effect).

The requested effective date in Advice No. 19-008 was extended after discussions between the Company and staff so information from the 2019 IRP could be utilized when responding to Staff data requests. Requested changes were effective on February 14, 2020. The February 3, 2020 Staff report contained the following information regarding the Company's assessment of the program continuation.

First, while the proposal includes a recommendation point regarding continuation of the Pilot (or not) after the 2021 season, the out years of the Pilot (2022 and 2023) appeared to have static kW savings targets and participant enrollment goals. In discussing this with PacifiCorp, it was clarified that activity during these years will likely consist of either ramping up the Pilot in preparation for a program, or winding down in preparation for cancellation, depending on the 2021 recommendation. Second, the proposal did not explicitly discuss an evaluation plan, particularly the use of a third-party evaluator. In discussion with the Company, Staff noted the value of an independent review is especially high when contemplating the transition from pilot stage to a program, and PacifiCorp agreed to use a third-party evaluator as part of informing the 2021 recommendation.

The post 2021 season report from Applied Energy Group (AEG), provided as Exhibit C, recommends the irrigation load control program be expanded to all customers in Oregon based in part on the selection of the irrigation resource within the 2021 IRP and participating customer feedback. The first five years of the Oregon irrigation selections from the 2021 IRP are provided in Table 1.

Table 1 - Oregon Irrigation selections in the 2021 IRP

	2022	2023	2024	2025	2026
Incremental MW (gen)	10.1	15.0	9.6	5.3	1.3
Cumulative MW (gen)	10.1	25.1	34.7	40	41.3

Delivery of the Expanded Program

PacifiCorp has selected Connected Energy to deliver the expanded program. This is the same company who started delivering the predecessor pilot program in 2018 and was the successful bidder in the 2021 Demand Response RFP (described above) to deliver these services for PacifiCorp's customers in Oregon and Washington.

Connected Energy is responsible for the installation, operation and maintenance of the irrigation load control devices, dispatch of the devices as directed by the Company, customer participation, customer service, and issuance of customer incentives. The Connected Energy equipment also provides participating customers with near real-time access to energy usage data available through a dynamic web portal.

The irrigation program is part of an overall equity approach by PacifiCorp to make demand response programs available to all customers classes. The program will be focused on enrolling pumps with the highest connected loads during the available dispatch hours in the dispatch period with incentives differentiated only by the dispatch notification option. Connected Energy is a small business with veteran and non-white full time staff members that will utilize local electrical contractors for equipment installations.

The irrigation program will continue as a complement to the irrigation time-of-use pilot program.² To ensure both programs are positioned to deliver useful information about grower acceptance of the incentive offers and their ability to shift usage in response to these offers, customer participation by meter will continue to be limited to either the irrigation program or the time of use pilot. A meter may not enroll in both programs.

Irrigation Program Period, Size and Grid Services Provided

The Company is proposing an on-going irrigation demand response program without an end date to align with on-going capacity needs in 2021 IRP period. The day-ahead and hour-ahead notice options provides capacity and energy grid services to the Company and are included in the impacts included in Table 2. The initial design could also provide regulating reserves if customers elect to participate with a 22.5-minute notification. Customer acceptance of this shorter notice is unknown at this point and, as a result, no impacts are included in Table 2. Cost effectiveness results and evaluations findings will inform future changes which would be managed through the change process enabled in Schedule 106.

Table 2 - Irrigation program impacts and participation estimates

	2022*	2023	2024	2025	2026
Incremental MW ³ (gen)	20.48	9.98	8.60	1.32	1.23
Cumulative MW (gen)	20.48	30.46	39.06	40.38	41.61
Participants (inc. sites)	456	250	250	75	75

*Note: Participation (particularly in year 1) will vary depending on timing of moving the new program into the market with customers.

² Irrigation time-of-use tariff was filed under Advice Nos. 15-003 and 15-006 and approved by the Public Utility Commission of Oregon on March 24, 2015, and April 28, 2015, respectively.

³ MW volumes represent maximum capacity available during a given year.

Irrigation Program Costs

Estimated costs for the irrigation demand response program are provided in the Table 3 and includes vendor costs, customer incentives, customer outreach/advertising, evaluation, measurement and verification (EM&V) and utility staffing costs directly attributable to managing the program. These costs include the impact of all customers participating with hour ahead notice and delivering the capacity impacts provided in Table 2.

Table 3 - Irrigation Program Costs

	2022	2023	2024	2025	2026
Total Program Costs ⁴	\$ 2,027,125	\$ 1,860,915	\$ 2,238,451	\$ 1,942,257	\$ 1,999,190

Cost Recovery

PacifiCorp proposes to recover the approved irrigation demand response program costs through Schedule 291 but is not proposing a change to Schedule 291 as part of this filing. Once the irrigation demand response program is approved, the Company will file an application to defer the costs incurred through this program for later recovery through Schedule 291.

Annual Reporting

PacifiCorp will continue to provide an annual report for the irrigation program by March 31 of the following year with the same content and format as provided in past reports. Information on reporting for future demand response programs will be included with future filing materials.

Cost Effectiveness

As discussed at the December 6, 2021, Demand Response Workshop, the Company proposes to continue the use of the 2016 California Demand Response Protocol specified in the staff memo in Advice No. 16-04 approving the irrigation load control pilot. Cost-effectiveness from a Total Resource Cost and Utility Cost Test perspective will be provided prospectively when seeking Commission approval for a new demand response program and retrospectively as part of the annual reporting. The cost effectiveness prospective provided will be similar to information on energy efficiency in Oregon.

Cost effectiveness for the irrigation demand response program is provided as Confidential Exhibit A. Cost effectiveness scenarios include the entire program being operated with an hour-ahead notice and the entire program being operated with day-ahead notice, both of which provide capacity and energy grid services. A third scenario estimates potential incentives for a 22.5 minute or less dispatch providing regulation reserve benefits. These scenarios are provided to illustrate the high and low value of these grid services and to reflect some uncertainty around

⁴ Additional detailed cost breakouts can be found in Confidential Exhibit A.

which options customers might initially select. The day ahead, hour ahead, and reserve program scenarios are cost effective from the utility cost and total resource cost perspectives when ten years of benefits and costs are compared. First year, 2022 benefits are slightly less than first year costs which include start-up expenses. The subsequent nine years for each scenario are cost effective under both cost tests. While the program is enabled to provide a shorter notice and regulating reserve grid services, customer acceptance is unknown, and no impacts are included in the cost-effective analysis provided. A summary of cost-effectiveness results over a ten-year horizon are summarized below in Table 4.

Table 4 - Irrigation Program Cost-Effectiveness Results

Program Dispatch Scenario	UCT	TRC
Hour-ahead	1.1	1.1
Day-ahead	1.2	1.3
22.5 minute or less	1.0	1.1

Stakeholder Involvement – Action Item No. 4 in Order 20-186 in Docket LC-70

Stakeholder engagement was an integral part of pursuing demand response acquisitions with a demand response RFP. Key activities tied to the demand response are provided in summary form and are in addition to irrigation load activities described later.

On January 21, 2020, PacifiCorp held a CPA workshop meeting in the 2021 IRP public input process. Highlights included review prior IRP/CPA comments, proposed CPA methodologies for demand response, interactions between demand response and pricing/rates options.

On February 18, 2020, PacifiCorp held a technical workshop in the 2021 IRP public input process. Highlights included further defining the grid services a demand response resource can provide and IRP credits for demand response.

On April 14, 2020, PacifiCorp held a stakeholder meeting interested in demand response. Highlights included background information on existing demand response programs, review of demand response in 2019 IRP, review of demand response potential in the conservation potential assessment, discuss pilot concepts and gather input on how to structure or focus a demand response RFP

On April 16, 2020, at its regular IRP public input meeting, PacifiCorp shared information on the demand response stakeholder meeting with the broader IRP audience.

In June 2020, the Company and Energy Trust of Oregon met to have an intentional conversation around how to run energy efficiency/demand response programs most effectively for Oregon customers. The discussion was intended to gain insight into Energy Trust interactions with Portland General Electric Company’s demand response programs in advance of developing the RFP.

On June 18 & 19, 2020, PacifiCorp held an IRP public input meeting, which included 2019 IRP Action Item 4 acknowledgement with demand response conditions and draft RFP schedule shared with broader IRP audience.

On August 28, 2020, PacifiCorp held an IRP CPA Technical Workshop. Highlights included an assessment of demand response resources, assessment methodology, transition to grid services view of demand response, development of demand response costs, draft potential results (short and long duration, winter and summer) and a demand response RFP update

On October 22, 2020, PacifiCorp held an IRP public input meeting. Highlights included demand response ramp rates, battery storage assumptions, types of demand response costs used in the levelized calculation, demand response cost bundles

On October 14, 2020, Johnson Consulting Group was hired to: Research demand response technical vendor requirements, summarize demand response RFPs that have been issued by other energy organizations, assist in developing a simple Request for Qualifications (RFQ) template to identify potential vendors, assist in the distribution of the RFQ to ensure it is widely circulated to encourage a robust response rate, Conduct in-depth interviews with up to 15 potential demand response vendors to identify market barriers, opportunities, and critical elements that should be addressed in a forthcoming demand response RFP, summarize key elements and essential components that should be considered in developing a demand response RFP and a demand response RFQ.

On October 22, 2020, PacifiCorp held an IRP Public input meeting. Highlights included demand response ramp rates, battery storage assumptions, types of demand response costs used in the levelized calculation, demand response cost bundles

On November 2, 2020, PacifiCorp posted the RFQ for bidders to the following website: <https://www.pacificorp.com/suppliers/rfps/demand-response-rfp-2021.html>. RFQ responses were due on or before November 23, 2020, and were intended to build the bidders list for the RFP and help to expand our outreach to a range of suppliers. The RFQ also asked respondents to provide some brief descriptions of potential programs and also asked for Oregon pilot ideas, response to stakeholder interests. The RFQ was also posted to Peak Load Management Alliance, Association of Energy Service Professionals, International Energy Program Evaluation Conference, , Energy Central, and ESource in order to reach a broad audience.

On February 8, 2021, PacifiCorp released the RFP to 26 bidders registered in the Company's on-line procurement system.

On February 9, 2021, PacifiCorp filed the RFP with the Washington Utilities and Transportation Commission under Docket UE - 210088.

On March 15, 2021, the Company received RFP responses from 18 different organizations.

On April 23, 2021, PacifiCorp held an IRP public input meeting. Highlights included updates on All Source 2020 and the demand response RFPs.

On June 25, 2021, PacifiCorp held an IRP public input meeting. Highlights included update on demand response selected by the System Optimizer model selections from the 2021 demand response RFP.

On July 14, 2021, the Company provided Commission Staff an update of the RFP process including, modeling selections in the five categories (smart thermostats, commercial and industrial curtailment, residential batteries, irrigation and water heating), costs and process steps.

On August 16, 2021, PacifiCorp filed a written update on its demand response efforts in Oregon in compliance with the directive provided by the Commission in Order No. 20-186. Staff provided a summary of the update at the August 24, 2021 regular public meeting.

On August 27, 2021, PacifiCorp held an IRP public input meeting highlighting the 2021 preferred portfolio action plan with demand side management actions.

On December 6, 2021, the Company held a demand response workshop with invitations sent to 17 organizations. Topics included Potential programs and design elements, targeted customers and eligibility, event parameters, measurement and verification structures, recruitment and managing the customer relationship, cost-effectiveness, evaluation, reporting, cost recovery, process and next steps

Stakeholder Involvement – Irrigation Pilot and Expanded Program

In addition to annual reports provided for the irrigation load control pilot, the Company has engaged with stakeholders on the specifics of the existing and expanded irrigation program being proposed here.

The AEG post-2021 season report, as required in the approval of Advice No. 19-008, contains participants' feedback to interview questions designed by AEG. Many of the suggestions are addressed by the proposed program expansion.

On January 7, 2022, Company representatives met with Energy Trust staff to share the Company's plan for demand response in Oregon and explore opportunities for future coordination. Furthermore, during the last two years, integrating demand response with energy efficiency programs in general, and specifically joint opportunities for irrigation customers has been a standing topic during the regular coordination meetings between the Energy Trust and the Company.

On February 4, 2022, Company representatives and Connected Energy met with a representative from Farmer Conservation Alliance per the conversation during the December 6, 2021, demand

Advice No. 22-004
Public Utility Commission of Oregon
March 28, 2022
Page 11

response workshop. Organizational roles and plans, demand response program design and opportunities for coordinated outreach were discussed for both Oregon and Washington.

It is respectfully requested that all formal data requests regarding this matter be addressed to:

By email (preferred): datarequest@pacificorp.com

By regular mail: Data Request Response Center
PacifiCorp
825 NE Multnomah, Suite 2000
Portland, OR 97232

Please direct any informal questions about this filing to Cathie Allen, Regulatory Affairs Manager, at (503) 813-5934.

Sincerely,



Shelley McCoy
Director, Regulation

Enclosures

Confidential Exhibit A – Cost Effectiveness for irrigation demand response program
Exhibit B – Content managed on web site (irrigation demand response program)
Exhibit C – Post 2021 season recommendation prepared by AEG
Exhibit D – NEW Schedule 106
Exhibit E – Program change process
Exhibit F – Cancel 105.1 and 105.2

Redacted
Exhibit A

**THIS EXHIBIT IS CONFIDENTIAL IN ITS
ENTIRETY AND IS PROVIDED UNDER SEPARATE
COVER**

Exhibit B

OREGON IRRIGATION DEMAND RESPONSE

This document includes the following sections:

- Definitions
- Program Description
- Participation Requirements and Procedures
- Dispatch Parameters and Incentives
- Additional Conditions

DEFINITIONS

Available Dispatch Hours: Daily timeframe within which Pacific Power may dispatch its demand response control system.

Criteria: Additional requirements for participation beyond being an Eligible Customer. Criteria are set forth in Table 1 below.

Dispatch Days: The days upon which Pacific Power may or may not dispatch its demand response control system.

Dispatch Duration: The duration of time that demand response events may be dispatched for.

Dispatch Event: The period during which Participating Customers' electrical loads are shut off or controlled to minimize electrical consumption

Dispatch Parameters: The criteria within which Pacific Power may dispatch its load control system.

Dispatch Notification: The maximum time between a Participating Customer receiving a notice from the Program Administrator or Pacific Power and the beginning of the Dispatch Event. "Hour ahead" shall mean 60 minutes. "Day ahead" shall mean 24 hours.

Dispatch Period: The calendar year timeframe within which Pacific Power may dispatch its demand response control system.

Eligible Customer: Any party who has applied for, been accepted, and receives electric service at the real property, or is the electricity user at the real property.

Incentive: Payments of money or bill credits made by Program Administrator or Company to a Participating Customer for participation in a demand response offer. Incentives are specific to Dispatch Notification the Participating Customer elects for the season.

Maximum Dispatch Hours: The maximum amount of time Pacific Power may dispatch its demand response control system annually.

Maximum Dispatch Events: The maximum number of events Pacific Power may utilize in dispatching its demand response control system annually.

Opt-Out: The process whereby a Participating Customer notifies the Program Administrator and/or the Company they don't want to be included in an upcoming event. Opt-Out notification must be received prior to the beginning of the event.

Participating Customers: Eligible Customers who meet the Criteria and agree to participate in the Irrigation Demand Response Program.

Program Administrator: A third-party entity selected by Pacific Power to engage with Eligible Customers about the irrigation demand response program, contract with Participating Customers on behalf of Pacific Power and provide the systems to control Participating Customers irrigation loads during certain times.

Targeted Area: One or more geographic area within Pacific Power's Oregon service territory that may have additional demand response requirements and/or value. Targeted Areas may be used by the Program Administrator do one or more of the following: focus marketing, differentiate participation requirements and/or Incentives.

PROGRAM DESCRIPTION

The Irrigation Demand Response Program is a program offered by Pacific Power that provides Incentives to Participating Customers in exchange for granting Pacific Power the right to curtail Participating Customers' irrigation loads at certain times within the Dispatch Parameters and during the Dispatch Period. Pacific Power contracts with the Program Administrator to deliver the Irrigation Demand Response Program; the Program Administrator will oversee the enrollment of Participating Customers, deliver Dispatch Notifications, and call Dispatch Events on behalf of Pacific Power. The ability to curtail these loads provides Pacific Power with a summer capacity or energy product.

1) Participation

Eligible Customer and relevant load Criteria are included in the table in this document. Eligible Customers who meet the Criteria and agree to participate are Participating Customers. Participating Customers will be required to sign a standard contract with the Program Administrator to initiate participation. The agreement is perpetual (unless terminated by either party) and does not need to be re-signed at the start of each year.

2) Incentives

Incentives are available on a \$/kilowatt (kW) per year basis and vary by Dispatch Notification. Using data from the installed switches, loads available for curtailment (kW) during the hours and days of each week of the Dispatch Period are averaged to arrive at an average available load which will be multiplied by the Incentive rate depending on the notification option selected. Loads opted out are removed from the connected load calculations and reduce the Incentive payment to the Participating Customer. Incentives are paid after the end of the season by check or if requested a bill credit. Participating Customers receive Incentives based on the availability of load reduction, regardless of whether Pacific Power calls upon a load reduction during a Dispatch Event.

3) Dispatch Notification and Events

Participating Customers may select from three different Dispatch Notification options—22.5 minute-ahead, hour-ahead or day-ahead notices—which define the time between when the customer is notified of an event and when the event starts. Participating Customers notify the Program Administrator with their preferred notification channel(s) for Dispatch Events and may select more than one, i.e., text and a phone call. Dispatch Events called with 22.5 minute-ahead notice are focused on providing the utility with regulating reserves. Dispatch Events called with

an hour-ahead notice are focused primarily on providing additional capacity for the utility. Dispatch Events called with a day-ahead notice are focused primarily on providing additional energy or an energy price mitigation tool for the utility. The value of the curtailed load to the utility system depends on the time between the notification and the start of the event. Available Incentives reflect the variability in the utility value.

4) Equipment Operation

Control occurs through a Company-provided switch (communicating via cellular signals) on the pump motor controller. Individual switches communicate with the software platform provided and installed by the Program Administrator which also provides secure access to Pacific Power to initiate Dispatch Events. Unless activated during an event, the switches do not affect normal control of the irrigation equipment, but they do convey information about the connected load back to the system and Pacific Power.

5) Opt Outs

To provide Participating Customers with some operational certainty around the impacts of the demand response program on their operations, there are limits on hours in a day, the total number of events within a season, and total hours in a season when the loads may be curtailed. Recognizing that unforeseen operational issue may arise, Participating Customers on an hour ahead or day ahead notification may a) opt out a site for future events or b) opt out a site once the Dispatch Notification has been sent by the Program Administrator. Opt-Out requests must be received before an event starts. In order maximize the load available for control and minimize program costs, loads that are available for control are strongly preferred. Loads that are opted out or unavailable on a regular basis may be removed from the program at the sole discretion of the Program Administrator.

6) Quality Assurance, Change Process and Reporting

Quality assurance review and techniques may be utilized during the delivery of the program. Periodic program impact and process evaluations will be conducted by a third party working for Pacific Power. Pacific Power will regularly review program performance, quality assurance and evaluation findings, and cost effectiveness results in combination with current Company resource planning results to evaluate potential program changes. Program changes may include changes to information in this document and will follow the process outlined in current version of Oregon Schedule 106.

Annual reports on program performance are provided to the Public Utility Commission of Oregon annually.

PARTICIPATION REQUIREMENTS AND PROCEDURES

Table 1 – Dispatch Parameters and Incentives

Dispatch Parameters and Incentives	Description
Eligible Customer	<ul style="list-style-type: none"> Irrigation customers on Delivery Service Schedules 41 or 48
Criteria	<ul style="list-style-type: none"> Pumps \geq 25 HP running at least 200 hours in the Dispatch Period Pumps larger than 500 HP running at least 200 hours in the Dispatch Period with service voltages higher than 480V may be controlled manually at the sole discretion of the Program Administrator
Dispatch Period	Week including June 1 through week including September 15.
Targeted Areas	All areas within Company's Oregon territory
Dispatch Days	All days during Annual Program Period
Available Dispatch Hours	12:00 p.m. to 10:00 p.m. Pacific Time on all Dispatch Days
Maximum Dispatch Hours	52 hours per year
Maximum Dispatch Events	20 events per year.
Dispatch Duration	Up to 4 hours
Dispatch Notification	Day ahead, hour ahead and 22.5 minute ahead
Incentive	<ul style="list-style-type: none"> Day ahead Dispatch Notification is paid at \$18/kW per year Hour ahead Dispatch Notification is paid at \$30/kW per year 22.5 minute ahead Dispatch Notification is paid at \$45/kW per year <p>The available Incentive per site is calculated at the end of the irrigation season and paid to each participant by either a check or (if requested) a bill credit in the Fall. Incentives will be determined by multiplying the average load (kW) a customer can reliably shut-off during Available Dispatch Hours on the Dispatch Days in the Dispatch Period by the Incentive rate, adjusted for Opt-Outs.</p>
Opt-Out	Participating Customers on an hour ahead or day ahead notification may Opt-Out of dispatches. Opting out will lower Incentive payments

proportionally. Repeated opt outs may result in removal of the site from the program.

ADDITIONAL CONDITIONS

System Emergency Dispatch: In the event of a system emergency, Pacific Power may, at its discretion, expand the Dispatch Parameters beyond the parameters listed. Emergency events may be used to satisfy requirements of the North American Electric Reliability Corporation standard BAL-002-WECC-2 for Contingency Reserve Obligation and may be deployed when the utility is experiencing a qualifying event as defined by the Western Power Pool.

Exhibit C



MEMORANDUM

To: Don Jones and Peter Schaffer (PacifiCorp)
From: Maggie Buffum, Kelly Marrin, and Barb Ryan (AEG)
Date: 2/15/2022
Re: Recommendations for PacifiCorp's OR ILC Pilot

The Purpose of This Memo

Pacific Power has offered irrigation customers in the Klamath basin an irrigation load control (ILC) program since 2016. In 2019, Pacific Power filed to extend and expand the program. In early 2020, the Public Utility Commission of Oregon (OPUC) approved Pacific Power's request and conditioned their approval on a recommendation after the 2021 season that provides clear direction to either ramp down or move the pilot toward a full-scale program.

Pacific Power contracted with the Applied Energy Group (AEG) to provide research and reporting services culminating in a recommendation to either transition the ILC pilot to a full-scale program or ramp down. This memo summarizes findings from that research and provides AEG's recommendations for expanding the pilot.

Summary of Findings and Recommendation

This section first summarizes AEG's research activities, including our associated findings and recommendations. Then, we give our overall recommendation regarding the ILC Pilot.

Research Activities and Findings

AEG based its recommendation on two key activities, described below, along with a summary of key findings and recommendations for consideration. The sections that follow provide additional details on AEG's research.

We completed a [documentation review](#), which covered overviews of the current pilot, load-reduction estimation methods, pilot participants and performance over time, and plans for the pilot's expansion.

- AEG found that the methods used to calculate savings align with industry standards and match the descriptions of methods provided in the implementer's annual reports.
- PacifiCorp plans for the program to continue offering multiple event notification options (e.g., day-ahead and hour-ahead notifications) to increase the program's value to PacifiCorp and the ILC program participants. Part of the program expansion will include a review of the baseline approaches given the different options available to customers.
- PacifiCorp received multiple responses to its recent request for DR implementation proposals from bidders looking to implement an ILC program in Oregon. Levelized costs per-kW were consistently lower than other commercial and industrial (C&I) demand reduction strategies.
- PacifiCorp's 2021 IRP model selected an ILC program in Oregon as a demand-response resource through 2031.

We also conducted a series of [in-depth interviews](#) with the current program implementer and all five current pilot participants to gain insight into program delivery and operations, challenges or successes with the pilot, satisfaction with incentives and pilot design, and recommendations for improvements.



- Participants most often cited saving money as the main program benefit. One water agency participant described its interest in helping develop and promote programs that lower energy costs, which it sees as an additional benefit to ILC pilot participation.
- Overall, the current participants were satisfied with the pilot. Four out of five participants found the incentives satisfactory and felt they made the program worth the time and effort. When prompted for recommendations, some participants suggested increasing the incentives (including those satisfied with the pilot), which is a typical finding in satisfaction research. All five participants would prefer to receive the incentive before the end of the calendar year.
- Although they rarely opted out of an event, many participants said the ability to opt out was important in their decision to enroll.
- Participants felt that farmers with pivot systems would have the easiest time participating, and one participant said that pastureland worked very well with the program. However, none of the participants felt that the type of irrigation technology or crops supported by the pumps in the pilot affected their participation.
- The implementer felt that the COVID-19 pandemic impacted the pilot's ability to attract new participants. While the pandemic did not appear to impact any participant's ability to respond to events, potential customers needed to focus instead on other aspects of their operations as a result of it.
- While only one participant, a water agency, mentioned the effect of water shortages on their participation in the pilot, the implementer saw lower available capacity for curtailment overall compared to previous years and believed that water shortages discouraged some potential participants from committing to the pilot.

Final Recommendation

Based on these findings, **AEG recommends that PacifiCorp transition the the ILC pilot to a full -scale program. Below we present our** conclusions and recommendations for the expansion based on the research activities.

- The current pilot, which includes a small number of customers all located in the Klamath Basin, has generated consistent capacity savings over the years, though water availability influences the available capacity. Expanding customers, geography and pump types **can mitigate the volatility of savings for reasons outside of customers' control**, such as during dry seasons, because growers or water agencies may need to respond differently to these environmental (or other) factors.
- The current participants themselves value the program and provided insightful feedback. Their high satisfaction with the pilot under its existing pricing structure and the limited technological barriers to participation they cited provide evidence that scaling the pilot to a broader customer base outside of the Klamath Basin could be successful. **AEG recommends that the implementer and PacifiCorp consider quicker incentive payments to customers and review incentive levels for each dispatch option as part of the participation and cost effectiveness analysis provided in annual reporting.**
- The responses from actual bidders for program implementation show that the market supports the pilot's continuation and expansion, as does the pilot's selection in the 2021 IRP through 2031.
- **As the program expands, the implementer and PacifiCorp program staff, should review the baseline methods periodically to ensure they reflect the multiple dispatch methods.**

The sections that follow provide additional details on AEG's research.

Documentation Review

The AEG team reviewed the existing ILC pilot reports and documentation in detail to build a comprehensive picture of the pilot over time. We also validated the appropriateness of the methods used to estimate load reductions and cost-effectiveness and noted any recommendations in these areas for future program years.



We received the following data and documentation from PacifiCorp.

- 2021 performance reports with context around results from the implementer's perspective.
- Five-minute load data for each pump during the 2021 event season, demand reduction calculations, and incentive calculations.
- PacifiCorp's descriptions of the ILC pilot program and its plans for expanding the program through 2023.
- PacifiCorp staff recommendations for expanding the program, including program background information, discussion of early results and challenges, plans for transitioning the pilot to a full program, and key pilot data from the 2016-2018 program years, that was delivered to the OPUC.
- Results from PacifiCorp's recent demand response RFP and current integrated resource plan modeling to see the potential demand reductions and costs-per-kW bid from the market of implementers.

Pilot Overview

The Oregon Irrigation Load Control Pilot offers voluntary direct load-control to irrigation customers within the Oregon portion of the Klamath Basin. The pilot's goal is to reduce the load from irrigation pumps during peak summer days. Similar programs currently exist in PacifiCorp's Utah and Idaho territories, and they launched the pilot to test the program design in Oregon.

The 2021 event season ran from the first week of June through the first week of September. The pilot restricts events to less than 52 hours per year in total, with up to 20 events per year, each lasting no more than four hours. Customers choose between day-ahead notice incentives (\$18/kW per year) and hour-ahead notice incentives (\$30/kW per year); in the 2021 event season, all customers selected the hour-ahead option. Customers can opt out of events without penalties beyond the foregone incentives.

Load-control devices with integrated metering chips are installed on the pumps and provide five-minute interval data during the entire program event season. This data is used to calculate actual load reductions (i.e., a running pump produces positive load and curtailment shows zero load).

Load-Reduction Estimation Methods

The program implementer estimated load reductions by assuming that during curtailment events, each pump could have consumed an amount equal to their observed load during the most recent eligible non-event day, on average. Then, to calculate the total curtailed load for each pump across all events, this potential curtailed load was reduced by the pump's actual load across curtailment events.

This approach is generally reasonable, but AEG provides the following comments for consideration:

- **The baseline approach is appropriate for both day-ahead and hour-ahead notification options, but there are opportunities to modify estimation methods depending on which option each customer selects.** The current method uses the most-recent eligible non-event day to create the baseline for each pump. This method is necessary when customers receive notifications a full day ahead of the event, but different notification options allow for other baseline periods, such as the hour ahead of an event for the hour ahead dispatch notification, which would more fully reflect the impacts from shorter notice events.

Pilot Participation and Performance Over Time

In the first year of the pilot (2016), the implementer recruited three customers with ten pumps. These customers all continue to participate in the pilot. In 2019, the current implementer recruited two additional customers for a total participant pool of five customers and 17 pumps used for crop growth (alfalfa, potatoes), pasturelands for livestock grazing, and reservoirs.

The design of the pilot has primarily remained consistent over the years with tweaks to incentive pricing and timing and duration of events called as needed.



- 2016: (Partial season.) One event.
- 2017: (Full season.) All customers participated in the four events; each event lasted longer than the one 2016 event, and all were dispatched with only a day of separation between events. The logistics of dispatching events using the load-control technology were successful throughout the season. The implementer signaled its intention to exit the delivery contract after the 2017 season completed.
- 2018: The current implementer (Connected Energy) took over the pilot after being selected through a request for proposals (RFP). The pilot retained all previous participants through new agreements and new load-control switch technology. All customers participated fully in three of four events. (One of the four events revealed issues with one of the load-control switches.)
- 2019: The implementer recruited two additional participants with seven pumps. Like prior event seasons, the four events occurred close together (all four took place within two weeks) without losing participation. Although 2019 was warmer and dryer than normal (a continuing trend since the 2017 event season), according to the implementer, the irrigators did not raise concerns about water shortages concerning their ability to participate in the pilot.
- 2020: The COVID-19 pandemic did not appear to have a meaningful impact on participation in the events, though the implementer found it difficult to enroll new customers whose focus shifted to managing their current operations. All six events were called with one-hour ahead notification, which increased incentive costs compared to the day-ahead notifications of previous years.
- 2021: Six events were dispatched during the season, including one on Saturday and one on Sunday. However, droughts and low water availability reduced pump loads leading to notably smaller impacts. One customer opted two pumps out of all events to prevent flooding, contributing to the lower available and achieved reductions. All other pumps participated in the six events.

Table 1 Pilot Participation and Performance Over Time

Metric	2016	2017	2018	2019	2020	2021
Implementer	EnerNOC		Connected Energy			
Participating Customers (Pumps)	3 (10)	3 (10)	3 (10)	5 (17)	5 (17)	5 (17)
Target kW Reduction	0-2,000	3,000	3,000	3,000	5,000	5,000
Number of Events	1	4	4	4	6	6
Average Available kW	565	546	563	945	969	473
Average kW Reduction	281	432	258	554	574	360
Actual Costs	\$150,000	\$125,000	\$180,819	\$181,631	\$175,704	\$174,804
Cost per kW (\$/kW)	\$265.49	\$229.94	\$321.17	\$192.20	\$181.33	\$369.56

Planned Program Expansion

According to a memo submitted to the OR PUC by PacifiCorp staff on February 14, 2020, PacifiCorp plans to extend the Irrigation Load Control Pilot through 2023 and expand the pilot in terms of the number and location of participating pumps. The current pilot focuses on a small number of customers in the Klamath Basin. Expanded recruitment would target 70 larger pumps in the Klamath Basin, Central Oregon, and south of Medford.

The pilot expansion would retain several changes already integrated into the current pilot, such as extending the event season to September 1 (from August 15) and the last eligible hour to 10 pm (from 8 pm). The implementer has also added an hour-ahead notification option with higher incentives. As discussed in the [participant interview](#) findings, these changes were well-received by current participants, and in 2021, all five participants opted for hour-ahead notifications.



For pumps with unique configurations that could not participate with the current load-control switch, the implementer would consider allowing customers to manually control pumps for events and instead use Advanced Metering Infrastructure (AMI) data to calculate achieved load reductions and incentive payments.

AEG reviewed responses to PacifiCorp's recent request for DR implementation proposals, including an irrigation load control program in Oregon. The levelized costs per-kW associated with these bids were lower than other types of C&I programs and are materially less than the pilot costs on a per-kW basis. Furthermore, based on the assumptions provided by bidders, the 2021 IRP selected the ILC program as a viable demand response resource through 2031.

In-Depth Interviews

For this task, AEG conducted six in-depth interviews. We interviewed the implementation program manager and all five current program participants. The interviews focused on gathering information that could help inform future ILC program years.

- The **implementer interview** focused on perceived satisfaction of OR ILC participants, requests or feedback from participants, perceived level of interest among other irrigators, effects of COVID on recruitment or operations, and learnings from other programs or pilots.
- The **participant interviews** focused on general program satisfaction, satisfaction with incentives, preferred notification type, length and frequency of events, types of irrigation that are good candidates for controls (i.e., pivot, drip, wheel line, hand line), participation as it relates to pump sizes and crop types, interest in other types of controls including manual control, and COVID effects on operations and participation.

Below we include a detailed summary of the interviews.

Program Background

Connected Energy implements the program. It is a turnkey program where Connected Energy is responsible for all customer recruitment, onboarding, hardware installation, event notification and implementation, reporting, and calculation and processing of incentives.

There are currently five participants in the program: three growers and two water agencies. The growers have pivots and wheel line irrigation systems with irrigation seasons from April/May to September/October. Three of the participants became aware of the program through Pacific Power's outreach, one proactively searched for energy-saving options, and another hired a contractor to help them find energy-saving opportunities.

Program Participation

Connected Energy has been running the program since 2018. They recruit customers from a list provided by Pacific Power. Connected Energy conducts one-on-one outreach with prospective participants and feels that customers with a large load that runs often and can be curtailed for up to 4 hours are good candidates. Conversely, customers who use pumps to reduce flooding, customers with small pumps, or customers with pumps that do not run very often are poor candidates.

All five participants find it easy to participate in events. Four of the five said the program has caused them to shift energy usage, and one participant said participation has decreased their water usage. The dominant reason for participating is the incentive. Only one participant, a water agency, cited an additional benefit for participating. He is interested in helping to develop and promote programs that lower energy costs and sees that as an additional benefit to program participation. Although Connected Energy feels that the access to technology that allows them to remotely control and monitor their irrigation devices is an additional benefit, none of the participants cited that feature as a benefit.

According to the implementer, COVID restrictions have made participating in the program less of a priority or focus for prospective participants. There are also water restrictions where potential participants don't have access to water, so there is nothing to control.



However, none of the program participants felt that COVID impacted their ability to participate, and only one participant, a water agency, said water shortages affected their participation. Most participants think that farmers with pivot systems will have the easiest time participating, and one participant feels that pastureland works better than other crops for the program.

Program Satisfaction

For the first time since 2018, three events in a row were called in 2021. According to Connected Energy, there were no customer complaints. They reach out to customers personally by phone to notify customers of events. Overall satisfaction with the program is high, with the exception of one participant who requested additional information on the calculations. The participants were all very satisfied with the number and frequency of events and the event notification. All the participants would prefer to receive the incentive check before the year-end rather than early in the new year.

Additional suggestions for improving the program include the following:

- Encourage more customers to participate
- Provide more transparency into how long the program will continue
- Pay the incentive as a credit on the utility bill
- Improve the platform for remote access into pump operations

Connected Energy has a lot of experience with load control programs. As a rule, they use lessons learned from other areas to inform how they implement the Pacific Power program. They are constantly learning and using their experience to improve all their programs.

Exhibit D

DEMAND RESPONSE PROGRAMS

Page 1

AVAILABLE:

In all territory served by Company in the State of Oregon.

APPLICABLE:

All Customers served by the Company in the State of Oregon taking service under the Company's Delivery Service Schedules listed on Schedule 291 – System Benefits Charge are eligible to participate in demand response programs subject to criteria listed on the program section of the Company website.

PURPOSE:

To manage electric loads through one or more Company-dispatched demand response control system(s).

PROGRAM DESCRIPTIONS:

One or more detailed program descriptions can be found on the demand response section of the Company's website (<https://www.pacificpower.net/savings-energy-choices.html>). Each program will have separate area on the website.

CUSTOMER PARTICIPATION:

Customer participation in each program is voluntary and is initiated by following the participation procedures listed on the program website.

PROGRAM ADMINISTRATOR:

Qualified person or entity hired by the Company to administer one or more demand response Program(s).

PROVISIONS OF SERVICE:

1. Incentive amounts, participation requirements and procedures will be listed on the demand response website.
2. Incentive delivery may vary by program and may include cash payments and/or bill credits.
3. Incentives may be offered year-round or for selected time periods.
4. Incentive amounts, participation requirements, and procedures may be changed to enhance program cost effectiveness, improve participation, reflect quality assurance findings or market information.
5. All changes will occur with a minimum of 45-day notice and be prominently displayed as a change on the demand response section of the Company's website.
6. Company and/or Program Administrator will employ a variety of quality assurance techniques during the delivery of the program. They may differ by program and may include, but are not limited to, site inspections, phone surveys, and confirmation of Customer eligibility.
7. The Company may verify or evaluate the demand response impacts at Customer sites. Verification or evaluation may include, but are not limited to, telephone survey, site visit, billing analysis, pre- and post-installation of monitoring equipment as necessary to quantify demand response impacts.

ELECTRIC SERVICE REGULATIONS:

Service under this Schedule will be in accordance with the terms of the Electric Service Agreement between the Customer and the Company. The Electric Service Regulations of the Company on file with and approved by the Commission, including future applicable amendments, will be considered as forming a part of and incorporated in said Agreement.

Exhibit E

Exhibit E
Pacific Power Flexible Tariff Format – Change Process - Oregon

This process applies to specific program details managed outside of the program tariff such as:

- Incentive tables
- Program definitions
- General incentive information

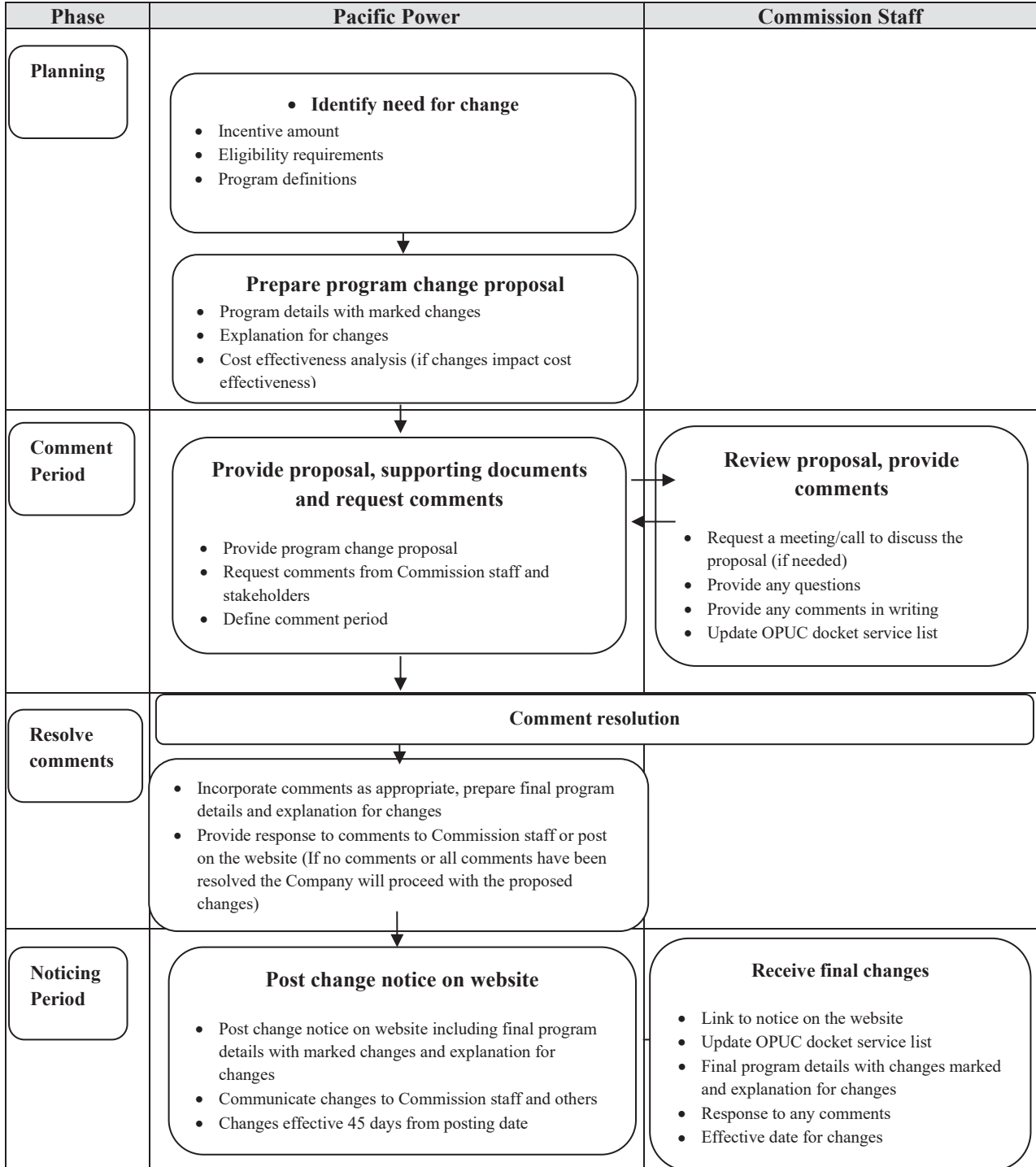


Exhibit F

IRRIGATION LOAD CONTROL PROGRAM PILOT

Page 1

Purpose

This optional tariff allows Customers in target areas in Oregon posted on the Company web site, taking service for agricultural irrigation and agricultural soil drainage pumping under Electric Service Schedule Nos. 41, and 48 to participate in a demand response pilot program.

Available

To areas served by the Company in target areas in Oregon posted on the Company web site.

Applicable

Available to qualifying customers in target areas on Schedule Nos. 41, or 48 who are receiving service for agricultural irrigation and agricultural soil drainage pumping. The Program Pilot will expire after the 2023 irrigation season.

Program Description

A detailed description of the program can be found on the Company website at: www.pacificpower.net/orilc.

- **Mandatory Program Events:** The Company shall have the right to implement a Mandatory Dispatch Event according to the following criteria:
 - a) Dispatch Period: Week including June 1 through week including September 1.
 - b) Available Dispatch Hours: 12 PM to 10:00 PM Pacific Time
 - c) Maximum Dispatch Hours: 52 hours per Program Year
 - d) Dispatch Duration: Not more than four hours per Dispatch Event or twelve hours per week
 - e) Dispatch Event Frequency: limited to a single (1) Dispatch Event per day
 - f) Dispatch Days: all days during Dispatch Period.
 - g) Dispatch Notification: Day-ahead or hour-ahead notification will be provided for each Dispatch Event
- **Program Provider:** The Irrigation Load Control Program will be operated by a third party load control program provider. Participating Customers will contract directly with the Program Provider.
- **Incentives:** Incentive options for participation shall be provided by the Program Provider to any eligible customer upon request through the process described on the Company website. Incentives will differ based on the Dispatch Notification requirements.

(Continued)

Program Description (continued)

- **Non-Discrimination:** Eligible facilities of similar size, operations and ability to participate will be treated in a fair and consistent manner. Any claims of discriminatory treatment should be addressed through the dispute resolution process described below.
- **Participation:** The Company or Program Provider shall have the right to qualify program participants, at their sole discretion based on criteria the Company or Program Provider considers necessary to ensure the effective operation of the Program and utility system. Criteria may include, but will not be limited to: impact on the Company's transmission and distribution system and/or cost effectiveness. The Company may limit participation levels. Participation limits beyond those included in this schedule will be described on the Company website.
- Metered points of delivery enrolled in this pilot will not be eligible to participate concurrently in any time-of-use (TOU) pilot which is offered by the Company.

For additional information or to initiate participation, Schedule 41, or 48 customers who are receiving service for agricultural irrigation and agricultural soil drainage pumping should visit www.pacificpower.net/orilc.

DISPUTE RESOLUTION: Issues associated with the Irrigation Load Control Program that have not been resolved by the Program Provider should be directed to the Pacific Power irrigation hotline at (1-800-715-9238). In the event the issue is not resolved by Pacific Power, the customer may elect to follow the process outlined at [http://www.puc.state.or.us/consumer/Consumer Complaint Process.pdf](http://www.puc.state.or.us/consumer/Consumer%20Complaint%20Process.pdf).