

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: May 3, 2016

REGULAR _____ CONSENT X EFFECTIVE DATE May 4, 2016

DATE: April 26, 2016

TO: Public Utility Commission

FROM: Jason Salmi Klotz and George R. Compton

THROUGH: Jason Eisdorfer, Marc Hellman, and Michael Dougherty

SUBJECT: PACIFIC POWER: (Docket No. ADV 242/Advice No.16-04) Initiates
Schedule 105, Five-year Irrigation Load Control Program Pilot.

STAFF RECOMMENDATION:

Staff recommends that the Commission approve Pacific Power's (PacifiCorp's or Company's) Schedule 105, Irrigation Load Control Five-Year Program Pilot.

ISSUE:

Whether the Commission should approve PacifiCorp's Advice No. 16-04, which seeks to implement Schedule 105, a Five-Year Irrigation Load Control Pilot Program.

APPLICABLE LAW:

PacifiCorp submitted Tariff P.U.C. OR No. 36, Sheet Nos. 105-1 and 105-2, of Schedule 105, Five-Year Irrigation Load Control Pilot Program in compliance with ORS 757.205, OAR 860-022-0025, and OAR 860-022-0030. Energy utilities must file tariffs for services provided to retail customers pursuant to ORS 757.205.

OAR 860-022-0025 sets forth filing requirements for filing tariffs or schedules changing rates. OAR 860-022-0030 provides requirements for filing tariffs or schedules naming increased rates. PacifiCorp's proposed Schedule 105 will entail rate changes for another Schedule which will be determined in a separate proceeding prior to implementation of this proposed pilot program.

DISCUSSION AND ANALYSIS:

Background

The following discussion sets out the general elements from the application to this Advice filing, dated March 4, 2016.

The Company's 2015 Integrated Resource Plan (IRP) selected irrigation load management as a capacity resource in Oregon beginning in 2022. Action item 3a in the 2015 IRP described the implementation of a west-side irrigation load control pilot beginning in 2016. This action item was acknowledged in Order No. 16-071, issued by the Commission on February 29, 2016. The Company proposed the Irrigation Load Control Pilot Program to investigate whether its current program design and operation in Utah and Idaho would be effective in Oregon and California. The proposed Pilot Program will provide the Company information needed to evaluate the program to identify any necessary modifications before the 2022 resource need.

PacifiCorp's Irrigation Load Control Pilot Program is a voluntary direct load control, load reduction program designed to provide load reductions during peak summer days by paying participants incentives based on the availability of load reduction. Participants will be given incentive payments regardless of whether the Company calls upon a load reduction for any given event. However, non-performance will ultimately lower the incentive payment provided to participants. PacifiCorp states that the program's "value [as] a capacity product, with standby characteristics similar to generating resources that can be called upon when needed to manage system reliability, is the *ability* to call for the load reduction *should* it be needed."¹ Additionally, the Company is investigating the ability of the proposed program design and operation to contribute system capacity toward the Company's planning reserve margin.

The Irrigation Load Control Pilot Program is expected to complement the irrigation time-of-use pilot program, which was filed under tariff advice letter 15-003 and 15-006, and approved by the Commission on March 24, 2015, and April 21, 2015, respectively. The time-of-use program targets customers who are able to shift their daily usage to off-peak times. By contrast, the Pilot Program targets customers who are unable to shift their usage on a daily basis but can participate in a limited number of load reductions with day-ahead notice. Participation in both programs is not permitted at this time in order to allow PacifiCorp to assess grower acceptance of the incentive offers and their ability to shift usage in response to these offers.

During the Pilot Program, the Company intends to test for grower acceptance, barriers

¹ PacifiCorp Advice No. 16-04 at 3 (emphasis in original).

to participation, and cost to deliver within the Klamath Basin area.² Much of the Klamath Basin irrigation load is subject to water restrictions and/or scheduling and coordination challenges. For this reason, the Company believes the Pilot Program should run for five consecutive years to allow sufficient time for growers and water districts to work through scheduling and coordination challenges and to investigate changes to pumping operations to facilitate participation. Notably, these challenges are different from those of PacifiCorp's other irrigation load control programs in Idaho and Utah.

The Company proposes to use EnerNOC to operate the Oregon Irrigation Load Control Pilot Program. EnerNOC is currently delivering the program in Utah and Idaho, and will have responsibility 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 irrigation incentives to be paid to participating irrigation customers.

Participants in the Irrigation Load Control Pilot Program will be required to allow their irrigation to be interrupted under specific conditions. These interruptions will require the installation of a two-way cellular communication load control device. The technology utilized by EnerNOC will enable the consolidation of interval data from program participants and will provide the Company accurate information regarding the load available for curtailment and near real-time results of load control events.

Summary of Program Elements:

1. Eligible Customers: Irrigation Customers on Schedules 41 or 48 in and around Klamath Falls.
2. Target level of capacity control: Three thousand kW (after the first year).
3. Program days: Weekdays, 12 noon to 8 p.m., June 1 through the week including August 15, excluding holidays.³
4. Dispatch limitations: Twenty load control events per year; 1 to 4 hours per event; maximum total of 52 hours per year. A minimum of four dispatch events will be called per season.
5. Dispatch announcement/warning day and time: 5 p.m. on the day prior to dispatch event itself.
6. Opt out: Subscribers can opt out of any event at will; opting out will lower participation payments proportionately.

² In 2014, the Oregon Klamath Basin area represented 29 percent of Oregon's irrigation sector megawatt hour energy sales and 25 percent of its irrigation customers or 1,959 sites.

³ In addition, voluntary events may be dispatched separately through September 30.

7. Incentive rate: Approximately \$25 per kW per year. That amount is reduced in proportion to the subscriber's opt-out rate. It is not reduced by the degree to which dispatches total less than twenty events or 52 hours.
8. Kilowatt basis of compensation to participant: The amount by which average kW demand during the dispatch period is beneath the average kW demand during the *baseline* period.
 - a. Baseline definition: For purposes of this program the baseline period demand is defined as the average kW demand during the noon to 8 p.m. period of the most recent program day prior to the dispatch event.
9. Estimated program cost: First year — \$150,000; \$225,000 in succeeding years.

Proposed cost recovery

In its filing, the Company proposed to implement a surcharge to recover of the cost of this Pilot Program as a separate rate in its existing Schedule 297 on a forecast basis with a true-up to actual costs during the annual evaluation of Schedule 297, typically submitted to the Commission in November. On April 21, 2016, due to concerns raised by Staff regarding the use of Schedule 297 for cost recovery of the Pilot Program, PacifiCorp filed Advice No. 16-07 – Schedule 95- Pilot Program Cost Adjustment, wherein it proposes to collect rates to cover the costs of this Pilot Program.⁴

Analysis

The fact that PacifiCorp has, for a number of years, had an ongoing EnerNOC-administered agricultural load control program in Utah and Idaho provides considerable confidence that major errors will be avoided in the program that is proposed in Oregon. But to assure sound understanding on Staff's part, we submitted twenty-three information requests which were duly answered—in some cases with supplemental responses.

An early concern was that by having the compensation baseline day so close to the dispatch event day, program participants could possibly game the process by exaggerating their loads on that day. (To minimize that opportunity, other utilities under other circumstances employ as many as ten days to make up the baseline.) Attachment 1 to this Staff Report consists of PacifiCorp's supplemental response to Staff's questions regarding the baseline. In reviewing that detailed response, Staff became satisfied that the risks under the subject agricultural circumstances are small enough to warrant our acceptance of the Company's baseline proposal for this case.

Staff was also concerned with certain program fundamentals. On page four of its application, the Company stated "[i]f the Pilot Program is successful, and if the Company's biennial IRP continues to select west-side load control resources, then the

⁴ PacifiCorp Advice No. 16-07 – Schedule 95 – Pilot Program Cost Adjustment at 1 (April 21, 2016).

Company could propose to extend and/or expand the Pilot Program during or at the end of the five-year period.” OPUC Staff’s interest pertained to what the criteria might be for judging the program to be a success. Attachment 2 to this Staff Report consists of PacifiCorp’s supplemental response to Staff’s question on that matter. In reviewing the Company’s detailed supplemental response, Staff became satisfied that, when it so chose, the Company would be duly prepared in moving to continue or expand the pilot. Recommendation No. 1, immediately below, applies to that conclusion.

In PacifiCorp’s 1st Supplemental Responses to OPUC Data Request 1, the Company stated that a “post-season assessment will investigate whether quantifiable benefits can be attributed to the pilot program’s ability to improve system reliability, reduce transmission/distribution congestion, and/or reduce energy costs by shifting consumption from on-peak to off-peak periods, and whether resources of this size, shape, and location would have an ability to defer capacity or transmission and distribution investments.” Staff commends PacifiCorp for identifying some of the potential benefits of demand response and for utilizing the resource as part of its Integrated Resource Planning process.

It is evident to Staff that further discussion is needed to better understand and eventually construct a consistent and proper valuation methodology for dispatchable demand response programs. To aid in the development of a cost-effectiveness methodology for demand response, Staff perceives value in using this program as an opportunity to collect data that would be helpful to the broader community as we begin discussions to develop a cost-effectiveness methodology. To that end, Staff requests that when PacifiCorp evaluates this program, they do so using the California Public Utilities Commission’s (CPUC) Distributed Energy Resource Avoided Cost Framework as a guide.

Staff does not believe this requirement would be too onerous as PacifiCorp has filed for approval of a very similar irrigation load control pilot with the California PUC, which requires the Company to use the CPUC Distributed Energy Resource Avoided Cost Framework. Staff is not advocating that PacifiCorp be required to directly apply California’s Distributed Energy Resource Avoided Cost Framework, but recommends that PacifiCorp use the framework as a guide and supply similar data with the post-season assessment of this program. Staff believes this data will help further community discussion on the value of demand response programs.

Finally, Staff would like to raise concern here that our regulated entities have begun to propose various demand response pilot programs. In this proceeding, Staff worked with PacifiCorp to extend the effective date because Staff had many questions about the construction and operation of the proposed pilot program. Staff believes these issues

could have been addressed within the initial filing if a common filing framework for demand response programs had been developed. Staff would like to open a discussion with PacifiCorp, PGE, and Idaho Power about creating a common demand response proposal framework such that consistency enables more swift decision making.

Recommendations

1. Given the length of the proposed Pilot Program, Staff recommends that after the third year of the pilot, the Company should assess the costs and benefits of the program and explain in detail the reasons why the program should be terminated at that time, stay the same, or be expanded to all agricultural customers.
2. On page 5 of its application, PacifiCorp says that it "proposes to implement a surcharge to recover of the cost of this Pilot Program as a separate rate in the existing Schedule 297." That Schedule is designated as an "ENERGY CONSERVATION CHARGE." Inasmuch as load controls constitute a "capacity product," Staff regards that particular recovery mechanism to be inappropriate. This matter is addressed in more detail in Staff's Report for PAC Adv. 16-07. On April 21, 2016 PacifiCorp filed a separate tariff with a Less Than Statutory Notice to be included in the May 3, 2016, Consent Agenda, to recover the associated costs.
3. PacifiCorp use the California Public Utilities Commission Distributed Energy Resource Avoided Cost Framework as a guide when conducting the post-season assessment it plans to undertake for the Irrigation Load Control Pilot.
4. PacifiCorp work with Staff on the development of a demand response program proposal filing framework.

Conclusion

In order for PacifiCorp to gather desired agricultural demand control program data, Staff finds it appropriate for the Company to initiate a five-year pilot, beginning in May of 2016.

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PROPOSED COMMISSION MOTION:

Approve PacifiCorp's Schedule 105, Irrigation Load Control Five-Year Program Pilot, effective May 4, 2016, subject to the reporting requirement and cost recovery exclusion presented in the Recommendations portion of this Staff Report.

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OPUC Data Request 3

Attachment 1 is the only place in the filing where Pacific Power has displayed a baseline methodology associated with the proposed program. The attachment seems to be an illustration provided by EnerNoc. However, there is no place in the filing that discusses the baseline methodology. Please provide a full discussion of the baseline methodology, including examples of how it is calculated, the reasoning behind choosing this baseline, and how this baseline addresses possible gaming.

1st Supplemental Response to OPUC Data Request 3

Following discussions with Commission Staff, the Company supplements this response to provide additional information and justification for the use of the baseline proposed for this pilot.

A) What other baseline approaches were considered for the program?

Baseline selections are designed specifically for the characteristics of participating loads (e.g., irrigation loads) for accuracy, clarity and program integrity. The baseline provides the reference from which to measure program event impacts. While no baseline is perfect given inherent variability in end use loads, the selected baseline should provide a good estimate of what the load would have been absent a demand response event.

The baseline selected for this program is the average electric demand during the 12 - 8 pm period on the most recent program day (Monday through Friday excluding holidays) in which there was not a program event. Five minute interval data (kW) from installed equipment is averaged over sixty minutes to calculate eight hourly (kW) averages. The eight hourly averages are then averaged to calculate the baseline (kW) for the event.

Irrigation loads fluctuate based on multiple variables, including crop type, plant maturity, soil moisture and water availability. The multitude and range of these variables means pumps don't always follow a schedule typical of commercial or industrial loads. For example, through the growing season, pumps may run for extended periods when crops have just been planted and pumping schedules may be reduced as harvest approaches. There is less day-to-day variability during the growing season.

Minimizing the impact of variability in irrigation loads throughout the growing season is why the average demand during program hours on the day before a program event represents the best estimate of what loads would have been during an event. This baseline is used to measure participants' load reduction during an

event and is incorporated into the participants' incentive payments. This baseline is also used in the calculation of the Company's payment to the program vendor.

For this program, multiple baseline methodologies were considered, but were not utilized due to the fact that they added complexity and reduced clarity for the participants and the company. Alternative baseline approaches that were considered, but were not utilized include the following:

- Subset of multiples or "X of Y":
 - This approach uses the highest or the average demand data from multiple days (or hours) across an overall set of days (or hours). This baseline methodology is more suited for loads with less variability within a season than irrigation loads, for example, in commercial curtailment programs. Utilizing this type of baseline for irrigation may actually reduce the accuracy of the load available for reduction and adds unnecessary complexity.
- Baseline with adjustment:
 - This baseline methodology applies an additive or multiplicative adjustment to a measured baseline. Typical adjustments are factored into a baseline methodology to account for variables such as weather or building occupancy over time with adjustments added to or multiplied with measured demand data. This adjustment does not fully account for crop types and adds unnecessary complexity. Additionally, these adjustments can make the baseline more susceptible to gaming.

B) Why isn't the baseline weather adjusted?

The selection of the baseline (as described above) has the intended effect of reasonably accounting for weather impacts in both the baseline period and the event period. While the presence of irrigation loads (on or off the system) is somewhat correlated with broad changes in weather, the actual demand when the pump is in use does not vary based on the weather in the way that a conditioned space (e.g., office building or refrigerated warehouse) may use more electricity for cooling on a hot day versus a cold day. For this reason, no additional weather normalization is applied since it diminishes the baseline accuracy and clarity while adding unnecessary complexity.

C) How is gaming minimized through use of this baseline.

Rocky Mountain Power has utilized this baseline for three irrigation seasons and has not experienced participants load shifting around events. EnerNOC and Pacific Power will also review the five minute interval data for program participants to see if baseline demand materially changes between notification and the event start time.

Advice 16-04/PacifiCorp
April 6, 2016
OPUC Data Request 3 — 1st Supplemental

Attachment 1

As outlined in Advice No. 16-04, Pacific Power is proposing to test the design characteristics of the existing irrigation load control program offered in Utah and Idaho. Pacific Power has contractual arrangements in place to deliver the existing design in Oregon starting in 2016. This design includes the baseline described in responses to data requests. Alternate designs including those utilizing a different baseline that might be developed in collaboration with Staff, will require different contractual arrangements and will need to be developed during 2016 in advance of the 2017 irrigation season.

OPUC Data Request 14

Page 4 of the filing states that if the pilot is successful the Company could submit a filing request for an ongoing program. What are the criteria by which Pacific Power will judge the program to be a success and merit on-going investment and activity?

1st Supplemental Response to OPUC Data Request 14

Following discussions with Commission Staff, the Company supplements this response as follows:

Pacific Power 2016-2020 Preliminary Irrigation Load Control Pilot Program Plan

1. Program Statement

Implement a new pilot irrigation load control program for Oregon irrigation customers near the Oregon and California border, specifically in the area comprising the Klamath Basin.

2. Program Objectives

- Test for grower acceptance and cost to deliver an irrigation load control program within the Klamath Basin area.
- Investigate whether its current standalone program design operating in Utah and Idaho will be effective in Oregon agricultural environments.
- Provide the Company and its irrigation customers the time needed to evaluate the program to identify any necessary modifications before resource need identified in the IRP.
- Help identify additional benefits from targeting a load control program in a specified geographic area such as the Klamath Basin.
- Utilize multiple dispatch triggers to assess value and grower acceptance. Identify additional benefits from potential expansion of the program.

3. Program activities and tactics

- Screen and enroll a range of pump operators (if possible)
- Install enabling equipment
- Dispatch events using multiple event triggers
- Verify event impacts

- Pay participants
- Prepare report including benefits assessment

4. Program Implementation

The program will be implemented by EnerNOC serving as an aggregator in a manner generally consistent with the Rocky Mountain Power program(s). Customer participation information will be available at www.pacificpower.net/orile

5. Quality Assurance and Evaluation Activities

Company quality assurance will consist of review of grower participation, web site and five minute interval data collected by EnerNOC equipment, program impact and settlement calculations. Third party evaluation will be conducted to support a Company request to expand or extend the pilot program.

6. Program Reporting

Beginning in 2016 at the end of the first year, and at the end of each year thereafter for the pilot period, Pacific Power will prepare an annual report for the program. Reporting elements are provided in Advice No. 16-04.

7. Projected Program Budget

	Year 1	Year 2	Year 3	Year 4	Year 5
Est. Program Costs (Calendar Year)	\$150,000	\$225,000	\$225,000	\$225,000	\$225,000

Note: Cost are estimates and based on the expected availability (i.e., 3 MW in years 2-5)

8. Projected Program Impacts (expected availability)

	Year 1	Year 2	Year 3	Year 4	Year 5
Est. kW Delivered	0 - 2,000	3,000	3,000	3,000	3,000

Note: Year 1 expected availability is hard to predict and is subject to, among other factors, timing of approval and initial response/interest from customers. The company has requested expansion up to 5,000 kW during the pilot program as part of the initial filing.

Program Logic Outline

- Activities:
 - EnerNOC recruits eligible customers
 - Screening and enrollment
 - Events called by Pacific Power
 - Verification of curtailment
 - Settlement

- Benefits assessment and program reporting
- Outputs
 - Pools of qualified irrigation customers identified. Customer information submitted for screening and enrollment
 - Eligible customers screened and enrolled
 - Estimated average kW availability established
 - Number of events (4 minimum)
 - kW dropped in response to curtailment events
 - Results of demand response event analyzed and verified
 - Dollar value of payments provided
 - Report
- Short term outcomes (year one)
 - Payments dispersed to EnerNOC
 - EnerNOC pays capacity payments to customers per customer agreement
 - Initial information on grower acceptance, program design, program impacts and benefits obtained
- Medium term outcomes (years two and three)
 - Irrigation customers gain experience with curtailment and demonstrate willingness to enroll and participate in dispatch events. Financial benefits accrue to irrigators
 - Costs are within expected ranges.
 - kW reduction and reliable DR capacity allows utility to avoid higher cost options
 - Pacific Power gains operational efficiency through use of aggregators to identify, enroll and manage groups of irrigation demand response participants.
- Long term outcomes (years three, four and five)
 - Improved system stability and lower costs
 - Economic benefits accrue because of reduction of load at critical peaks
 - Improved understanding of how to manage DR resources and curtailment events
 - Full understanding of potential and best way to engage additional customers for quick expansion