

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1667

In the Matter of

PACIFICORP, dba PACIFIC POWER,
2017 Annual Smart Grid Report.

Staff Comments

The Public Utility Commission of Oregon Staff (Staff) files these comments in response to Pacific Power's (PacifiCorp or Company) fourth annual smart grid report (2017 Smart Grid Report).

In 2012, the Public Utility Commission of Oregon (Commission) adopted smart grid reporting requirements for PacifiCorp, Portland General Electric, and Idaho Power Company to "ensure that utilities are systematically evaluating promising smart-grid technologies and applications, that the Commission is kept apprised of utilities' progress, and that stakeholders, Commission Staff, and the Commissioners have an opportunity to provide input into utility evaluations of smart-grid technologies and applications, as well as their plans for smart-grid investments."¹

At a minimum, the utility's Smart Grid Report must include:

1. Smart-grid strategy, goals, and objectives.
2. Status of smart-grid investments the utility plans to take in the next five years and of projects already underway.
3. Smart-grid opportunities and constraints.
4. Targeted evaluations of technologies and applications pursuant to Commission approved stakeholder recommendations.
5. Related activities such as investment to address physical-and cyber-security, privacy, customer outreach and education, etc.²

The Smart Grid Guidelines specify that each utility's first report must include all smart grid reporting elements identified in Order No. 12-158. Subsequent reports need only include incremental additions and updates of all elements in the first report and information that may be required by the Commission in a previous order.³

¹Order No. 12-158 at 1, Docket No. 1460, May 8, 2012.

² Order No. 12-158 at 6.

³ Order No. 12-158 at 4.

Order No. 16-476 accepted PacifiCorp's 2016 Smart Grid Report, with the inclusion of the following recommendations:

1. PacifiCorp should continue to include a high-level table summary of all stakeholder informal comments and corresponding Company responses as an appendix in future smart grid reports.
2. In the 2017 Smart Grid Report, the Company should provide an AMI Roadmap that outlines a framework for tracking the following:
 - AMI costs and cost savings such as those presented in PacifiCorp's analysis of the AMI rollout
 - Reliability improvement and reconnection times
 - Mitigating technology obsolescence risk
 - Customer engagement
 - Analysis of AMI data and data application (including but not limited to reliability and resource planning)
 - Transition from AMI "capabilities" to "functionalities" and clearly defined milestones that would motivate this change
3. The Company should timely apprise the Commission of any new developments of new DLR projects.
4. The Company should continue to apprise the Commission of the success, or lack thereof, of its remedial action scheme in the form of redundant relays.
5. PacifiCorp should provide a comprehensive narrative explaining its developments, or lack thereof, both past and present, with Peak Reliability and WECC and its decision to stop its transfer of PMU data to Peak Reliability. The Company should also follow through with its commitment to address ODOE's questions set forth on page 10 of this memorandum.
6. The Company should provide an update to its irrigation load control pilot and update the table on page 32 of the 2016 Smart Grid Report including Oregon data when it is available.
7. The Company should provide a summary of its review to investigate linking distribution devices to its OMS system and energy management system.
8. Unless the Company plans on installing a field area network or implementing communication functionality some other way, Staff does not recommend requiring any further action on the status update, including any benefits, of the implementation of capacitor bank, recloser and regulator bank controls.

9. The Company should work with Staff and interested stakeholders to schedule a CYME demonstration no later than April 30, 2017.
10. The Company should continue to keep the Commission apprised of demand response developments in future smart grid reports.
11. The Company should provide its DER analysis, including how it has utilized the transmission and distribution planning tool.

Below are Staff comments on each of PacifiCorp's responses to the Commission recommendations adopted in Order No. 16-476.

Staff's Comments on 2016 Recommendations

Recommendation 1: Include a high-level table summary of all stakeholder informal comments and corresponding Company responses as an appendix in future smart grid reports.

In its 2017 Smart Grid Report, the Company provided a table in Appendix A detailing the Stakeholder, recommendation description, Company actions, and the page number where the discussion can be found.⁴ In addition, the Company included a table of Staff recommendations and page numbers of discussion in the Executive Summary.⁵

Recommendation 2: Provide an AMI Roadmap that outlines a framework for tracking the following:

- AMI costs and cost savings
- Reliability improvement and reconnection times
- Mitigating technology obsolescence risk
- Customer engagement
- Analysis of AMI data and data application (including but not limited to reliability and resource planning)
- Transition from AMI "capabilities" to "functionalities" and clearly defined milestones that would motivate this change

The Company has documented an extensive framework for tracking the above results in its 2017 Smart Grid Report.⁶ Staff appreciates the thorough response for AMI planning.

Recommendation 3: Company to apprise the Commission of any new developments of new DLR projects.

⁴ Pacific Power Smart Grid Oregon Annual 2017 Report at 58-61.

⁵ Pacific Power Smart Grid Oregon Annual 2017 Report at 3.

⁶ Pacific Power Smart Grid Oregon Annual 2017 Report at 8-19.

In reply comments from 2016, the Company stated that high power flows on lines with DLR had diminished, and the thermal constraints on the lines no longer existed. The Company reported that it was no longer planning on reporting on the West-of-Populus line project because there is no data available. In the 2017 report, the Company states that there are no new projects, and there is no specific timeline for future DLR installations.

Recommendation 4: Company to continue to apprise the Commission of the success, or lack thereof, of its remedial action scheme in the form of redundant relays.

In the 2017 report, the Company states that the remedial action scheme of installing redundant relays as an alternative to a combination of a thermal replicating relay and dynamic line rating is in-service and functioning as designed, and no future action is anticipated.

Staff requests that the Company state in its reply comments under what circumstances a thermal replicating relay and/or dynamic line rating would provide benefits that outweigh the considerable cost difference in relation to a redundant relay scheme.

Recommendation 5: Company to provide a comprehensive narrative explaining its developments, or lack thereof, both past and present, with Peak Reliability and WECC and its decision to stop its transfer of PMU data to Peak Reliability. The Company should also follow through with its commitment to address ODOE's interest in seeing a discussion of lessons learned from identifying and analyzing system vulnerabilities and disturbances. ODOE was also interested in information in future smart grid reports on synchrophasor data being used to increase real-time situational awareness for transmission operations.

The Company detailed its decision to stop transfer of PMU data to Peak Reliability explaining that it has robust EMS and SCADA systems that offer real-time system data every two seconds for maintain situational awareness. PacifiCorp goes on to state that after several years in the program, the tools have yet to produce timely data that can be used to make real-time decisions for PacifiCorp's transmission operations. The program also faced interface and communication issues connecting to Peak Reliability. PacifiCorp stated that its biggest lesson learned about working with PMU's was that quality data is difficult and costly to maintain. The Company states that it may restart the data stream to Peak Reliability in the future depending on tools available.⁷

The Company plans to continue to collect PMU data at its central office, and has plans to expand PMU coverage as part of NERC standard MOD-033-1, and includes a table

⁷ Pacific Power Smart Grid Oregon Annual 2017 Report at 20-22.

of locations identified for equipment in Appendix C. PacifiCorp also plans to install PMUs at large wind, hydro, and natural gas generating facilities. The scope and estimate were estimated to be complete in July 2017, and design and construction of the systems is planned for completion in 2018.⁸

Staff requests that the Company update these plans in reply comments, and provide the scope and cost estimates for expanded PMU coverage, if available.

Recommendation 6: Company to provide an update to its irrigation load control pilot and update the table on page 37 of the 2016 Smart Grid Report including Oregon data when it is available.

In 2017, no new customers will be added to the pilot program. However, one customer who signed up for the program in 2016 was not enabled until 2017. One two-hour event occurred since the last Smart Grid Report, on August 19, 2016, where 281 kW of available capacity was called on with 100% participation from the customers.

The Company will issue a Request for Proposals (RFP) in 2017 for load control services. Following the 2017 season, the Company will reassess the pilot to decide the future of the load control program.

Staff requests that the Company state in its reply comments why no new customers will be added to the program in 2017. Staff also requests that the Company elaborate on the criteria that will be assessed in determining the future of the program, and how the RFP may or may not influence that assessment.

Recommendation 7: Company to provide a summary of its review to investigate linking distribution devices to its OMS system and energy management system (EMS).

The SCADA Monarch EMS was commissioned at PacifiCorp in April of 2016. The Company has determined that integrating the communicating faulted circuit indicators (CFCI) with the EMS is not the preferred solution. Rather, the Company believes the CFCI devices should be visible to the Company's Distribution Management System (DMS). The Company plans to upgrade its DMS to a newer version beginning in fall of 2018, which includes capability to integrate CFCI devices.⁹

Staff requests that the Company state in its reply comments the feasibility of linking EMS and DMS systems and any advantages or disadvantages in doing so. Staff also requests that the Company address whether both systems follow IEC 61968 standards for information exchange.

⁸ Pacific Power Smart Grid Oregon Annual 2017 Report at 22-23.

⁹ Pacific Power Smart Grid Oregon Annual 2017 Report at 37.

Recommendation 8: If applicable, Company to provide an update on any field area network or communication functionality implementation.

The Company is deploying Fuse Saving devices that provide two-way communication on the distribution system. The devices provide rapid detection of system functionality, which reduces momentary interruptions.

The Company has two pilot projects in development. One project utilizes FuseSavers and CFCI, and the other project utilizes LineScope. If the pilot installations show positive results in the next 18-24 months, their installations will become standard practice. The Company is also observing data from newly upgraded substation devices and line reclosers for possible expansion to other locations.¹⁰

Staff requests that the Company state in its reply comments what functionalities of LineScope the Company hopes to utilize, and what positive results would lead to installation being standard practice.

Recommendation 9: Company to work with Staff and interested stakeholders to schedule a CYME demonstration no later than April 30, 2017.

The Company provided a demonstration of CYME to Staff and stakeholders on March 28, 2017.

Recommendation 10: Company to continue to keep the Commission apprised of demand response developments in future smart grid reports.

The Company has assessed demand response potential in its 2017 Integrated Resource Plan (IRP). It engaged Applied Energy Group to investigate the potential for, and cost of, summer- and winter-focused demand response options, and compared the results to supply-side alternatives in the IRP. The study found that the first new need-based demand response resource occurs in 2028. No additional demand response projects are planned at this time.¹¹

Recommendation 11: Company to provide DER analysis, including how it has utilized the transmission and distribution planning tool.

The Company deployed a DER screening tool for transmission and distribution planners to compare DERs to traditional solutions. The tool is an alternatives template created in a Berkshire Hathaway Energy cross-platform initiative that screens for solar, energy

¹⁰ Pacific Power Smart Grid Oregon Annual 2017 Report at 39.

¹¹ Pacific Power Smart Grid Oregon Annual 2017 Report at 42.

storage, and demand-side management feasibility and cost comparison. The Company is waiting for the conclusion of the RVOS (UM1716) and energy storage (UM1751) dockets to populate the tool with each technology's respective values. The Company has also partnered with ETO to determine whether customer-cited energy efficiency technologies have the ability to improve system operation during specific locational peak hours. The Company anticipates that future proposed system reinforcements will include DER solutions as part of system analysis.¹²

Staff requests that the Company summarize exercises where DER was considered as an alternative to traditional solutions, the results of the exercises, and what hurdles, if any, there are to implementing the tool on a permanent basis.

Additional Comments

Staff requests that the Company state in its reply comments whether smart inverter communication and functionality has been explored for integration with the AMI, EMS, and/or DMS systems.

One of the goals of the Company's Distribution Automation Feasibility study was to identify circuits containing critical loads/infrastructure.¹³ Therefore, Staff requests that the Company state in its reply comments what distributed automation or other smart grid technology would increase reliability on these critical circuits, and what plans, if any, there are to implement such technology.

Staff requests that the Company provide in its reply comments an update on the VaultGard Portland Low Voltage Secondary Network Project.

This concludes Staff's Comments.

Dated at Salem, Oregon, this 16th day of November, 2017.



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¹² Pacific Power Smart Grid Oregon Annual 2017 Report at 44-45.

¹³ Pacific Power Smart Grid Oregon Annual 2017 Report at 34.