ORDER NO. 16 476

ENTERED DEC 07 2016

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1667

In the Matter of PACIFICORP, dba PACIFIC POWER, 2016 Annual Smart Grid Report.	ORDER

DISPOSITION: STAFF'S RECOMMENDATION ADOPTED

This order memorializes our decision, made and effective at our December 6, 2016 Regular Public Meeting, to adopt Staff's recommendation in this matter. The Staff Report with the recommendation is attached as Appendix A.

Dated this 7 day of December, 2016, at Salem, Oregon.

Lisa D. Hardie
Chair

John Savage
Commissioner

Stephen M. Bloom
Commissioner

A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Circuit Court for Marion County in compliance with ORS 183.484.

ORDER NO. 16 476

ITEM NO. 1

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: December 6, 2016

REGULAR X **CONSENT** ___ **EFFECTIVE DATE** **N/A**

DATE: November 29, 2016

TO: Public Utility Commission

FROM: Nadine Hanhan NH

THROUGH: Jason Eisdorfer and John Crider

SUBJECT: PACIFIC POWER: (Docket No. UM 1667) 2016 Annual Smart Grid Report.

STAFF RECOMMENDATION:

Staff recommends the Commission accept Pacific Power's (PacifiCorp or Company) *2016 Smart Grid Report* as having met the requirements of Order No. 12-158 established in Docket No. 1460. Staff also requests the Commission accept Staff recommendations described below.

DISCUSSION:

Issue

Whether PacifiCorp has met the reporting requirement set by Order No. 12-158.

Applicable Law

In 2012, the Commission issued Order No. 12-158, establishing smart grid policy goals and objectives, utility reporting requirements, and Commission guidelines for utility actions related to smart grid. Under Order No. 12-158, utilities were required to file an initial smart grid report that, at a minimum, included the following main elements summarized below:

1. Smart grid strategy, goals, and objectives.

2. Status of smart grid projects, initiatives, and activities that are underway, results of implemented smart grid projects, and planned smart grid investments for the next five years.

3. Smart grid opportunities the company is considering for the next five years and any constraints.

4. Targeted evaluations pursuant to Commission-approved stakeholder recommendations.

5. Related activities.

Thereafter, utilities were required to file an annual smart grid report that, at a minimum, includes incremental additions and updates of all elements of the initial report.[1] On an on-going basis, the Commission provides for comment by Staff and parties including recommendations on smart-grid investments and applications to be explored by the utilities. If the Commission approves any of these recommendations, "the Commission may require the utilities to address the recommendations in a subsequent report."[2]

In its Order No. 15-367, the Commission accepted PacifiCorp's *2015 Smart Grid Report* as having met the requirements of Order No. 12-158. In the Order, the Commission also adopted the list of Staff recommendations for PacifiCorp's *2016 Smart Grid Report.*[3] The recommendations adopted by the Commission in its Order are as follows:

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

2. Continue to provide updates to the Commission regarding AMI [Advanced metering Infrastructure] evaluation as it pertains to the Company's Oregon service territory, including status updates of necessary IT and customer systems.

3. Continue as planned to report on West-of-Populus's possible results in the Company's *2016 Smart Grid Report,* and if no update is available, provide a full explanation as to why that is the case.

4. Provide an update regarding the Company's use of thermal replicating relays at the Soda Springs area and any other location the Company may determine in the interim in the *2016 Smart Grid Report.*

[1] Order No. 12-158, page 4.
[2] Order No. 12-158, page 4.
[3] Order No. 15-367, Appendix A, pages 15&16.

5. Provide the ensuing 2017 IRP analysis of specific transmission lines that PacifiCorp considers DLR as an alternative to traditional infrastructure upgrades.

6. Continue to report on any working relationship developments with WECC and Peak Reliability as well as providing comprehensive qualitative and quantitative analysis regarding the utilization of PMU data for transmission system model validation that the Company plans to detail in the *2016 Smart Grid Report.*

7. Provide the results of the feasibility assessment for the irrigation load control pilot under consideration for Oregon, including methodologies and both qualitative and quantitative components of the analysis.

8. Include a comprehensive and exhaustive evaluation of each candidate circuit discussed in the Company's reply comments, including methodologies, assumptions, and sources that identify all potential benefits and costs of CES as appendices in its *2016 Smart Grid Report.*

9. Include the update on the feasibility of Fuse Saving device implementation with the accompanying methodology and qualitative and quantitative data in the Company's *2016 Smart Grid Report.*

10. Include a status update, including any benefits, of the implementation of capacitor bank, recloser, and regulator bank controls.

11. Provide a summary of ongoing efforts of completing a cost-benefit analysis of CFCIs [Communicating Faulted Circuit Indicators], including alternative communication technologies such as AMI, in case the cost-benefit analysis is not ready for the *2016 Smart Grid Report.*

12. Provide an update, including milestones, of its planned transition to a new, more powerful circuit analysis application. PacifiCorp should also provide an evaluation of the expected impact of the new circuit analysis on the potential for CVR application.

13. Describe in the *2016 Smart Grid Report* how lessons learned from the irrigation TOU program can be applied to the other TOU programs offered by the Company.

14. Provide a quantitative and qualitative comparison of the Cool Keeper program's performance before and after the efficiency improvements in the *2016 Smart Grid Report.*

15. Provide a comprehensive analysis, including methodologies, and qualitative and quantitative data of possible benefits and costs, of the Company's collaborative analysis of DER integration.

Analysis

Staff's Standard of Review
The standard of review utilized by Staff in its review of the utilities' smart grid reports subsequent to their initial reports is set forth below. Staff employed this same standard in reviewing the Company's *2016 Smart Grid Report:*

1. Whether the Company has met the guidelines set forth by the Commission in Order No. 12-158;[4] and

2. Whether the Company has addressed prior Commission-approved recommendations from prior smart grid report reviews regarding potential smart grid investments and applications.

Staff concludes that PacifiCorp complied with the guidelines set forth in Order No. 12-158 and with the Commission's recommendations from its Order No. 15-367. PacifiCorp's report and reply comments are consistent with the Commission's reporting requirements outlined in Order No. 12-158. Nevertheless, Staff notes a few areas where reporting expectations for future reports are clarified.

Background
On July 12, 2016, prior to filing its report, PacifiCorp held a smart grid workshop to receive and consider feedback from stakeholders on its 2016 Smart Grid Draft Report. PacifiCorp submitted its third smart grid report on August 1, 2016, per Commission requirements found in Order No. 12-158. Staff offered informal comments to aid in the development of the report.

Upon publication of the report, interested parties were asked to file written comments on PacifiCorp's *2016 Smart Grid Report* by October 6, 2016. Staff and the Oregon Department of Energy (ODOE) filed written comments as scheduled. In its reply comments filed on November 4, 2016, PacifiCorp addressed Staff's and ODOE's comments.

[4] This should also include incremental additions and updates of all elements of the first report. *See* Order No. 12-158, page 4.

Staff noted in its Comments that the most significant update in PacifiCorp's 2016 Smart Grid Report is the Company's intention to install Advanced Metering Infrastructure (AMI) technology. In the past, the Company has chosen not to install AMI technology due to low population density within its service territory[5] and the inability to find a compelling business case for AMI.[6] This year, PacifiCorp has reevaluated AMI and states that its AMI program presents a positive business case to the Company and benefits customers.

In addition to AMI deployment, PacifiCorp expands on other projects and programs, such as transmission synchrophasor locations, energy storage, and demand-side management initiatives (DSM), among others.

Below Staff addresses each of the requirements from Order No. 15-367. Staff includes pertinent intervener comments where applicable as well as any recommendations.

PacifiCorp Responses to Staff 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.

2016 Smart Grid Report Discussion: Table 6 in Appendix B of the *2016 Smart Grid Report* includes stakeholder informal comments and corresponding page numbers of where the Company responded.

Staff Comments: Staff acknowledged the Company's response to Recommendation 1.

PacifiCorp Response: PacifiCorp also acknowledged that it provided a table listing stakeholders' informal comments to the Draft Report.

Staff Recommendation No. 1 for 2017 Report: 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.

Recommendation 2: Continue to provide updates to the Commission regarding AMI evaluation as it pertains to the Company's Oregon service territory, including status updates of necessary IT and customer systems.

2016 Smart Grid Report Discussion: The Company reveals its plans to install AMI technology. PacifiCorp reports the core components of PacifiCorp's AMI project as

[5] PacifiCorp *2013 Smart Grid Report*, page 33.
[6] PacifiCorp *2015 Smart Grid Report*, p. 1.

replacing its existing meters with smart meters and implementing a communications network. The Company provides a summary of functionalities[7] and capabilities[8] and states that due to reduction of labor, additional revenue through reduction of power losses and write-offs, the AMI program will deliver reduced O&M expenses.[9] In addition, the Company cites a number of customer benefits, which it expanded on in a workshop on September 28, 2016. The customer benefits as explained by the Company include improved response time for connection of service, improved bill accuracy, and faster outage restoration, among others.[10] The Company estimates that approximately 590,000 customers would receive a smart meter and that the project will be complete by 2020.

Staff Comments: Staff noted that this was the most significant smart grid update in this year's smart grid report. Staff highlighted several concerns with the project, most notably the list of "non-deliverables"—AMI latent capabilities that the Company does not plan on utilizing by the 2020 rollout. Staff contrasted this with AMI "functionalities"—actions that AMI meters will be able to perform upon rollout, such as capturing hourly energy consumption and turning customers' power on and off remotely. Staff did recognize some of the benefits that the AMI rollout should offer but was also concerned that the Company does not appear to have a clear plan for utilizing any of the additional capabilities offered by the meters. Staff also expressed concerns about technology obsolescence and asked the Company to expand upon quicker response time functionality, reconnection functionality, and outage detection functionality as a result of AMI implementation. Staff also requested a cost-benefit estimation of these functionalities.

ODOE Comments: ODOE commended the Company on its AMI deployment and believes that improved customer service is a key benefit of AMI. ODOE also asked questions about the AMI rollout, such as why customers will not be able to have access to their hourly data in real time and whether the AMI technology will be capable of providing data to home area networks. ODOE also expressed excitement over the Customer Portal and its potential to increase customer engagement. In general, ODOE's comments focused on customer engagement and increased data applications.[11]

PacifiCorp Response to Staff: Regarding the reconnection functionality, the Company responded to Staff by explaining that it expects reconnection to occur within one to five

[7] PacifiCorp *2016 Smart Grid Report*, p. 11.
[8] PacifiCorp *2016 Smart Grid Report*, p. 13.
[9] PacifiCorp *2016 Smart Grid Report*, p. 10.
[10] PacifiCorp 2016 Smart Grid Report, p. 10.
[11] ODOE Comments on PacifiCorp's 2016 Smart Grid Report, pp. 1-3.

hours of receipt and processing of payment from a customer. The Company does not provide the total cost of this functionality because it is embedded in the total cost of the project, but total benefits as a result of avoiding labor costs is expected to be $3.16 million. The Company also expects to gather more data during outage restoration as a result of AMI implementation, granting the ability to investigate a group of meters and provide more visibility as to the extent of an outage. The Company does not provide the total cost of the outage detection functionality because it is embedded in the total cost of the AMI implementation. In addition, it states that reliability benefits are not quantifiable because of the absence of data involved.[12]

Regarding AMI "functionality" vs. "capability," PacifiCorp states that it does not plan on pursuing additional AMI capabilities until they can be demonstrated to provide a value to customers.[13]

Regarding technology obsolescence risk, PacifiCorp reiterates that the meters have a 25-year useful life but also notes that technologies can become unsupportable five to ten years after commissioning. To mitigate these risks, the Company provides a list of strategies: the vendor will include support commitments, PacifiCorp will use an open protocol network, and PacifiCorp will develop an AMI roadmap that includes hardware and software updates.[14]

PacifiCorp Response to ODOE: Regarding real-time data, PacifiCorp stated a preference for validating data before it is presented to the customer.

Regarding compatibility with home area networks, PacifiCorp affirmed integration of smart grid technology with home area networks.

Regarding real-time access to smart-grid data, the Company stated that such functionality involved using Zigbee technology (already a component of the AMI technology) and activating Zigbee technology, in addition to a series of other steps.

Staff Position: Staff reiterates its concerns regarding the short timeline for review of PacifiCorp's AMI project. Staff's primary concerns are understanding the risk of technology obsolescence, understanding the Company's future goals of AMI implementation, the costs and benefits (beyond reduction in labor costs and increased Company revenues), and the limited customer benefits.

[12] PacifiCorp 2016 Smart Grid Report Reply Comments, pp. 13-15.
[13] PacifiCorp 2016 Smart Grid Report Reply Comments, pp. 15.
[14] PacifiCorp 2016 Smart Grid Report Reply Comments, pp. 16.

In its Reply Comments, the Company stated that it does not plan to pursue broader AMI applications "unless the investigation and subsequent analysis demonstrate a value to customers sufficient to warrant implementation." The Company does not define "value" however. Though Staff is not recommending the full scope of "capabilities" be pursued, Staff finds it troubling that the Company did not provide a more robust justification for postponing the non-deliverable capabilities.

As mentioned above, the Company did not provide specific AMI functionality costs because they were included in the total cost of the AMI project. Commission Guidelines for Utility Action in Order No. 12-158 maintain that utilities should consider the full benefits of customers of improved reliability, power quality, security, and safety. The Guidelines also state that the utility should consider identifying quantifiable and non-quantifiable benefits in its smart grid report.

Staff reiterates from its Comments that complying with a reporting requirement in this docket, and subsequent Commission acceptance of the 2016 Smart Grid Report, should not be interpreted as pre-approval of AMI implementation for cost recovery. Staff believes it is important for the Company to track the AMI program's costs, benefits, and deliverables. Attachment 2 of Staff's Comments is a list of costs and cost savings that the Company considered in its financial analysis of its AMI rollout. Ideally, the Company should track these in yearly updates as the program is implemented. Staff is very interested in comparing and contrasting the Company's projections of costs, benefits, and AMI functionality between now and when the Company files for rate recovery. Though this may be outside the scope of the smart grid docket, Staff will likely be looking into these same costs, benefits, and deliverables when the Company files for rate recovery. In the interest of gaining a better understanding of where the Company is headed as far as the smart grid report is concerned, Staff makes the following recommendation:

Staff Recommendation No. 2 for 2017 Report: 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 its financial 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

Recommendation 3: Continue as planned to report on West-of-Populus's possible results in the Company's 2016 Smart Grid Report, and if no update is available, provide a full explanation as to why that is the case.

2016 Smart Grid Report Discussion: The Company's update in the 2016 Smart Grid Report asserts that, due to low line loading, information regarding the West-of-Populus project is difficult to retrieve. The line was originally projected to have been a thermally constrained line, increasing the value of dynamic line rating (DLR) application. However, since the installation of DLR, the line has experienced low loading levels and has not approached thermal capacity.

Staff Comments: Staff wanted to know why this location was originally chosen for DLR application since the line no longer appears to be thermally constrained.

PacifiCorp Response to Staff: Since implementation of the DLR pilot, the probability of high power flows on the line has diminished. The Company explains that this is due to "peak loads at Pacific Power and Rocky Mountain Power coinciding over time." Furthermore, though the thermal constraint conditions can still theoretically occur, due to current trends, it is not expected that they will. Due to this development, the Company no longer plans on reporting on the West-of-Populus line in future smart grid reports but that "DLR will remain an important tool for use in system planning."

Staff Recommendation No. 3 for 2017 Report: The Company should timely apprise the Commission of any new developments of new DLR projects.

Recommendation 4: Provide an update regarding the Company's use of thermal replicating relays at the Soda Springs area and any other location the Company may determine in the interim in the 2016 Smart Grid Report.

2016 Smart Grid Report Discussion: The Company found an alternative to its original thermal replicating relays (in conjunction with a DLR system)—a remedial action scheme. The estimated cost of this alternative is $115,000 as opposed to the thermal replicating relays (in conjunction with a DLR system) at an estimated $1.4 million.[15] Due to the cost advantage, the Company is pursuing a remedial action scheme in the form of redundant relays as opposed to thermal replicating relays.

[15] PacifiCorp *2016 Smart Grid Report*, page 16.

Staff Comments: Staff wanted to know whether there were any disadvantages to using redundant relays as opposed to the thermal replicating relays and if there were any advantages to redundant relays other than cost.

PacifiCorp Response to Staff: One of the advantages of redundant relays is simplicity in application. The data gathering complexity of thermal replicating relays and their maintenance are greater than redundant relays as part of a remedial action scheme.

Staff Recommendation No. 4 for 2017 Report: 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.

Recommendation 5: Provide the ensuing 2017 IRP analysis of specific transmission lines that PacifiCorp considers DLR as an alternative to traditional infrastructure upgrades.

2016 Smart Grid Report Discussion: The Company has not yet filed its IRP, and DLR as it relates to the IRP was not directly addressed in the smart grid report.

Staff Comments: Staff pointed to the fact that it is unaware of DLR-specific analysis reported through the IRP stakeholder process. In addition, Staff recognized that this recommendation had been updated after Staff had filed its 2015 Staff Report. This update was included as an attachment to Staff's Comments for the 2016 Report.

PacifiCorp Response to Staff: The Company responded that "no additional analysis is occurring as part of the IRP process."

Staff Recommendation: The Company has satisfied Staff's concern. As such, no further action by the Company is needed in this area

Recommendation 6: Continue to report on any working relationship developments with WECC and Peak Reliability as well as providing comprehensive qualitative and quantitative analysis regarding the utilization of PMU data for transmission system model validation that the Company plans to detail in the 2016 Smart Grid Report.

2016 Smart Grid Report Discussion: PacifiCorp states in its October filing that it participates in Peak Reliability meetings on a monthly basis to ensure data integrity of the PMUs. The Company also states that in its process of improving situational awareness, it has facilitated the compatibility of its new SCADA Monarch energy management system with integrating PMU data. Access to this PMU data has not yet

been secured, but the Company stated that it was still undergoing discussions about integrating PMU data in its operations.

Staff Comments: The Company was not clear about its plans to utilize the PMU data for comprehensive analysis. Staff also requested that the Company state in its reply comments how it plans on utilizing the PMU data once it is available.

ODOE Comments: ODOE was interested 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.

PacifiCorp Response to Staff: PacifiCorp views PMU data's greatest value is in its application to situational awareness. Since the Company already has situational awareness capability through its SCADA system, the Company does not have plans to utilize PMU data to increase situational awareness. In addition, the Company informed Peak Reliability that that it would no longer be sending it PMU data as part of its WISP program.

PacifiCorp Response to ODOE: PacifiCorp asserts that ODOE's issues will be addressed in the 2017 Smart Grid Report.

Staff Recommendation No. 5 for 2017 Report: 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 in its *2017 Smart Grid Report.*

Recommendation 7: Provide the results of the feasibility assessment for the irrigation load control pilot under consideration for Oregon, including methodologies and both qualitative and quantitative components of the analysis.

2016 Smart Grid Report Discussion: The median curtailed load dispatch was 141 MW for seven events that the irrigation load control program was dispatched for in 2015.[16]

Staff Comments: Staff requested that the Company provide load curtailment data for all seven events and explain why the program was not dispatched more often.

PacifiCorp Response to Staff: PacifiCorp explains that higher temperatures in June 2015 were the primary factor in causing the Company to dispatch its irrigation load

[16] PacifiCorp 2016 Smart Grid Report, p. 32.

control pilot. The Company also provides a table with the seven events and each of their estimated load reductions.

Staff Recommendation No. 6 for 2017 Report: The Company should provide an update to its Oregon irrigation load control pilot and update the table on page 32 of the *2016 Smart Grid Report* with Oregon data when it is available.

Recommendation 8: Include a comprehensive and exhaustive evaluation of each candidate circuit discussed in the Company's reply comments, including methodologies, assumptions, and sources that identify all potential benefits and costs of CES as appendices in its 2016 Smart Grid Report.

2016 Smart Grid Report Discussion: PacifiCorp explains that it had a conversation with Staff about the studies on November 30, 2015, after Staff filed its Staff Report. The Company stated that it would provide PacifiCorp's CES study to Staff. However, PacifiCorp also referenced two additional studies from NV Energy and MidAmerican Energy. In the interim, PacifiCorp agreed to provide PacifiCorp's CES report but did not specifically say anything about NV Energy's and MidAmerican Energy's studies.

Staff Comments: Staff requested that PacifiCorp provide an update to these studies.

PacifiCorp Response to Staff: PacifiCorp sent its CES report to Staff on October 25, 2016. There was no reference to the other two studies.

Staff Recommendation: No further action by the Company is needed in this area.

Recommendation 9: Include the update on the feasibility of Fuse Saving device implementation with the accompanying methodology and qualitative and quantitative data in the Company's 2016 Smart Grid Report.

2016 Smart Grid Report Discussion: PacifiCorp has installed new Fuse Savings devices. Due to the installations being new, comprehensive analysis of their benefits is limited. However, PacifiCorp has started an investigation to determine the feasibility and cost of establishing communications with Fuse Saving devices.

Staff Comments: Staff requested that the Company provide additional details in its reply comments about what is needed to establish communication with Fuse Savings devices. Staff also asked about existing barriers to integrating Fuse Savings devices with the SCADA Monarch energy management system.

PacifiCorp Response to Staff: The barriers for implementing Fuse Saving devices into PacifiCorp's "outage management system" (OMS) and its Monarch energy management system are the need for a field area network, a data application program interface, and management system modifications that would allow them to accept the field data. The Company says that a review is underway to investigate linking distribution devices to its OMS system and energy management system.

Staff Recommendation No. 7 for the 2017 Report: The Company should provide a summary of its review to investigate linking distribution devices to its OMS system and energy management system.

Recommendation 10: Include a status update, including any benefits, of the implementation of capacitor bank, recloser, and regulator bank controls.

2016 Smart Grid Report Discussion: The Company stated that "the communication protocols for the control devices of reclosers and regulators were evaluated,"[17] and that the devices are DMP 3.0 ready.

Staff Comments: Staff did not believe that the Company adequately addressed this recommendation because not much detail was provided about the reclosers and regulators. Staff pointed to the fact that this was another recommendation that was clarified after Staff filed its 2015 Staff Report. In the clarified recommendation, Staff requested updates on the smart grid capabilities of those devices (capacitor banks, reclosers, and regulator bank controls), be it from devices already installed and said capabilities activated, or for new devices installed. In its Comments, Staff requested an update as to the benefits that were in the clarified recommendation.

PacifiCorp Response to Staff: The Company explained that though the devices have communication capability, so far they have not had communications enabled. Enabling communications is only likely to happen after establishing a field area network and installing a system that can handle the data and control functions.

Staff Recommendation No. 8 for the 2017 Report: 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.

Recommendation 11: Provide a summary of ongoing efforts of completing a cost-benefit analysis of CFCIs, including alternative communication technologies such as AMI, in case the cost-benefit analysis is not ready for the 2016 Smart Grid Report.

[17] PacifiCorp *2016 Smart Grid Report*, page 27.

2016 Smart Grid Report Discussion: The Company stated that "[i]mplementation of CFCI data is expected to occur in 2016 and outage event data is possible for analysis and inclusion in the *2017 Smart Grid Report*," but the Company did not provide any additional detail as to a cost-benefit analysis.[18]

Staff Comments: Staff requested that the Company provide an update as to the status of this project.

PacifiCorp Response to Staff: CFCIs would be incompatible with the planned AMI field area network, but the Company uses integrated cellular coverage for CFCI communication. The Company states that it is investigating the cost of integrating CFCI with OMS.

Staff Recommendation: No further action by the Company is needed in this area.

Recommendation 12: Provide an update, including milestones, of its planned transition to a new, more powerful circuit analysis application. PacifiCorp should also provide an evaluation of the expected impact of the new circuit analysis on the potential for CVR application.

2016 Smart Grid Report Discussion: PacifiCorp provides a description of a new distribution system analysis application called CYME, which was installed late 2015. Some of the benefits of CYME are listed, such as the ability to incorporate additional details into it that were incompatible with the previous model, ABB FeederAll.

Staff Comments: Staff noted that the Company did not relate CYME to conservation voltage reduction (CVR) potential and did not provide specific milestones of the CYME phase-in. It was also unclear as to whether CYME is going to be utilizing new AMI data. Staff requested that the Company in its Reply Comments outline a list of benefits comparing CYME and ABB FeederAll.

PacifiCorp Response to Staff: The Company provided a comprehensive list of CYME benefits that included vender support, product development, an engaged user community, capital planning accuracy, and additional details about functionality. The Company also offered Staff the opportunity to see a CYME demonstration.

Staff Recommendation No. 9 for the 2017 Report: The Company should work with Staff and interested stakeholders to schedule a CYME demonstration no later than April 30, 2017.

[18] PacifiCorp 2016 Smart Grid Report, p. 26.

Recommendation 13: Describe in the 2016 Smart Grid Report how lessons learned from the irrigation TOU program can be applied to the other TOU programs offered by the Company.

2016 Smart Grid Report Discussion: The Company discusses a number of lessons it learned regarding TOU programs, which includes a number of methods it used to increase participation in the TOU program. These methods include increasing the potential for customer bill savings, concentrating the pilot by location, and in-person outreach.

Staff Comments: Staff was satisfied with the Company's update on its TOU program.

Staff Recommendation: The Company has satisfied Staff's concern. As such, no further action by the Company is needed in this area.

Recommendation 14: Provide a quantitative and qualitative comparison of the Cool Keeper program's performance before and after the efficiency improvements in the 2016 Smart Grid Report.

2016 Smart Grid Report Discussion: PacifiCorp talked about a number of new functionalities as a result of a 2014 communications upgrade that improved overall efficiency of the system. This included daily resource analysis, hourly forecasting, collecting information from every Cool Keeper device, and measurement and verification analysis.

Staff Comments: While Staff found the data applications informative, Staff also requested that the Company explain in its reply comments whether it regularly runs the analytics it describes in the Smart Grid Report and whether it was able to garner additional quantitative comparisons.

ODOE Comments: ODOE stated that it was interested in more information about the flexibility of the Cool Keeper program and any additional grid services it could offer.

PacifiCorp Response to Staff: The Company elaborated on additional data application and analysis as a result of information garnered from the Cool Keeper program. These include daily resource analysis, hourly forecasting, event validation, customer segmentation, along with additional "ad hoc" analyses. The Company's list provides an explanation of a least eight individual applications.

PacifiCorp Response to ODOE: The Company points to a presentation it gave to the Commission on August 16, 2016. The public meeting presentation involved the role of demand response programs and pilot considerations in PacifiCorp's system.

Staff Recommendation No. 10 for the 2017 Report: The Company should continue to keep the Commission apprised of demand response developments in future smart grid reports.

Recommendation 15: Provide a comprehensive analysis, including methodologies, and qualitative and quantitative data of possible benefits and costs, of the Company's collaborative analysis of DER [Distributed Energy Resources] integration.

2016 Smart Grid Report Discussion: The Company commissioned an internal report to explore the potential of DER as a method of offsetting or deferring transformer replacement. This was in Utah. As a result of this report, the Company realized there was a need for a transmission and distribution planning tool that would compare DER solutions, and the Company has worked on creating such a tool. The Company provided templates of DER alternatives in an appendix to the smart grid report.

Staff Comments: Staff noted that since creation of the planning tool seems to have held up the DER study, Staff is willing to wait for the Company to provide a more substantive update to the study in its *2017 Smart Grid Report*.

ODOE Comments: ODOE was pleased the Company had submitted a DER template and found the attachment of the template in Appendix F useful. ODOE looks forward to additional examples of the template in future reports, but ODOE also supports the use of the template to demonstrate multiple system benefits for DER, not just a focus on DER as an alternative to a single investment as Appendix F seems to indicate.

PacifiCorp Response to Staff: PacifiCorp will include a summary of DER analysis as it applies to finding alternatives to system reinforcement projects. The Company will provide this in its *2017 Smart Grid Report*, in addition to examples of its analysis.

PacifiCorp Response to ODOE: The Company states that these issues will be addressed in its 2017 report.

Staff Recommendation No. 11 for the 2017 Report: The Company should provide its DER analysis, including how it has utilized the transmission and distribution planning tool, in its *2017 Smart Grid Report*.

Additional Comments

ODOE Comments
ODOE discussed additional research it was interested in seeing in future reports, to which the Company deferred until its 2017 report.[19] The list includes the following:[20]

- Information about how synchrophasor data is being used to increase real-time situational awareness for transmission operations.
- Evaluations of centralized energy storage alongside evaluations of distributed energy storage.
- An assessment of how to leverage AMI and smart grid technology to enable more distributed, automated demand response assets.
- An assessment of demand response assets that reduce peak demand.
- An assessment of assets capable providing load following or fast response ancillary services.
- An Oregon pilot for winter peaking demand response.
- A compilation of successes and challenges with the irrigation pilot in the Klamath Basin.

Staff agrees that this information would be helpful in gaining a comprehensive understanding of where the Company is headed in terms of demand response and distributed resources. Staff views this as an expansion of what has already been included in the *2016 Smart Grid Report*, and the Company should work to incorporate these elements to improve the robustness of its *2017 Smart Grid Report.*

Organization of the Report and Reply Comments
Staff found PacifiCorp's report organized. The table on page 3 of the report was useful in tracking down the Company's responses to the Commission's recommendations. The Company's organization of its Reply Comments was also helpful in observing where and how the Company responded to stakeholder comments. Staff encourages the Company to continue with this organization structure in future reports.

Conclusion

Recommendations
Staff recommends the Commission accept PacifiCorp's *2016 Smart Grid Report* and acknowledge that it meets the requirements of Order No. 12-158. Staff also recommends that the Company take or implement the following actions for its *2017 Smart Grid Report*:

[19] UM 1667 – PacifiCorp Reply Comments, pp. 18 and19.
[20] This list excludes topics that have already been discussed above.

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
   - 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.

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.

PROPOSED COMMISSION MOTION:

Accept PacifiCorp's *2016 Smart Grid Report* with Staff's recommendations set forth immediately above in the "Recommendations" part of this memorandum.

UM 1667 – PacifiCorp 2016 Smart Grid Report.