

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON
UM 1675**

In the Matter of
IDAHO POWER COMPANY,
2015 Annual Smart Grid Report.

STAFF'S COMMENTS

The Public Utility Commission of Oregon Staff (Staff) files these comments in response to Idaho Power Company's (Idaho Power or Company) third annual smart grid report (*2015 Smart Grid Report*).

In 2012, the Public Utility Commission of Oregon (Commission) adopted a smart-grid reporting requirement for PacifiCorp, Portland General Electric, and Idaho Power 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

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

² *Ibid.*, at 6 (The actual guidelines include more detail regarding each of these requirements).

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

Order No. 15-053 accepted Idaho Power's *2014 Smart Grid Report*, with the inclusion of the following recommendations:

1. [Idaho Power Company] IPC provide a summarizing table of all research, development, and pilot projects, their respective descriptions, expected benefits and costs in future smart grid reports.
2. IPC report on the progress of its evaluation and solutions to the obstacles to the implementation of the [time-of-day] TOD pricing plans in the *2015 Smart Grid Report*.
3. IPC quantify the benefits expected from all smart grid programs and identify when the benefits will flow to its customers.

In these comments, Staff analyzes how Idaho Power addressed the requirements for subsequent smart grid reports for incremental additions and updates of all elements in the first report and how Idaho Power addressed the requirements set forth in Order No. 15-053. Staff reviewed Idaho Power's *2015 Smart Grid Report* that was submitted on October 1, 2015. Staff finds the Company's *2015 Smart Grid Report* satisfies the Commissions' smart grid goals outlined in Order No. 12-158. However, opportunities exist for the Company to leverage existing smart grid applications so that additional benefits can be provided to customers.

Below are Staff comments on each of Idaho Power's responses to the Commission recommendations adopted in Order No. 15-053. In addition, the Company provided information related to the following topics of interest: transmission situational awareness, advanced metering infrastructure, behavioral demand response, myAccount, direct load control, customer data, meter data management system, substation fiber-based protection and control pilot, automated volt/vAr management system pilot, solar end-of-feeder project, photovoltaic and feeder peak demand alignment pilot, and customer satisfaction and engagement.

Order No. 15-053 Recommendations

Requirement #1: Provide a summarizing table of all research, development, and pilot projects, their respective descriptions, expected benefits and costs in future smart grid reports.

Idaho Power provided such a table in Appendix D of the *2015 Smart Grid Report*. The table greatly facilitated analysis of the diverse smart grid efforts the Company is evaluating or planning to implement and also creates a more accessible repository of

³ Ibid., at 4.

efforts for readers who may not be familiar with the material. Though *quantifiable* benefits were not explicitly requested in this particular recommendation, Staff would like the Company to provide *quantifiable* benefits where available. Staff addresses this further in the section under Recommendation #3.

Requirement #2: Report on the progress of its evaluation and solutions to the obstacles to the implementation of the TOD pricing plans in the 2015 Smart Grid Report.

Staff finds the Company's response to this recommendation rather curious. Idaho Power argues that seasonal time-of-use (TOU) pricing is foundational for implementation of TOD pricing. The results of the Company's TOD pricing pilot described in depth in the *2014 Smart Grid Report*⁴ indicate that seasonal TOU does not necessarily lead to robust and successful participation, despite being available to Idaho Power Idaho customers for "many years."⁵ Though these two programs both involve nontraditional rates in the strictest sense, their respective temporal qualities and the subsequent behavioral considerations on the part of customers make TOD and seasonal TOU two very different programs. Staff disagrees with the Company's belief that seasonal TOU is needed prior to the implementation of TOD and is concerned this line of thinking is depriving customers of benefits that are available from the AMI technology they have paid for. Staff is aware of a number of other successful deployments of TOD rates that were not preceded by seasonal rates.⁶

Staff supports Idaho Power's efforts in "designing fair and appropriate rates structures."⁷ One approach in doing so is providing options to customers in the form of differing pilots, including the TOD one discussed in the *2014 Smart Grid Report*. However, other TOD designs exist in addition to incentive programs like critical peak pricing, critical peak rebates, and behavioral demand response programs that can accompany and enhance TOD programs. To attempt only one type of behavioral pricing or incentive program without exposing customers to other types of programs and the necessary education to ensure successful participation deprives customers of potential benefits and prevents DSM decisions informed by broad, deep and experimentally-backed research. The utility must be proactive in this area, especially given the existing investments.

The Company mentions limits of the customer relationship and billing (CR&B) system. Seeing as full-scale implementation of TOD is not ripe, Staff finds additional piloting of various TOU and pricing behavioral programs can proceed given the existing infrastructure. However, Staff would like to know the extent and full nature of the limitations posed by the existing CR&B system on a full deployment of a TOU program – discovery will be sent accordingly.

⁴ Idaho Power's *2014 Smart Grid Report*, Appendix D, Docket No. UM 1675, October 1, 2014.

⁵ Idaho Power's *2015 Smart Grid Report*, at page 56, Docket No. UM 1675, October 1, 2015.

⁶ Lakeland Electric Company, Minnesota Power, PPL to name a few.

⁷ *Ibid.*

Recommendation #3: Quantify the benefits expected from all smart grid programs and identify when the benefits will flow to its customers.

Idaho Power provided its response to this recommendation by means of a table in Appendix E of its *2015 Smart Grid Report*. The structure through which the Company attempted to quantify and subsequently present benefits of all smart grid efforts is helpful and intuitive, though the table does not satisfy the full recommendation in that no *quantifiable* benefits are found as explicitly requested. Staff recognizes that some smart grid efforts may not have benefits that lend themselves to quantification upon production of the annual smart grid report, such as projects that are not yet implemented or where the full scope of a project's impacts on the system or customers is not yet ascertained. However, Staff believes certain projects as they are currently operating do have quantifiable benefits, such as advanced metering infrastructure (AMI) capabilities and the available transfer capacity calculation tool.

Staff would like the Company to provide anticipated, forecasted, and/or actual *quantifiable* benefits where available. The lack of benefits across all three investor-owned utilities' smart grid reports has not gone unnoticed by Staff, who is deeply concerned by the fact that the operative component of this recommendation was ignored. Staff hopes that the Company will provide sufficient explanation for why Appendix E contains no quantitative data despite the recommendation.

Additional Topics

Transmission Situational Awareness

Idaho Power describes three separate efforts that fall under the umbrella of transmission situational awareness. Essential to each one of these efforts is the deployment of phasor measurement units (PMU), which generate synchrophasor data that generate the transmission operators' "awareness." Additional PMUs are planned for the oscillation monitoring pilot, are needed for continuation of the voltage stability monitoring system pilot, and would enhance the state estimator that Idaho Power accesses through the Peak Reliability Coordinator Hosted Advanced Application (PR application). Staff would like to know in full detail how, where, and when the Company determines additional PMUs are installed. Ideally a comprehensive explanation of the Company's methodology would be provided.

Regarding the oscillation monitoring pilot, Staff would like the Company to explain what is meant by "various applications" when it discusses data streaming and archiving.⁸ Under the Company's voltage stability monitoring system pilot, Staff would like to know what "additional PMUs" are needed in order for the Company to revisit the project and under what circumstances the Company would install them. Finally, Staff would like to know any planned integration the Company has for the PR application with either conservation voltage reduction (CVR) or a distribution management system.

⁸ Ibid., at page 7.

Additionally, the Company states the necessary hardware and applications were installed to support remote access of the PR application in 2014. Since then, how has the Company utilized this software in its current grid operations and have any immediate or anticipated benefits been determined?

These specific requests reflect a larger question Staff has, which is: does the Company currently have a long-term, overarching plan with a defined end state for its transmission situational awareness efforts?⁹

Advanced Metering Infrastructure (AMI)

Idaho Power's current and planned capabilities involving its AMI represent some of the core smart grid principles and goals of both the Commission and the Company. Staff asked a number of AMI-related questions in its informal comments, to which the Company responded. Staff appreciates these responses, but has additional questions. First, Staff would like to know what reliability data derived from installed smart meters the Company can report. Staff seeks such information in order to provide greater transparency and quantification of reliability benefits derived from smart grid investments. Staff would like to work with the Company in order to determine possible reliability metrics that could be reported beyond what is already required of the Company.

In regard to quantification of smart grid benefits described above under Recommendation #3, Staff believes certain functions currently provided by the AMI, including outage detection, reverse power flow, investigations of non-communication issues, and remote connect/disconnect lend themselves to quantification. For example, the Company could determine the number of reduced truck rolls and labor hours from accomplishing some of these functions had there not been AMI. Staff would like to work with the Company in order to determine what can be achieved in terms of reporting quantifiable benefits.

Finally, given certain limits of Idaho Power's existing AMI, including home-area network access and sub-hourly data, Staff would like to know if the Company is currently evaluating upgrading to AMI with enhanced functionality.

Behavioral Demand Response (BDR)

Staff would like to know the potential of implementing a small-scale BDR pilot in Idaho Power's service territory. Staff believes that such a pilot would provide customers an additional opportunity to utilize AMI while also learning about ways in which they can reduce energy use and lower costs. A pilot would also provide Idaho Power valuable data regarding customer participation, load changes, and insights into increasing and sustaining customer participation in DSM programs.

⁹ Staff anticipates the Company would supplement the information provided in Appendix E of the 2014 *Smart Grid Report*.

myAccount

Staff appreciates Idaho Power's responses to Staff's data requests pertaining to the myAccount features. Customer usage and satisfaction data is encouraging and Staff looks forward to future development of this service. Staff would like to know if the Company is planning to leverage its existing customer data in order to provide more detailed recommendations, including through its myAccount web features. For example, if the Company was forecasting a high peak day, could it notify customers who access their accounts either on the desktop or mobile of possible actions to mitigate customer load? Could the Company suggest possible energy efficiency upgrades or behavioral modifications based on possible usage patterns ascertained from data analysis? In the accompanying myAccount images provided in the *2015 Smart Grid Report*, tabs that state "How I Use Energy" and "When I Use Energy" suggest that greater opportunities exist for the Company to leverage its existing customer data to encourage customer usage changes.

Direct Load Control Programs

In its Energy Efficiency Advisory Group (EEAG) meetings, the Company has discussed quarterly performance results of its three demand response programs. In light of changing participation and reduced performance in all three programs, particularly "A/C Cool Credit" and "Flex Peak," Staff would like the Company to discuss what opportunities exist within current and planned smart grid functions beyond what is already found in the *2015 Smart Grid Report* and that has been discussed at the EEAG that could facilitate increased participation and performance in these programs.

Customer Data

Staff would like to know if the Company is making customer usage data available to third parties in order to provide analyses that the Company can in turn utilize either to adjust system operations or planning, or to advise customers about their energy usage? Is the Company already working with outside entities to provide such services? If not, what are obstacles preventing the Company from utilizing customer data to provide enhanced services?

Meter Data Management System

The Company states "software upgrades will ensure appropriate vendor support and increase potential customer billing and pricing options."¹⁰ Staff asks the Company to provide further information regarding these "options." Do they include TOU or other DSM opportunities?

¹⁰ Ibid., at page 34.

Substation fiber-based protection and control pilot

Staff finds Idaho Power's work in this particular effort to be promising and exciting. Does the Company have any plans to retrofit existing substations if the fiber optic technology proves to be successful? Due to the Company's direct role in developing this new technology, will Idaho Power have an opportunity to monetize its investments, such as receiving royalties from other utilities who utilize this technology?

Automated Volt/VAr Management System (VVMS) Pilot

In its *2014 Smart Grid Report*, the Company stated that its CVR system could be controlled by a VVMS. Now that the enhanced CVR program is underway and the Company plans to initiate a VVMS pilot in 2016, Staff would like clarification to whether CVR and VVMS compatibility is still an option. Furthermore, Staff would like to know more about the VVMS pilot, including where the pilot will be implemented and criteria for deployment beyond a pilot.

Solar End-of-Feeder Project

The Company states that "during 2015 and 2016, the physical and economic feasibility will be examined. If feasible, a pilot system will be constructed and monitored."¹¹ Staff seeks understanding of the Company's criteria and methodology for determining both physical and economic feasibility.

Photovoltaic (PV) and feeder peak demand alignment pilot

The results of this study could prove significantly beneficial to the utility, solar PV owners and non-PV owners by optimizing installation and operations of future PV systems. How does the Company plans to utilize this data – could the Company work with future interested PV customers and/or third parties to guide installations such that they optimize benefits to the system?

Customer Satisfaction and Engagement

Staff appreciates Idaho Power's response to Staff's data requests regarding customer satisfaction and engagement. The Company stated that "areas for improvement identified during this period included Idaho Power establishing itself as the energy expert."¹² Staff would like to know all areas for improvement identified in the Company's assessment. Additionally, in what ways is the Company utilizing other utilities outreach and education efforts in order to enhance customer participation in Company DSM programs.

¹¹ Ibid., at page 45.

¹² Ibid., Appendix A, at page 3.

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This concludes Staff's Comments.

Dated at Salem, Oregon, this 13th day of November, 2015.



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