

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
SPECIAL PUBLIC MEETING DATE: November 1, 2017

REGULAR X CONSENT _____ EFFECTIVE DATE _____ N/A _____

DATE: October 25, 2017

TO: Public Utility Commission

FROM: ^{JB, AB} Mark Bassett

THROUGH: ^J Jason Eisdorfer and ^{JB} JP Batmale

SUBJECT: PORTLAND GENERAL ELECTRIC: (Docket No. UM 1657) Annual Smart Grid Report.

STAFF RECOMMENDATION:

Staff recommends the Commission accept Portland General Electric Company's (PGE or Company) *2017 Smart Grid Report* filing as having met the requirements of Order No. 12-158 established in Docket No. UM 1460. Staff also requests the Commission accept Staff recommendations described below for future PGE Smart Grid Reports.

DISCUSSION:

Issue

Whether PGE 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:

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 such as investment to address physical- and cybersecurity, privacy, customer outreach and education, etc.

Thereafter, utilities are 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

The Commission accepted PGE's fourth *Smart Grid Report* (the 2016 report) as having met the requirements of Order No. 12-158. At the same time, in its order accepting the 2016 report, the Commission adopted a combined list of Staff and Commission recommendations for PGE's *2017 Smart Grid Report*. The Commission expressed the expectation that in the next smart grid report PGE would:

1. PGE provide the results and work papers used in the cost-effectiveness evaluation of the Energy Partner Pilot before the next *Smart Grid Report* filing.
2. In future *Smart Grid Reports*, PGE include copies of new or updated DSM and DER marketing material as an appendix.
3. PGE conduct a stakeholder process to develop metrics in which to compare cost effectiveness methodologies across all current and future DER and DSM efforts.
4. PGE provide data on its Energy Partner, Flex: Pricing Research - Peak Time Rebate and Next Rush Hour Rewards pilot programs.
5. PGE identify and discuss the system and Company resources necessary to begin evaluation of DER value to customers and the additional resources needed to commence distribution resource planning.
6. PGE participate in a staff-led stakeholder workshop process to determine if and what changes should be made to the smart-grid reporting process.

¹ Commission Order No. 12-158, page 4, Docket No. UM 1460, May 8, 2012.

As explained in more detail in this Staff report, PGE complied with the recommendations in Order No. 16-405, which is the order arising from PGE's 2016 report. PGE's current report is consistent with the Commission's reporting requirements outlined in Order No. 12-158.

Analysis

Staff Review

The standard 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 *2017 Smart Grid Report*:

1. Whether the Company met the guidelines set forth by the Commission in Order No. 12-158²; and
2. Whether the Company addressed prior Commission-approved recommendations from prior smart grid report reviews regarding potential smart grid investments and applications.

PGE submitted its fourth annual smart grid report on May 31, 2017, per Commission requirements found in Order No. 12-158.³

Interested parties were asked to file written comments on PGE's *2017 Smart Grid Report* by August 11, 2017. Staff and the Oregon Department of Energy (ODOE) filed written comments. In its Reply Comments filed on September 15, 2017, PGE addressed Staff's and ODOE's comments.

Staff finds that PGE's *2017 Smart Grid Report* has improved on previous efforts resulting in another good report. The report has evolved into a cohesive, comprehensive and helpful report that reflects PGE's substantial efforts in producing a quality product. Staff lauds the Company's effort over the last five years that has resulted in a commendable product.

Background

Below Staff addresses each of the requirements from Order No. 16-405, the order resulting from PGE's *2016 Smart Grid Report*.

² This should also include incremental additions and updates of all elements of the first report. See Order No. 12-158 at 4.

³ Commission Order No. 12-158, at page 4, Docket No. UM 1460, May 8, 2012.

Requirement #1: Provide the results and work papers used in the cost-effectiveness evaluation of the Energy Partner Pilot.

PGE provided this in Appendix 8 of the *2017 Smart Grid Report*. At the end of the evaluation, Navigant provides conclusions and directions for future research based on the consultants analysis. Regarding data utilization, Navigant included the following opportunities for improvement:

- Consulting resource dispatch engineers to determine the threshold for the top number of hours in which demand response is most likely to be called as a resource.
- Using historical data to determine when these peak hours occur, and assign a dispatch importance weight to each of those hours.
- Collection performance history from Energy Partner to determine the hourly load impacts of the program.

Regarding indirect costs, Navigant stated participants in the Energy Partner program can curtail their load in a variety of ways, such as manual or automated, which can affect performance, costs, and value to participants. Because the conducted analysis assumes indirect costs are consistent across all participants, Navigant suggests that "future surveys of participants could provide information to more accurately quantify these factors."⁴ These surveys could provide greater accuracy of actual participant costs.

Staff requested PGE in its reply comments to provide its opinions on the aforementioned suggestions by Navigant and indicate whether the Company is acting on any of them. If so, Staff would like to know the strategies the Company plans to pursue.

ODOE encouraged PGE to lower minimum thresholds for participation in the Energy Partner Pilot.⁵

PGE replied in comments that due to EnerNOC opting out of its business and contracts in the Pacific Northwest, PGE took the opportunity to review and revise existing programs. The proposed new Energy Partner Program would differ from the original in these ways:

⁴ PGE's *2017 Smart Grid Report*, at page 169.

⁵ Oregon Department of Energy *2017 Smart Grid Report Comments*, at page 5.

- This program should be administered directly by PGE, with support from a program implementer and technology integrator/demand response management system (DRMS) provider.
- The Energy Partner program should be offered through two tariffs - Schedule 25 and 26. Schedule 25 provides nonresidential customers with a turnkey, direct load control program, similar to Schedule 5 for our residential customers. Schedule 26, which more closely resembles Schedule 77, provides a much greater diversity of participation levels, allowing customers to select differing availability periods, notification times, and maximum event hours. Schedule 26 will also allow customers with multiple points of delivery (POD) the ability to self-aggregate their PODs.

PGE states that the new design will increase flexibility by offering shorter availability windows and longer notification windows, and more customers will be served.⁶

PGE also responded to Staff's comments concerning the Smart Thermostat Demand Response Pilot and is making a variety of efforts to increase program participation. PGE is partnering with new vendors as well as building opportunities with the Energy Trust of Oregon (ETO).⁷

Staff Recommendation: Staff supports the changes to the program, and appreciates the potential for expansion. Staff anticipates PGE's reporting of results in the *2019 Smart Grid Report*.

Requirement #2: In future *Smart Grid Reports*, PGE include copies of new or updated DSM and DER marketing material as an appendix.

PGE provided over 40 pages of marketing and outreach materials used in the Company's Rush Hour Rewards pilot (smart thermostat demand response program), Energy Partner pilot, and Flex: Pricing Research pilot.

Staff appreciates the time and effort PGE spent compiling the material and including it for stakeholder review. Doing so allowed Staff to have greater insight into how the Company and any of its vendors are engaging with customers. Not only does this information allow Staff to monitor a crucial component of any these pilots' success, but also provides Staff a high bar for reviewing other utilities' TOU and DR programs.

⁶ PGE 2017 *Smart Grid Report* Reply Comments, at page 3.

⁷ PGE 2017 *Smart Grid Report* Reply Comments, at page 4.

Staff looks forward to PGE's continued inclusion of updated marketing and outreach materials in future *Smart Grid Reports*.

Requirement #3: PGE conduct a stakeholder process to develop metrics in which to compare cost effectiveness methodologies across all current and future DER and DSM efforts.

PGE held a stakeholder workshop on April 28th, 2017, where Staff and a number of other stakeholders were in attendance. The primary purpose of the workshop was to present and compare all cost-effectiveness methodologies currently being used or developed by PGE and allow stakeholders to discuss. No decisions were made, but important considerations and cross-cutting issues across a number of DERs were identified. PGE included the workshop's presentation in Appendix 6 of the *2017 Smart Grid Report*.

Staff appreciates PGE's work in conducting this workshop and looks forward to future efforts regarding improving cost-effectiveness methodologies.

Requirement #4: Provide data on its Energy Partner, Flex: Pricing Research – Peak Time Rebate and Next Rush Hour Rewards pilot programs.

PGE provided participant, maximum available winter capacity, and maximum available summer capacity data for all three programs in the *2017 Smart Grid Report*. Staff is very encouraged by the initial performance of the Flex and Rush Hour rewards program as well as glad to see the continued growth in performance of the Energy Partner pilot. Staff looks forward to the final analyses for both the Flex and Rush Hour pilots in docket No. UM 1708.

Staff asked PGE to comment on the results of the May 2017 RFP for vendors who would provide new opportunities for nonresidential customers and describe the strategy moving forward, especially considering the strong performance and participant engagement of the Energy Partner program.

In reply comments, PGE pointed to input from vendors including Energy Partner evaluations conducted by Itron, market research from Hansa, customer interviews, focus groups, and Navigant reports that found these areas for improvement:

- The DR portfolio could benefit from having a variety of offerings;
- There needs to be more flexibility in programs;

- Segments of our customer base (particularly in our commercial sector) are under-served; and
- Offerings need to better address customer business needs.⁸

PGE is responding to these results through the implementation of new programs detailed in Requirement #1 above.

Staff Recommendation: Staff appreciates PGE's observing critical review of programs by outside vendors and stakeholders, as well as PGE's efforts to provide programmatic changes to address the concerns. Staff supports the changes to the program and appreciates the potential for expansion. Staff anticipates PGE's reporting of results in the *2019 Smart Grid Report*.

Requirement #5: PGE identify and discuss the system and Company resources necessary to begin evaluation of DER value to customers and the additional resources needed to commence distribution resource planning.

Staff appreciates PGE's willingness to engage Staff's endeavor on conceptualizing and identifying discrete tasks in pursuing a distribution resource plan (DRP) or distribution system planning (DSP). In the *2017 Smart Grid Report*, PGE detailed a seven-step process in which the Company would produce an initial DRP for Commission review. Though each step faces its own hurdles, Staff recognizes one crucial challenge in implementing a DRP is the essential tools in order to generate the granular data or forecasts essential in capturing accurate costs and benefits of location-specific DERs. Staff has been conducting internal research and meetings on this very same topic and understands the lack of robust and well tested options.

Because the Commission indicated its support of Staff's recommendation to conduct an investigation into the distribution system planning in PGE's 2016 IRP (LC 66), Staff anticipates the primary discussions and efforts happening within whatever docket arises from that specific recommendation. Because of this, Staff asks PGE in future *Smart Grid Reports* to summarize developments in the DRP or DSP efforts that arise from Staff's recommendation in LC 66.

ODOE expressed appreciation of PGE's DRP efforts, but would like PGE to further describe how DRP will align with other relevant dockets including Resource Value of Solar (UM 1716), Energy Storage (UM 1751), Transportation Electrification (UM 1811), and Integrated Resource Planning (LC 66).⁹

⁸ PGE 2017 *Smart Grid Report* Reply Comments, at page 4.

⁹ Oregon Department of Energy 2017 *Smart Grid Report* Comments, at page 3-4.

In reply comments, PGE states that all of the above dockets will help inform a DRP to support the development of the dockets. PGE agrees to continue to report the DRP efforts as directed through LC 66 and report updates in future *Smart Grid Reports* through UM 1657.¹⁰

Requirement #6: PGE participate in a staff-led stakeholder workshop process to determine if and what changes should be made to the smart-grid reporting process.

On May 15, 2017, Staff hosted a workshop attended by PGE, PacifiCorp, Idaho Power, Energy Trust of Oregon, and ODOE to discuss the future of the *Smart Grid Report Guidelines* found in Commission Order No. 12-158. In addition to agreeing upon how stakeholders view the value of the utilities' smart grid reports, participants agreed that more time between reports would enable be valuable to all smart grid stakeholders. The one-year cycle is demanding on both utilities and stakeholders who review the reports. In Commission Order No. 17-290, the Commission approved a biannual submission cycle for all future smart grid reports, which means after the 2017 reports, the next year utilities will file will be 2019.

Staff concludes that PGE successfully satisfied all of Staff's recommendations.

Additional Topics

Customer Engagement Transformation (CET): Customer Touchpoints Project

Staff asked PGE to comment on how adaptable the systems and processes the CET is updating will be to future program developments. That is, can a future demand-side management or DER program be easily incorporated into these new systems? How future proofed are the results of the CET and does PGE know of any current limits with the improvements?

In reply comments, PGE states that a "new Customer Information System (CIS) and Meter Data Management system (MDMS) will provide a more adaptable platform for standardized and streamlined transfer of data, improving the effort to implement and manage PGE's DR programs." They further state that "systems are more widely used across utilities, both nationally and globally, so the changing needs of the industry are more easily updated in the system through upgrades."¹¹

¹⁰ PGE 2017 *Smart Grid Report Reply Comments*, at page 7.

¹¹ PGE 2017 *Smart Grid Report Reply Comments*, at page 5-6.

Staff agrees that the CIS and MDMS software will be valuable tools to the CET project. Staff recommends that PGE comment on this topic again after further implementation of the project with specific examples of how CIS and MDMS enables CET in the *2019 Smart Grid Report*.

T&D Analytics

Staff observed that PGE describes how the data can be utilized for circuit analyses and asset management initiatives, but would like PGE to expand upon how the T&D analytics and data can be used in a future DRP or DSP.

ODOE also expressed interest in how the T&D Analytics pilot can be used to inform DRP.¹²

In reply comments, PGE states that advanced T&D data collection and analytic capabilities will give a more granular-level look at system impacts of DER deployments, which could inform a DRP process regarding when and where to deploy DERs. The data will also inform how to yield maximum benefits and how to mitigate problems of DERs.¹³

Expansion of the Next Rush Hour Rewards Pilot

Staff approves of PGE's plans to expand the current smart thermostat demand response pilot detailed in Docket No. UM 1708 to include non-Nest smart thermostats in the program. As detailed in the most recent Staff Report on the docket, Staff recommends:

1. PGE should look to more aggressively augment the Direct Load Control Thermostat (DLCT) program offering, including exploring system wide direct installation of smart thermostats in partnership with the Energy Trust of Oregon. By July 1, 2018, PGE should present an initial program design or several program designs to Commission Staff and possibly ETO staff if coordination with ETO would enhance the program offering or cost effectiveness.
2. PGE should follow the Cadmus recommendation to refine its first-year assessment of demand response capacity benefits and cost-effectiveness. Where possible, PGE should report how and at what incremental costs it could improve its meter data management system and customer information system to increase its participation

¹² Oregon Department of Energy *2017 Smart Grid Report Comments*, at page 4.

¹³ PGE *2017 Smart Grid Report Reply Comments*, at page 7.

tracking and meter data storage and processing capabilities to support a broader rollout of the program and future demand response enabled assets.

3. PGE should also work to have a more robust verification of customer participation, including a customer retention process to lure customers back into participation.

4. PGE should update its planning assumptions. PGE should strongly consider developing a broader rollout of the program to be reflected in PGE's IRP.¹⁴

PGE stated in reply comments that they agree with these recommendations, and is taking steps to comply by expanding the program with Whisker Labs to provide non-Nest smart thermostats, as well as exploring partnerships with ETO energy efficiency programs.¹⁵

Additional Comments (ODOE)

Advanced Metering Infrastructure (AMI)

ODOE would like PGE to quantify the direct and indirect benefits associated with its deployment of Advanced Metering Infrastructure (AMI).¹⁶

PGE originally replied to this comment in the *2016 Smart Grid Report*, and states that reports on operational savings were submitted in 2012. PGE has not performed any subsequent analysis of the overall informational benefits to be derived from AMI.¹⁷

Smart Inverters

ODOE points out the changes in industry standards for smart inverters, particularly UL-1741 and IEEE-1547, and encourages PGE to explore the enablement and adoption of the technology.¹⁸

Synchrophasors

"ODOE supports PGE accelerating the deployment of synchrophasor technology across its system, particularly given PGE's participation in the Energy Imbalance Market

¹⁴ OPUC Staff Report/ at pages 1-2, Docket No. UM 1708(2), July 11, 2017.

¹⁵ PGE *2017 Smart Grid Report Reply Comments*, at page 4.

¹⁶ Oregon Department of Energy *2017 Smart Grid Report Comments*, at page 2.

¹⁷ PGE *2017 Smart Grid Report Reply Comments*, at page 9-10.

¹⁸ Oregon Department of Energy *2017 Smart Grid Report Comments*, at page 2.

beginning later this year and the added value that synchrophasors can provide to PGE's participation in that market."¹⁹

Locational Net Benefit Analysis

ODOE asks PGE what near term steps could be taken to advance development of locational benefits.

PGE is standardizing the method for determining benefits and costs of grid investments, including several investigations in filings LC 66 (IRP), UM 1751/1856 (Energy Storage), and UE 319 Exhibit 800 (T&D testimony in PGE's 2018 general rate case). PGE recently filed a draft potential evaluation through the Energy Storage Dockets (UM 1751/UM 1856) that they believe demonstrates their proposed approach to locational value of storage, which may be used in evaluating other DERs in the future.²⁰

Staff also observes that locational values are continuing to be explored by PGE and several other stakeholders in the Resource Value of Solar docket (UM 1716).

Energy Storage

ODOE expressed support for PGE's Fire Station No. 1 project, and encourages PGE to "consider an agreement with the city that would allow the Company to utilize the system for multiple use cases (beyond demand response)."

PGE is also interested in exploring several use cases, but observes that the extent of use cases cannot be determined until the City of Portland finalizes its choice of a battery system.²¹

Conclusion

Recommendations

Staff recommends the Commission accept PGE's *2017 Smart Grid Report* as meeting the requirements of Order No. 12-158. Additionally, Staff also recommends that:

1. PGE report on the effectiveness of the proposed changes to the Energy Partner, Smart Thermostats, and other demand response pilot projects.
2. PGE provide an update on cost-effectiveness methodologies of DERs.

¹⁹ Oregon Department of Energy *2017 Smart Grid Report* Comments, at page 3.

²⁰ Oregon Department of Energy *2017 Smart Grid Report* Comments, at page 9.

²¹ PGE *2017 Smart Grid Report* Reply Comments, at page 10.

3. PGE provide an update to its DRP efforts as directed through LC 66 and other pertinent dockets.
4. PGE provide specific examples of how CIS and MDMS projects are enabling demand response and Customer Engagement Transformation projects.

PROPOSED COMMISSION MOTION:

Accept Portland General Electric's *2017 Smart Grid Report* along with Staff's recommendations set forth immediately above in the "Recommendations" part of this memorandum.

2017 PGE Smart Grid Report