

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON
LC 56**

In the Matter of

PORTLAND GENERAL ELECTRIC

2013 Integrated Resource Plan

STAFF'S OPENING COMMENTS

Staff's initial comments are organized into five sections. First, we discuss the how the Company's plan generally complies with established guidelines and rules. We then offer comments on specific areas of interest and concern in the current plan and then provide a summary. The comments are organized as follows:

- I. Compliance with Order 89-507
- II. Compliance with Order 10-457 in Docket LC 48
- III. Compliance with previous Commission Orders
- IV. Substantive Comments by Area
- V. Summary

I. General Least-Cost Planning Compliance (Order 89-507)

Order 89-507 established least-cost planning principles for Oregon utilities. The key elements of this order were the direction to incorporate demand-side resources in addition to traditional supply-side resources, statement of the necessity for public involvement, and establishing the goal of achieving the least cost resource mix for ratepayers and the utility.

The Order also established four basic elements that the Commission believed were integral to the least-cost planning process. These include:

- Evaluation of all resources on a consistent and comparable basis;
- Consideration of uncertainty in the decision making;
- A primary goal of least-cost solutions that are consistent with the public interest; and
- Consistency with the energy policy of the state of Oregon.

In this IRP Portland General Electric (PGE or the Company) has demonstrated an overall compliance with the basic elements of least cost planning. The approach taken by the Company addresses both supply- and demand-side resources, exhibits a comprehensive look at life-cycle costs both on a unit basis and a portfolio basis, aims to find solutions that represent not only least-cost but also least risk, and offers a plan that is consistent with the

primary elements of Oregon’s energy policy – namely, energy efficiency and utilization of renewable resources on a path towards a low-carbon energy future.

II. Compliance with Order 10-457 in Docket LC 48 (2009 IRP)

In Order 10-457 the Commission concluded that PGE’s 2009 IRP reasonably adhered to the principles of resource planning established by the Commission and acknowledged the IRP with several requirements. Specifically, for its subsequent IRP the Commission required that PGE:

1. Include an updated benefit-cost analysis of Cascade Crossing.
2. Provide a more comprehensive treatment of Demand Response (DR) resources, including:
 - a. An estimated cost per MW of capacity savings by type and projected MW acquisitions for the next five years;
 - b. A discussion of the steps it is and will be taking to evaluate DR in the next IRP; and
 - c. An updated action plan for assessing and acquiring DR for the next three years.
3. Consider Conservation Voltage Reduction (CVR) for inclusion in its best cost/risk portfolio and identify in its action plan steps it will take to achieve any targeted savings.
4. Include a wind integration study that has been vetted by stakeholders.
5. Evaluate the use of unbundled Renewable Energy Certificates (RECs) in its strategy for meeting the Renewable Portfolio Standards (RPS) requirements.
6. Evaluate alternatives to physical compliance with the RPS requirements.

Since this Order was issued, the Cascade Crossing project has been cancelled, so Staff believes that requirement (1) is no longer valid.

Staff commends the Company for a well-designed and vetted wind integration study that has demonstrated analytic innovation in its approach to determining the true cost of wind integration. The Company has shown great initiative in tackling difficult modeling issues and has been very inclusive of, and responsive to, regional stakeholders.

However, the Company has not completely addressed items 2, 3, 5 and 6 in this IRP. Although the Company has included some discussion on these topics, Staff believes that none of these have been considered as comprehensively or exhaustively as expected by the Commission. These issues will be discussed at greater length in Section IV.

III. Compliance with Commission IRP Guidelines (Orders 07-002 and 12-013)

In general, Staff believes that the Company has adhered to the 14 IRP Guidelines established by the Commission, with a few exceptions. In Guideline 1 it is clear that the Commission expects the Company to explore all known resources, both demand-side and supply-side.

Although the Company does a fairly comprehensive job of *identifying* all resources and describing them, they do not consider them fairly as resources in the portfolio choices. For example, supply-side storage resources, although discussed and identified, are not included in any portfolios. Likewise, potential demand response resources are excluded with no explanation provided for the exclusion.

As discussed later in Section IV(d), Staff finds that PGE has not fully assessed the potential for Demand Response in this IRP. As a result, Staff concludes that the Company has not fully complied with Guideline 7 regarding a comprehensive consideration of Demand Response capability.

All resources are expected to be considered on an equal footing by the Company. This requires, in part, that all the costs of energy for each resource be properly accounted for. Staff believes that the cost estimates of some resources have been over-stated, which has the effect of unfairly eliminating these resources from further consideration. In particular, Staff is not convinced that the levelized cost of energy (LCOE) derived for solar or biomass is a true reflection of cost based on cost figures for similar plants from other sources. Staff urges the Company to use a more diverse set of inputs to derive the LCOE figures, rather than rely on a single source of information – in this case, Black & Veatch.

Finally, Staff is of the opinion that this IRP fails to fulfill Guideline 12 requiring distributed generation to be evaluated on par with all other resources. PGE's discussion of distributed generation is limited to a brief discussion of the potential for rooftop solar, and a few paragraphs regarding dispatchable standby generation, which is merely a program for providing non-spinning reserve and not a true distributed generation program.

IV. Substantive Comments by Area

a. Load Forecast

Staff continues to investigate the Company's load forecasting methodology and results. At this point, Staff has identified several issues related to the load forecast and will continue to investigate these areas:

- The basic forecast methodology has a biased positive trend, particularly in Commercial sector;
- The load forecast is provided to the IRP team with DSM "embedded" and IRP removes ETO forecast of DSM. However, the Staff is unsure as to whether the ETO forecast correctly represents a similar level of DSM.
- Monthly load factors are held constant across the forecast period. These factors are 15-year rolling averages. Staff is concerned that in fact load factors may trend up in

summer due to increased air conditioning load. This suggests that peak demand may rise faster than forecasted, counteracting the overall positive bias.

- Large industrial customers self-forecast their load. These customers tend to be overly-optimistic in energy use, particularly for out years.
- Load growth scenarios do not appear to test for high and low load growth, or high and low level shifts.
- PGE assumes 5-year flat Direct Access load, but past Direct Access load has a positive trend.

b. Natural Gas Forecast

Staff's analysis shows that PGE's natural gas price forecasts are reasonable for the time the projections were made, disregarding the first three years of the IRP analysis process. However, Staff is concerned that (1) there is no variation between the low, reference, and high gas prices in the first three years of the forecast and (2) the forecasts used for the analysis were nearly one year old when the IRP document was filed.

Regarding the Company using the same forecast for the low, reference, and high gas price scenarios: Since the forecasts begin in 2014 but were made in Spring 2013, even the front years are likely to have a degree of uncertainty. In fact, spot gas prices in 2014 have been significantly higher than the \$4/MMBtu projected in the IRP. In a future IRP where the Company is asking acknowledgement of a new generation resource, this lack of price risk could bias the results toward natural gas resources. This is particularly true because discounting makes the first years of the forecast the most relevant.

Additionally, in a future IRP where the Company is seeking acknowledgement of a new generation or transmission resource it is reasonable to expect that the Company use up-to-date forecasts. The Company points out that a December 2013 forecast is similar to the Spring 2013 that was used for analysis in the IRP. However, Staff feels the difference between the forecast vintages is significant enough that it could impact the choice of the preferred portfolio. Staff hopes to avoid this possibility in IRPs where the Company has action items regarding new generation resources.

c. Wind and Solar contribution at peak

"Capacity contribution" (CC) at peak load for wind and solar are important, not only to the utility's planning, but also because it is a factor in determining rates for customer-owned generation. Staff believes that the determination of CC is to some degree

dependent on geographic location, and that the geographic diversity among the plants could be a contributing factor to determining this value.

Staff would like the Company to include data from all wind generation resources and all solar generation resources when calculating these values. As an example, instead of relying solely on data from Biglow for wind CC at peak as calculated in this IRP, future IRPs should also include data from Tucannon River, Klondike and Vansycle Ridge wind projects, as well as any other wind resources available on the system.

d. Demand Side Options

i. Energy efficiency

Staff is actively investigating PGE's action plan regarding energy efficiency. At present, the issues of concern for Staff include:

- Verifying the rationale behind the declining energy efficiency opportunities beyond 2016 and the increasing gap between achievable and all deployable energy efficiency;
- Understanding how lost opportunities fit into the picture and at what avoided costs could substantially all lost opportunity energy efficiency be acquired; and
- Looking at how PGE is calculating the risk reduction value of energy efficiency and the results of their analysis.

Staff will have more extensive comments regarding energy efficiency in our Final Comments.

ii. Demand response

Staff is currently seeking greater detail regarding PGE's demand response activities and has some initial concern regarding how PGE utilized demand response resources in their resource planning. Staff is also concerned about how PGE anticipates using the demand response from an operational point of view.

Specifically, Staff is concerned about the technology PGE views as necessary to utilize demand response resources. It appears that PGE's vision for demand response is dispatch-oriented not customer-centric.

Staff is interested in knowing more about how PGE leverages its advanced metering infrastructure to build and utilize demand response resources.

Staff also wants to learn more about PGE's contractual agreement with EnerNoc and is interested in understanding how PGE will utilize the resources under contract with EnerNoc.

Finally, Staff wants to know if PGE has fully assessed its demand response possibilities and capabilities, including dynamic rate design, and if PGE has identified barriers to demand response implementation.

e. Flexible Capacity

The Company has developed an innovative approach to examining flexibility requirements. Staff commends PGE for creating this unique analysis tool. The result of the analysis clearly shows the adequate capability of PGE's system for incremental ramping at all rates. However, just as clearly it can be seen that PGE's decremental flexibility is poor. In Staff's view, this result clearly demonstrates the necessity for the Company to examine storage options in greater depth, and to include storage options in at least some of the portfolios to address this issue.

f. Environmental Considerations

Staff recognizes the work PGE has done to meet its obligations under IRP Guideline 8. The work done provides a great deal of useful information. However, Staff would like PGE to model more immediate carbon costs associated with recent EPA actions, particularly the new Section 111(d) rule, and extrapolate from these costs the potential resource acquisition decisions affected.

Although still investigating the many aspects of environmental impact, Staff has identified several items that it would like to see investigated. Staff would like to see PGE:

- Model a carbon market mechanism that is regional as opposed to federal;
- Prepare a more comprehensive report of its climate-change planning activities;
- Explain in greater depth how PGE is incorporating the risks of climate change into its planning;
- Describe what climate-change adaptation and mitigation actions PGE is conducting on its own behalf and on behalf of its customers; and
- Report on any climate change-centered customer engagement activities PGE is undertaking.
- Fully analyze the effect of EPA Section 111(d) rules on future resource acquisitions.

g. Portfolio and Resource Choices

i. Solar & Biomass

Staff is concerned that the rapidly changing landscape for solar generation is not being adequately captured by the Company's analysis. The levelized cost of solar generation represented does not reflect the downward trend of solar costs within the planning horizon. Solar is a unique resource in this way – the LCOE of solar continues to drop year to year, unlike other resources whose LCOE remains relatively constant. Staff understands that it is challenging to quantify the LCOE of future solar generation; however, Staff suggests the Company examine methods to capture this additional value so as to compare utility scale solar on an equal footing to other resources available during the planning horizon.

Staff similarly believes that the LCOE calculated for biomass may be overestimated, primarily due to the assumed cost of hogged fuel. The Company should recognize that there are several options for fueling a biomass plant, and each of these yields a different LCOE. In addition, biomass plants may be utility-owned or customer-owned, each having different costs and characteristics.

Correcting the LCOE for solar and biomass may lead to the conclusion that these resources should be included in a least-cost, least-risk portfolio.¹

ii. Battery storage

Staff believes that battery storage is one of the most important emerging technologies and that the Company needs to devote more analysis to this. Vanadium and other earth-based flow batteries are beginning to become commercialized. Staff would like to see analysis of the cost and flexible capacity analysis of these types of batteries included, especially in light of the poor decremental capacity capability brought out in the Company's flexibility study.

In addition, Staff would like PGE to keep abreast of commercial storage solutions being implemented in California under that state's storage mandate and present an analysis of the applicability of similar solutions to PGE's system. The Company should consider battery storage solutions for all capacity needs, especially wind and solar integration but also for providing various ancillary services.

iii. RPS compliance

¹ As one reference, EIA's 2014 Energy Outlook lists the LCOE of utility-scale solar as \$118/MWh and that of biomass \$102/MWh, both values being much lower than those assumed by PGE.

Staff is concerned that the Company's supply-side options are not inclusive of all RPS qualifying opportunities, but agrees with PGE that it is not relevant to this particular IRP in light of the fact that the Company is not seeking acknowledgement of a generation resource or a Power Purchase Agreement (PPA). However, in the next IRP when the Company is expected to seek acknowledgement of a resource to comply with the RPS, it is important that RPS qualifying PPAs (i.e. renewable energy bundled with RECs) be considered as a supply-side option. Resource ownership vs contracting a resource has different cost allocations through time that need to be explored through discounting and evaluated along with other options.

h. Proposed Action Plan

Staff agrees that the supply-side actions – namely, retaining legacy hydro resources and adding cost-effective demand-side generation for reserves – seem to be in alignment with the Commission's least-cost planning guidelines. Similarly, Staff believes that PGE's proposed demand-side actions are also in agreement with the least-cost directives. However, Staff does question the level of DR being pursued by the company as being minimum and not inclusive of all potential, cost-effective measures.

To some degree, Staff believes the shortcomings of this IRP in meeting Guidelines 7 and 12 are addressed by the enabling studies proposed by the Company. Particularly, Staff expects that the studies regarding emerging energy efficiency measures and distributed generation will be reflected in a greater adherence to these guidelines in the next IRP.

V. Summary

Staff finds that PGE's 2013 IRP generally adheres to the Guidelines and relevant Orders put forth by the Commission related to least-cost, integrated resource planning. However, the information provided by the Company in this IRP falls short of demonstrating compliance with Guideline 7 (Demand Response) and Guideline 12 (Distributed Generation). In addition, Staff is still investigating several areas, including whether the Company has performed the analysis necessary for complete satisfaction of Guideline 8 (Environmental Costs).

Staff is also concerned that the Company has not fully addressed the specific requirements of Order No. 10-457, acknowledgement of PGE's prior (2009) IRP. Having said that, Staff is encouraged that the Action Plan in this IRP contains studies which should enable the Company to comply more completely with these directives in the next IRP.

Finally, Staff has pointed out several areas where the Company needs to improve in its next planning cycle. In particular, Staff would like to see that the Company's estimate of the levelized cost of supply-side resources be derived from multiple sources for better accuracy, that the Company's load forecast methodology be reviewed and tested for accuracy, and that emerging battery technologies be considered as potential resources in a least-cost portfolio.

Staff may have further comments and recommendations included in our Final Comments.

This concludes Staff's Opening Comments.

Dated at Salem, Oregon, this 12th day of June, 2014

A handwritten signature in black ink, appearing to read 'J. Crider', written over a horizontal line.

John Crider
Senior Utility Analyst
Energy Resources & Planning

CERTIFICATE OF SERVICE

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I certify that I have, this day, served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-001-0180, to the following parties or attorneys of parties.

Dated this 12th day of June, 2014 at Salem, Oregon



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