

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

LC 56

In the Matter of

PORTLAND GENERAL ELECTRIC

2013 Integrated Resource Plan

Comments of Renewable Northwest

Renewable Northwest enjoyed working with Portland General Electric's ("PGE's") thoughtful and responsive Integrated Resource Plan ("IRP") team during development of the 2013 IRP. We appreciate the opportunity to offer the Oregon Public Utility Commission ("Commission") our observations on PGE's 2013 IRP and, more generally, on the direction it represents for PGE. Two initial observations capture our general perspective:

Observation 1: PGE is pursuing many good things—aggressive energy efficiency, advanced demand response, physical RPS compliance, evaluation of renewables beyond RPS requirements, improved system flexibility and regional coordination, scaled-up distributed generation, renewal of flexible hydroelectric contracts. All of these will support the clean resource mix that will provide cost certainty and increasing benefits as carbon policies become more demanding over time.¹

Observation 2: If nothing changed from today's preferred portfolio, in its next IRP PGE would be asking the Commission to acknowledge 790 MW of new baseload gas plants.² With these additions, PGE would potentially exceed 60% of energy (and capacity) from gas,³ intensifying customer exposure to a single resource with a history of price volatility and emitting significantly more carbon without better reliability or significantly lower expected costs than other portfolios.⁴

PGE can be an example of how to rise to the challenge of building a clean, diverse, affordable, and flexible generating portfolio. The Commission should challenge PGE to deliver results on its positive initiatives and, in its next IRP, present winning portfolios that

¹ Recent federal policy represents just one step in the direction of greater federal and state carbon regulation.

² 2013 IRP, page 6 (identifying "Baseload Gas/RPS Only" as the preferred portfolio) and Figure 9-7.

³ Derived from 2013 IRP, Table 2-3 and Figure 9-7. Hydro renewals, not included, would improve diversity.

⁴ See Figures 10-17, 10-18 and Figure 3. Compare to Diversified balanced wind/CCCT and Diversified baseload gas/wind.

make greater use of clean energy and preserve PGE's ability to meet its energy and capacity requirements with low-carbon resources into the future.

In the more specific comments that follow, we recommend that PGE continue to improve its IRP and associated resource procurement to allow it to meet that vision.

1. Capturing rapidly evolving, increasingly competitive clean energy technologies to meet energy, capacity and flexibility needs

With clean energy technologies evolving rapidly—improving in performance and declining in cost—PGE and the Commission need to improve how resource planning and procurement keep up with those changes. An IRP is based on generic resource technology cost and performance assumptions that, realistically, must be set at a point in time well before procurement actually occurs. And, often, those assumptions are out of line with the market even at the time they are set. For the 2013 IRP, PGE's recent procurements gave it good market insight. However, PGE will not have the same advantage in its next IRP, increasing the risk of stale cost and performance assumptions.

Renewable NW recommends three approaches that can help address this situation.

A. Test the Market for Current Opportunities

Without the benefit of a recent RFP, PGE will need to be very purposeful about understanding the market and modeling a variety of choices in its next IRP. We recommend that, especially for renewable resources and storage, PGE demonstrate that it has engaged a consultant that specializes in pricing those resources and also that it go beyond the usual consultant report. In the stakeholder process and IRP, PGE should describe what it has done to engage with developers and technology suppliers directly.

Also, PGE should test at least two specific resources that were not modeled in the 2013 IRP. One is Montana wind with existing or upgraded transmission, rather than entirely new transmission. Various initiatives are underway to perform lower-cost upgrades to transmission from Montana, not to mention transmission that may be freed up by retirement or redispatch of coal facilities. With lower transmission costs and higher capacity factors—and improvement in overall peak capacity contribution—the competitiveness of Montana wind should be investigated. Another is energy storage technology, which was considered but not modeled for the 2013 IRP, despite its strong performance in PGE's RFPs.

B. Run Cost Sensitivities or Perform Trigger Point Analysis

To understand the significance of stale cost and/or performance assumptions, the IRP should run sensitivities that indicate how lower renewable resource costs would change the preferred portfolio. (In addition, given the apparent sensitivity of the preferred portfolio to cost assumptions between CCCTs and peakers, there should be some way to understand the significance of that cost assumption as well.) For its next IRP, PacifiCorp is considering a trigger point analysis that would demonstrate the cost/performance point at which the preferred portfolio would select greater quantities of clean energy. PGE should look at incorporating this type of analysis as well, both to minimize the amount of disagreement over where to set the cost/performance assumptions and to help encourage clean technologies to bid into all-source RFPs if they can beat the trigger price.

C. Emphasize Needs-Based IRP Action Plan & All-Source RFPs

It should be very clear that the IRP preferred portfolio/action plan and resulting RFPs are *performance oriented* and technology neutral (*i.e.*, all-source RFPs). IRP modeling obviously must reflect assumptions about specific generating technologies and certainly should be a place to evaluate the performance, risk, and cost of different combinations of resource types. At the same time, using the IRP to translate a preferred portfolio to broad performance characteristics will set PGE up for all-source RFPs in which advanced clean technologies (and combinations of such technologies) can be considered seriously as alternatives to traditional technologies and to the outdated baseload/peaking framework.

Energy, peaking capacity and flexibility are the basic categories that the total portfolio must supply to meet load. For peaking capacity and flexibility, demand response and storage should be considered on par with gas plants for meeting those needs if they compete favorably in an RFP. Also, their benefits should be better acknowledged throughout the planning and procurement cycle. For example, in PGE's recent capacity RFP, an energy storage was considered very competitive. Yet energy storage was not modeled in the IRP, despite PGE's flexibility study showing down regulation as the major constraint on its supply of flexible capacity—something that storage and demand response can provide much better than gas peakers. This suggests not only that RFPs should reflect the specific needs the utility actually has for flexibility, but also that methods for valuing the benefits of flexible technologies in supply modeling should be improved. (As an example, Puget Sound Energy's next IRP will decrement storage capital costs by the quantitative benefits shown in its flexibility analysis.)

PGE's IRP appears to be very sensitive to cost assumptions between peakers and CCCTs. Because of the relative economics between the two, portfolios with more CCCTs were considered to have outperformed portfolios that used more peaker plants. The danger with packaging energy and capacity within the preferred portfolio as a "baseload" CCCT is that RFPs may be geared toward that particular CCCT technology rather than testing the market for a combination of resources that achieves the same outcomes at lower cost—and with fewer carbon emissions. Beginning in the IRP, PGE should be setting up for resource procurement that will allow it to take advantage of energy supply from clean technologies that, at the time of procurement, may be less than the per MWh price of gas-fueled generation. (Xcel Energy's 2013 Southwestern Public service Company resource procurements are a good example.) Regional transactions, such as deals taking advantage of California's oversupply of solar, are other examples of transactions that could be competitive in all-source RFPs.

Finally, PGE should work with stakeholders and the Commission to recognize in procurement the different levels of risk that different technologies and deal structures impose on customers. Bids from low carbon technologies that beat IRP cost assumptions, but allow the portfolio to achieve better risk performance against future carbon regulation, should be credited for risk mitigation benefits. In addition, the IRP and/or RFP should recognize the optionality benefits of shorter term PPAs over acquisitions that commit customers to decades of new thermal generation.

In conclusion, we recommend that the Commission direct PGE to (1) test the market; (2) perform cost sensitivities or trigger point analyses; and (3) orient the IRP toward all-source RFPs in which bids are credited for performance and risk reduction. We look forward to PGE's responses as to the viability of these approaches and, ultimately, recommend that the Commission include some version of these as requirements for the next IRP.

2. Setting a high bar for reducing carbon emissions

No one can discount the actions that PGE has already taken to reduce carbon emissions in its portfolio. PGE's willingness to work with stakeholders toward Boardman early retirement seems to put Oregon in good position relative to EPA's Clean Power Plan. It is not yet clear how much more work PGE will have to do with its Montana coal generation to satisfy EPA's final rule. But this is not a time for PGE to fall back on what may be a lowest common denominator federal policy, nor to rest on its laurels. PGE should continue to lead.

PGE notes that each of its 2013 IRP portfolios reduces emissions by 15% from 2005 levels, because even the dirtiest portfolios (one of which is the preferred portfolio) drop below 8,000,000 short tons a year before climbing back above that level in the late 2020s. See Figure 10-18. Notable in Figure 10-18 is how much *better* than the preferred portfolio PGE can do on carbon emissions with portfolios that are competitive on cost. Two portfolios with very nearly the same costs and risks and equivalent reliability – “diversified balanced wind/CCCT” and “diversified baseload gas/wind”⁵ – stay under 8,000,000 short tons a year throughout the entire planning period, just by adding a bit more wind. Other feasible portfolios—whose costs may well be lower by the next IRP—can keep PGE in a leadership position ahead of the next tranche of carbon policy at the state or federal level.

The Commission should challenge PGE to find ways to stay in a leadership position on delivering the clean technologies that align with customer preferences and insulate customers from risk, especially where the expected costs are only slightly higher than other portfolios. By placing greater probability on futures in which carbon and gas are more costly (see comment below), PGE and the Commission may well see portfolios with lower emissions as least cost, least risk.

3. Miscellaneous

A. Greater credit to capacity value of solar in summer peaks.

PGE’s summer and winter peaks are nearly the same, with summer peaks rising. PGE’s solar capacity value analysis acknowledges a more significant contribution to meeting summer peaks, and its IRP suggests that peaking capacity is more scarce in the summer.⁶ If winter peaks can be managed with seasonal capacity contracts from other regions, then PGE can credit solar with a greater overall capacity value.

B. Resource cost and portfolio construction double-charge for flexibility

Renewable NW continues to object to the characterization in Figure 8-4, which depicts addition of capacity to the cost of variable energy resources. As the IRP seems to acknowledge in the following paragraph, the total portfolio construction to meet load is what requires particular energy and capacity additions. The *portfolio* requires capacity; wind and

⁵ A small request: PGE should number its portfolios in the next IRP! Titles are similar and hard to remember.

⁶ 2013 IRP, pages 190-91, assuming no spot market availability during summer peaks.

solar do not themselves create a requirement for “back-up.”⁷ If PGE continues to use this depiction, at the very least the cost should be based on the lowest cost peaking capacity resource rather than the “default capacity resource, reciprocating engines.” Otherwise, variable generation is essentially charged twice for flexibility—once as an incremental add-on for peaking capacity (charged as flexible capacity) and again within the integration cost. In addition, when constructing portfolios to achieve an equivalent level of peak capability, not all peakers need to be the most flexible technology. The flexibility analysis should indicate how much additional flexible capacity is required for load and particular penetrations of variable resources; PGE should consider modeling the rest of the peakers in the portfolio as lower cost, simple peaking resources. This is likely to make those portfolios more competitive relative to CCCT-dominated portfolios.

C. Seize opportunities to capture cost-competitive, clean, flexible capacity.

PGE notes that, between now and its next IRP, it may have opportunities to renew Mid-C contracts that deliver clean and flexible capacity. If PGE believes it can ultimately demonstrate that those renewals are cost-competitive relative to low-carbon, flexible capacity bids into its recent RFP, then we support the Commission giving PGE the flexibility to capture those renewals without a full RFP. These contracts are an important complement to a diverse, clean generating portfolio.

D. Expand discussion of risk modeling.

PGE’s discussion of risk performance is straightforward and accessible, but should be expanded. The primary risk analysis appears to plot the cost of each portfolio’s best, worst and average performance across all 32 futures, the best/worst not being the same futures for each portfolio. See Figures 10-2, 10-3, 10-4. When the portfolios are lined up side by side (Figure 10-6), they are compared only on their best and worst aggregate outcomes holding all portfolios equally likely to occur. In its next IRP, PGE should also depict which portfolios do better in which futures. Stakeholders and the Commission may consider all 32 futures worthwhile to test, but may have different views of the probability of any one occurring. It would be helpful to be able to see in which futures particular portfolios were the strongest performers. Even including a version of Figure 10-5 for each portfolio in an Appendix would be helpful, so that if the Commission and/or stakeholders see some risks as

⁷ Moreover, no generating technology is 100% reliable; the bars should perhaps depict reserves to cover large single-shaft forced outages if they are going to include extra capacity additions for variable technologies.

more probable than others, they can see easily how particular portfolios perform in those futures.

E. Flexibility study sets a good example, but needs more supply options.

PGE's flexibility study is a leading example. By objectively measuring flexibility requirements, PGE recognizes that the addition of greater amounts of variable energy resources is operationally viable under the right conditions. For the next IRP, PGE recognizes in its list of "enabling studies" that flexibility should be a continued focus. Renewable NW recommends that the next flexibility study emphasize the broad range of supply side options, from market opportunities to energy storage. PGE is doing the right thing to make its own system more flexible, but once its system reaches a threshold baseline of flexibility necessary to perform on shorter intervals, emerging market opportunities are likely to be the additional flexibility options most cost-effective for customers.

What PGE's short list of enabling studies does not mention is to further incorporate flexibility characteristics and values into supply modeling. Finding ways for benefits captured in intrahour modeling to be reflected in hourly modeling will enable PGE to better consider the broad benefits of flexible capacity options like energy storage and demand response.

F. Relationship between IRP acknowledgment and approval of key inputs

Recent PURPA rulings have complicated the relationship between IRP and avoided cost rate setting. With PURPA rates now contemplated to be adjusted by capacity values and integration costs determined in IRPs, it is not clear whether the Commission will now review (and approve or disapprove) specific analyses that generate those inputs. In this case, Renewable NW would not support acknowledgment of the 2013 IRP if it meant final approval of the generic wind capacity value selected (5%) based on two years of data at a single wind site (see pages 175-76, with the median capacity factor exceedence in the top 100 hours actually averaging 8.34%) or the solar resource value (not discussed specifically in the IRP, but examined to some degree in UM 1673 and UM 1610). We would appreciate a clear statement from the Commission as to whether and, if so, how these values will be set in the IRP; if they will be considered in detail, we would request an opportunity for more detailed discussion and comment.

4. Conclusion

Renewable NW supports acknowledgment of PGE's IRP (with the caveat in 3.F), and recommends that the Commission use this review process to press PGE toward improvements that can improve the possibilities for a winning portfolio with the lowest possible carbon emissions, the least exposure to increased regulatory and gas prices, and the greatest alignment with PGE customer preferences.⁸

Respectfully submitted this 12th day of June, 2014.



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⁸ 2013 IRP, Appendix H, pages 9, 11.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I served the foregoing COMMENTS OF RENEWABLE NORTHWEST upon the following parties on the service list for LC 56, via electronic mail, on June 12, 2014:

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