

**PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: November 12, 2014**

REGULAR CONSENT EFFECTIVE DATE _____ Upon Commission's Approval

DATE: October 20, 2014

TO: Public Utility Commission

FROM: John Crider *Jc*

THROUGH: Jason Eisdorfer *JE* and Aster Adams *AA*

SUBJECT: PORTLAND GENERAL ELECTRIC: (Docket No. LC 56)
Acknowledgement of 2013 Integrated Resource Plan.

STAFF RECOMMENDATION:

Staff recommends the Commission acknowledge Portland General Electric's (PGE or Company) 2013 Integrated Resource Plan with certain considerations.

DISCUSSION:

Procedural History

PGE filed its 2013 Integrated Resource Plan (IRP) on March 27, 2014. On June 12, 2014, Staff, Oregon Department of Energy (ODOE), Citizen's Utility Board (CUB), Renewable Northwest (RNW), and Small Business Utility Advocates (SBUA) filed initial comments regarding PGE's IRP. The Company filed reply comments on July 3, 2014. Final comments by Staff, Northwest Energy Coalition (NVEC), RNW, CUB and ODOE were filed on July 25, 2014, and the Company's final comments were filed on August 22, 2014.

Prior to filing the IRP, PGE held four public stakeholder meetings and three additional technical workshops. Stakeholders were allowed and encouraged to provide comments to the Company throughout the development process.

General Description of the IRP

The IRP included a detailed study of dynamic capacity capability of the Company's resources¹ as well as an updated wind integration study and an evaluation of energy storage costs from Black & Veatch.

The load-resource balance analysis showed adequate current resources to meet PGE's projected load for the five-year horizon of this IRP. Therefore, the 2013 IRP Action Plan contains no major resource acquisitions. The Action Plan identified four areas of continued resource activity for the Company:

- Retention and renewal of current hydro contracts;
- Continued procurement of Energy Trust of Oregon (ETO) cost-effective energy efficiency (EE) and demand response resources (DR);
- A set of enabling studies on the subjects of load forecasting; emerging EE; assessment of distributed resource capacity; assessment of biomass viability at Boardman; continued assessment of flexible capacity including potential participation in a regional Energy Imbalance Market; and an assessment of long term gas supply options to hedge price volatility; and
- Ongoing assessment and planning of transmission requirements in the wake of the termination of the Cascade Crossing project.

Compliance with Commission IRP Guidelines

All parties agree that PGE has met at least the minimum level of compliance with all of the Commission's IRP guidelines and the required actions contained in Orders acknowledging the Company's previous IRPs.

Staff has several areas that it would like to see examined in greater detail in future IRPs. In general, Staff believes it would be beneficial to the planning process for the Company to include more resources in the portfolio analysis, in order to quantitatively assess the effect of these resources on the cost and performance of a portfolio. These resources include: distributed solar PV; combined heat and power; utility scale solar; biomass; battery storage; and conservation voltage reduction.

Staff notes that PGE considered these technologies in the IRP, as required by guidelines, but did not include these resources extensively in the portfolio analysis. Staff notes also that the Company has stated a general willingness to work with stakeholders in developing portfolios that include these resources during the next IRP process.

¹ This was required by Order No. 12-013.

Staff recommends that the Commission direct PGE to hold workshops with Staff and stakeholders in the next IRP cycle for the purpose of developing one or more portfolios utilizing distributed resources, demand-side resources, and storage for portfolio analysis in the next IRP.

Action Item Discussion

PGE's 2013 IRP Action Plan does not include any major resource acquisitions. The objective of this plan is to retain existing resources and contracts, if they continue to prove economical, and to pursue a number of studies in preparation of the next IRP. Each of the proposed action items are discussed in the following section.

PGE's 2013 IRP Action Plan:

1. Supply Side Actions -- Retain legacy resources if economic
 - a. No major resources acquisition
 - b. Hydro contract renewals
 - c. Additional 23 MW of dispatchable standby generation
2. Demand Side Actions
 - a. 124 MWA of cost effective energy efficiency (EE) through ETO
 - b. 25 MW of additional Demand Response through EnerNOC
3. Enabling Studies
 - a. Third party review of load forecast methodology
 - b. Assessment of emerging EE in conjunction with ETO
 - c. Assessment of distributed generation potential
 - d. Continue feasibility studies of biomass at Boardman
 - e. Continued study of flexibility options
 - f. Evaluation of analytical tools to optimize flexible resources
 - g. Assessment of the viability of longer term gas supply options
4. Ongoing analysis and planning of transmission requirements.

Supply Side Actions

General

In the current IRP Action Plan horizon PGE's projected annual average energy supply-demand position is characterized by the Company as "generally balanced to slightly surplus" until 2019.² Growing deficits emerge beyond this time due to contract expirations coupled with expected load growth. Based on this projection, PGE

² PGE 2013 IRP Report, p.3

concludes that no major new resource actions are warranted in this planning horizon although the Company expects new resources will be needed in the next IRP.

Parties' Positions

Although no major resource acquisitions are identified in this IRP, both NWECA and RNW note that if nothing changed to alter the current preferred portfolio, in its next IRP PGE would be asking the Commission to acknowledge 790 MW of new baseload gas plants. RNW notes that with these additions, PGE's reliance on natural gas-fueled resources would increase such that 60 percent of its energy would be derived from natural gas assets. According to RNW, this increase in dependence on gas intensifies customer exposure to risk since natural gas has a history of price volatility.

In addition, RNW notes that the preferred portfolio has a higher carbon emission profile than other more renewable-based portfolios which are comparable, though higher, in overall portfolio cost.³ RNW urges the Commission to "challenge PGE to deliver results on its positive initiatives and, in its next IRP, present winning portfolios that 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."⁴ Finally, RNW wants PGE to be very clear that "...the IRP preferred portfolio/action plan and resulting RFPs are performance oriented and technology neutral" and should not be resource-specific.⁵

CUB is generally accepting of PGE's preferred portfolio with two exceptions. CUB states a strong opposition to PGE's assumed level of achievable energy efficiency, stating regulatory barriers that at present would limit the ability of the Company to realize the EE levels assumed. CUB is of the opinion that the Company needs to both work towards removing the regulatory barrier, and to analyze the effect on the preferred portfolio choice if in fact the level of achievable EE is less than that assumed.

CUB would also like to see more analyses involving operating restrictions and shutdown scenarios for the Colstrip coal plant, even though it recognizes PGE is a minority owner in the plant.

Staff Position

Staff agrees with the Company's conclusion that its load-resource balance analysis indicates no major new resource acquisition in the Action Plan timeframe. Staff also concurs that the Company has met the Commission's guidelines and directives

³ Renewable Northwest opening comments, p.1

⁴ *Ibid*, p2

⁵ *Ibid*

regarding this IRP, although Staff is of the opinion that this compliance is minimal in some areas. Staff shares RNW's concern that the Company's preferred portfolio shows a great reliance on natural-gas fired resources in the future; therefore, Staff is in agreement with RNW and expects that in the next IRP the Company will closely investigate renewable-based portfolios that are comparable to the gas-based preferred portfolio in risk and cost. A portfolio that creates more fuel diversity and hedging through the inclusion of renewable resources should be thoroughly considered as a viable planning option. Staff is of the opinion that the additional requirements of the U.S. EPA's proposed rule under Section 111(d) of the Clean Air Act to regulate CO₂ from existing electricity generating units make this exercise even more vital to PGE's future planning and resource need.

Staff is also in agreement with CUB regarding Colstrip and expects that PGE will thoroughly examine and analyze various shutdown scenarios for the coal plant as part of its next IRP process.

Hydro contract renewals – Action Item 1(b)

PGE has several contracts for hydro resources that will be expiring in the IRP Action Plan time frame of five years. PGE assumes that each of these contracts will be examined for economic viability near the time of expiration and those that prove to remain economic will be pursued for renewal. The contracts expiring in the near term are:

- Wells – PGE has a contract with Douglas County PUD for 147MW of capacity which expires at the end of August, 2018.
- NextEra – PGE receives 3 percent output of two plants for a total of 58MW, or 30MWh, and the contract expires in 2015.
- Portland Hydro – PGE receives 10 MWh of energy and 36 MW of capacity through August 2017.

Parties' Positions

RNW specifically supports the Commission giving PGE the flexibility to capture those renewals without a full RFP. RNW recognizes that these contracts are an important complement to a diverse, clean generating portfolio. No other parties stated an explicit position on this topic.

Staff Position and Recommendation

Staff supports the Company's proposal to renew all cost-effective hydro contracts and generally to pursue renewable-based portfolios that perform comparably to gas-based portfolios on a cost and risk basis.

Staff recommends acknowledgement for the Company's pursuit of cost-effective hydro contract renewals as stated in Action Item 1(b)

Dispatchable Standby Generation – Action Item 1(c)

The only additional supply-side resource acquisition planned by PGE is an additional 23MW of dispatchable standby generation (DSG). DSG is provided by diesel-fueled backup generators owned by commercial and industrial customers, and located at the customer's site. Under the DSG program customers allow PGE to dispatch these generators in a reserve capacity which enhances the system's overall reliability. With the additional capacity, PGE's total reserve capacity will be about 116MW.

Parties' Positions

NWEC states its general support of DSG as part of a comprehensive portfolio that has a focus on maximum achievable EE, demand response, and DSG. No other parties offered an explicit reference to DSG although both RNW and CUB are generally supportive of portfolios emphasizing cost-effective distributed resources.

PGE's Position

PGE believes that Staff mischaracterizes PGE's DSG program as "merely a program for providing non-spinning reserve and not a true distributed generation program." The Company claims that DSG provides an economic source of supplemental reserve and in addition provides dispatchable energy as needed and acts as a cost hedge during times of market scarcity.

Staff Position and Recommendation

Staff recognizes the value of the Company's award-winning⁶ DSG program and strongly encourages PGE to maintain this program as a permanent part of its resource strategy. Staff reiterates its position as stated in comments that this generation source has clear economic dispatch limitations since diesel-fueled power is very expensive compared to all other resources. However, Staff does recognize the value of DSG for its role in enhanced reliability.

⁶ The Peak Load Management Alliance 2006 Innovative Program Design Award

Staff recommends acknowledgement of PGE's Action Item 1(c) to obtain an additional 23 MW of DSG capacity by 2017.

Demand Side Actions

Cost Effective Energy Efficiency – Action Item 2(a)

Target levels of EE were developed by the Company in conjunction with the ETO through the year 2032. For the Action Item horizon (through 2017) it was determined that about 124MWa could be acquired based on current cost effectiveness tests. As an alternative, and for comparison purposes, the Company also considered a scenario under which all achievable EE was pursued without regard to the cost-effective constraint. PGE found that in the near term, the portfolio including all achievable EE did not differ materially from the base case of 124MWa in terms of efficiency savings, but was far more expensive. The Action Plan thus reflects the commitment only to cost-effective EE.

Parties' Positions

CUB

In general terms, CUB notes that because demand side energy efficiency is specifically listed by the EPA as one of the factors involved when determining the “best system of emission reduction” (BSER) in its proposed Section 111(d) rule, CUB recommends that EE be given priority consideration in future IRPs.

Specifically, for this IRP's portfolio results, CUB is concerned that there is a “disconnect between the IRP EE forecast and what is achievable” because of the regulatory cap on industrial efficiency. CUB notes that under the current ETO funding model the full level of cost-effective EE could not be achieved in the industrial sector. CUB concludes from this observation that “the Commission should not acknowledge the EE portion of the Action Plan until PGE develops a plan to meet its IRP targets.”⁷

NWEC

NWEC echoes the concerns expressed by CUB regarding the “current limitation on ETO's acquisition of cost effective conservation from large customers”. NWEC continues by commenting that “...(t)his is a very concerning issue; failing to acquire the least cost resource is not in the best interests of customers.”⁸

⁷ Citizens Utility Board, opening comments, LC 56, p.5

⁸ Northwest Energy Coalition, final comments, LC 56, p.2

SBUA

SBUA disagrees with the use of the Total Resource Cost (TRC) test since it can severely limit new energy efficiency acquisition. SBUA finds TRC contradictory to least-cost, least-risk planning.

PGE's Position

With respect to the funding cap on industrial customers, the Company recognizes that CUB is correct in stating that the ETO's forecast presumes that the funding limitation on industrial EE measures is removed or similarly resolved. The Company notes that should the funding limitation not be resolved, the ETO has estimated that 1.5-2 MWA of incremental industrial EE measures will be missed annually and that the ETO is likely to reach its funding limit for PGE's industrial customers this year.⁹

Despite the concern raised by CUB with regard to EE funding, PGE recommends that the proposed IRP Action Plan for EE be acknowledged. According to the Company, it is not practical for the IRP to predict the outcome of future policy debates and legislative or regulatory actions. Instead the PGE claims that the IRP has identified an Action Plan with cost effective energy efficiency acquisitions in accordance with least cost least risk IRP principles.

PGE agrees with CUB that EE measures will likely be an important part of State compliance plans under the EPA's 111(d) requirements. PGE notes that the EE acquisition forecast assumed by ETO is aggressive by national standards. The EE targets established for Oregon by the EPA may be smaller than those assumed by the ETO. Nonetheless, PGE will continue to focus on planning for and acquiring all cost effective EE with the ETO.¹⁰

Staff Position and Recommendation

Staff has reviewed the Company's EE projections and assumptions and finds them consistent with the resource potential study performed by ETO. Staff also supports the way PGE calculated the risk reduction benefit of EE in this IRP.

In its comments, NWECC recommends PGE continue to work with ETO to identify what future EE technology will become available and to develop new planning assumption and tools that will help bring future resource projections into current resource planning. Staff supports these recommendations by NWECC.

CUB and NWECC voiced concern that the EE target should not be acknowledged due to the potential limitation on large industrial efficiency contained in SB 838. Staff notes that

⁹ Portland General Electric reply comments, LC 56, p.20

¹⁰ Portland General Electric, reply comments, LC 56, pp.19-20

on September 24, 2014, in PGE's 2014 general rate case (Docket No. UE 283), a stipulation was filed by all parties recommending that a new docket be opened to consider questions, implications, and recommendations related to the SB 838 limitation. Given that this investigation is now moving forward, Staff is of the opinion that the parties' concern, although valid, is being addressed and should not prevent Commission acknowledgement of this Action Item.

Staff does recognize that in the absence of some regulatory or legislative action PGE may be limited in the amount of cost-effective EE it can actually acquire. Without such action, ETO estimates that as much as 2 MWa per year of EE will be unachievable due to SB 838 constraints. In order to recognize this reality, Staff suggests a revision of the EE target stated in this Action Item to reflect the potential impact of the SB 838 limitations. If PGE's target for EE is reduced by the ETO worst estimate of 2 MWa per year, the total achievable EE acquisition would be 114MWa over the five-year Action Plan time frame.

Finally, regarding SBUA's concern about use of the TRC test, Staff points out that the Commission has adopted the use of TRC with specific exceptions as defined in Docket No. UM 551, Order No. 94-590, and this adopted approach will be used until the policy is modified. Staff is of the opinion that this IRP docket is not the proper forum for the discussion regarding Commission policy regarding the cost effectiveness test for EE.

Staff recommends that the Commission acknowledge Action Item 2(a), which indicates PGE will work with ETO to continue procurement of cost-effective EE, with a revised EE acquisition goal of 114 MWa over the Action Plan time frame, and with the condition that this target increase to the full 124 MWa in the event that the statutory cost limitations are relieved through legislative or regulatory action.

Conservation Voltage Reduction

PGE's Position

PGE notes that the Company has "adhered to the original work plan and timeline indicated in the 2012 IRP Update, and does not think this process could have been accelerated or expanded".¹¹ PGE claims it is unable to consider CVR as a resource for candidate portfolios until the analysis from the pilot study is concluded.

¹¹ Portland General Electric, reply comments, LC 56, pp.14-15

Staff Position and Recommendation

Staff recognizes the research efforts undertaken by the Company to better understand CVR and agrees with the Company that they have adhered to the 2012 workplan. However, Staff also points out that the Commission's formal directives to incorporate CVR into the Company's planning began over five years ago. This issue was addressed in Order No. 10-457, the acknowledgement of PGE's 2009 IRP, when the Commission directed PGE to consider CVR "for inclusion in its best cost/risk portfolio". As of this current IRP, Staff notes that the Company has not included CVR in portfolio analysis as directed by the Commission.

Staff understands that the Company will conclude its CVR pilot study analysis and present a report to the Commission in the first quarter of 2015.¹² Staff expects that the results of the CVR analysis will allow the Company to move forward in including CVR in its portfolio analysis in the next IRP.

PGE does not include a specific Action Item regarding CVR.

Staff recommends that the Commission direct the Company to include a portfolio-level analysis of CVR in its next IRP.

Demand Response – Action Item 2(b)

PGE contracted with EnerNoc in 2013 to implement an automated demand response program in two phases. The first phase runs through June 2015 and is expected to provide up to 15MW of demand response (DR) at that time. The Company proposes to evaluate the program at that time and if the evaluation is favorable, then PGE will continue the program as an ongoing capacity resource. Assuming that the trial phase is successful and the program continues past 2015, it is expected that EnerNoc will deliver 25MW of DR by the end of the Action Plan window in 2017.

Parties' Positions

No parties specifically addressed this issue in comments. However, CUB, NWECC, and RNW have voiced general support for portfolios that include DR as part of a comprehensive resource plan.

PGE's Position

The Company primarily points to the results of a DR assessment by the Brattle Group (Brattle) and supports the report's conclusions regarding DR potential. The Company

¹² See Order No. 14-333 at 1 in Docket UM 1657.

also discusses the completed milestones from the 2011 IRP, including completion of the water heater direct load control pilot and the critical peak pricing pilot.

According to the Company's comments, PGE and Brattle looked at all potential participation scenarios for all known types of DR. Drawing on best practices from the other utilities which Brattle tracks, PGE determined potential participation rates. PGE then developed a cost effectiveness assessment for each of those models.

In its final comments, PGE commits to review of the assumptions used in the DR potential study, an evaluation of EnerNOC's performance, and an assessment of the potential for system-wide deployment of CVR.

Staff Position and Recommendation

Staff disagrees with assumptions regarding the anticipated customer participation levels embedded in the Brattle Group report. Staff is of the opinion that the enrollment levels could be substantially improved with additional outreach to customers. The assumption that participation levels for future DR programs will not exceed the actual levels obtained in PGE's CPP and TOU pilots seems overly pessimistic to Staff, and does not reflect the effect that a well-designed marketing and awareness-raising effort could have to increase participation. The report notes that PGE's particular customer base has both a high level of environmental consciousness and a proven history of adopting EE measures.¹³ These two factors indicate that DR participation could well be substantially higher than the levels assumed in this report.

Staff also questions the accuracy of the derate factors used in the economic feasibility screening for the individual DR measures. According to the report the derate factors provided by PGE for use in the cost-effectiveness assessment are "rough estimates and were developed based largely on staff intuition".¹⁴ Staff would like to see more rigorous development of screening derate factors to increase confidence in the results.

Staff understands that some DR measures, such as critical peak pricing and perhaps direct load control, may not be feasible at this time due to computer and equipment restrictions on the part of PGE. However, Staff fully expects the Company to pursue these measures when computer and equipment upgrades provide the proper functionality.

¹³ The Brattle Group, "An Assessment of Portland General Electric's Demand Response Potential", November 2012, p. 6

¹⁴ The Brattle Group, "An Assessment of Portland General Electric's Demand Response Potential", November 2012, p. 39

Staff is interested in keeping a close watch on the progress of the EnerNOC contract. Staff is concerned that the contract may allow for changes in the baseline used for calculating the amount of enrolled capacity without requiring validation of the baseline change. This could result in PGE paying for DR resources that are not actually deliverable. Due to these concerns, Staff recommends that the Commission require PGE to notify Staff any time a change to the baseline or baseline methodology is proposed by either PGE or EnerNOC. Staff is committed to working with PGE to fully assess EnerNOC's performance in delivering its demand response capacity.

Staff recommends acknowledgement of PGE's Action Item 2(b) to obtain an additional 25 MW of DR resources by 2017. Staff further recommends that PGE be directed to notify Staff of any proposed changes to the EnerNOC contract baseline.

Enabling Studies

Parties' Positions

ODOE, CUB, RNW, and NWECA generally support the enabling studies listed in PGE's proposed action plan and recommend that the Commission acknowledge those studies as proposed.

The specific studies are discussed below.

Load Forecast Methodology Review – Action Item 3(a)

The Company proposes to engage a third-party review of its load forecast methodology and basic assumptions regarding the relationship between demand growth and economic and population trends. PGE points to a nationwide trend of load growth decrease in the last decade as a driver to re-examine their load forecast assumptions. The Company offers no specifics about the cost or scope of this study.

Parties' Positions

No specific comments were made regarding this study.

PGE's Position

PGE states that its long-term load forecast methodology is based on historic long-run average growth rates over periods commensurate with the IRP planning horizon. PGE continues to believe that using a longer historical reference period as the basis for longer-term load forecasts is most appropriate.

According to PGE, shifting the historic period to a more recent, shorter timeframe, as Staff has suggested, or basing forecast assumptions on data from the most recent years would create serious flaws in a long-term load forecast. As an example, extrapolations from the most recent decade would forecast an extension or repeat of the atypical events such as the 2008 financial crisis and the "Great Recession." It would forecast that the United States and Oregon economies will remain mired in an economic slump for the next 10-30 years.

PGE also disagrees with Staff's contention that the large industrial customer forecast is overly optimistic, particularly in the out years. Beyond the short-term forecast horizon, PGE notes that industrial loads are forecasted based on average historic rates in the long-term forecast - these historic growth rates reflect periods of growth, but also reflect customer curtailments, closures, and other declines as experienced across all industries.¹⁵

The Company notes that even though the economic recovery from the 2008 "Great Recession" has been slower than the recovery from past recessions, the Pacific Northwest is still expected to outpace U.S. growth trends. However, due to the unusual economic factors of recent history, PGE considers it prudent to further examine fundamental electricity demand drivers and forecasting methods to ensure they are applying industry best practices. Accordingly, PGE has proposed, in the 2013 IRP Action Plan, conducting a third-party review of its load forecast methodology to identify potential improvements and ensure that the Company is employing industry best practices.

Staff Position and Recommendation

Staff is of the opinion that the load forecast methodology needs to be reassessed. However, Staff is not convinced that a third-party review of the methodology would provide added value over a thorough analysis by Staff and stakeholders, who have been working with PGE on this issue and can provide the Company with the necessary input to improve its methodology.

Staff does not support acknowledgement of the Company's proposed third-party review as stated in Action Item 3(a).

Emerging EE – Action Item 3(b)

The Company proposes continued support of the ETO in its analysis and examination of cost-effective EE, especially those measures which are just emerging and may become

¹⁵ Portland General Electric, reply comments, pp. 24-25

viable in the Action Plan window. PGE offers no specific actions and does not identify the specific technologies that may become cost-effective in the time frame.

Parties' Positions

NWEC "recommend(s) that PGE continue to collaborate with the Energy Trust of Oregon (ETO) to identify what future energy efficiency technologies will become available and what future measures may become least cost". NWEC also notes that in the next IRP it will be important to consider how implementation of EPA Section 111(d) rules will impact EE targets.¹⁶

Staff Position and Recommendation

Staff notes that in all public State energy policy statements, including the Governor's 10-year Energy Plan and state statutes, the acquisition of all cost-effective EE is a prominent and a high priority goal. Staff concludes that all reasonable efforts the Company can make towards meeting the goal of achieving all cost-effective EE should be supported as in alignment with State energy policy and in meeting the Commission's goal of least-cost, least-risk planning. However, in this Action Item the Company has not proposed any specific acquisition goals or activities beyond those normally expected of a prudent utility and therefore Staff concludes that this Action Item does not warrant Commission acknowledgement.

Staff recommends the Commission take no action regarding PGE's Action Item 3(b) to assess emerging EE opportunities with the ETO.

Distributed Generation Potential Study – Action Item 3(c)

PGE proposes to pursue studies and research initiatives with the goal of assessing potential business models and policies to expand the deployment of cost-effective distributed generation, primarily solar photovoltaics.

Parties' Positions

No parties commented specifically about this study, but CUB, RNW, and NWEC express general support for portfolios that include distributed generation, especially distributed renewable generation.

Staff Position and Recommendation

Staff supports this assessment study and notes that fossil technologies may also be considered cost effective DG, in addition to the solar resources targeted by the Company.

¹⁶ Northwest Energy Coalition, final comments, LC 56, p.2

Staff recommends acknowledgment of the proposed DG study stated in Action Item 3(c) with a directive from the Commission that PGE include all potential DG resources, not only distributed solar.

Boardman Biomass - Action Item 3(d)

PGE has been actively pursuing the use of torrefied biomass as a fuel at the Boardman plant. The equipment needed to produce the biomass fuel is currently being installed and tested onsite. It is expected that the Company will be ready for tests involving co-firing of coal and biomass sometime in 2015 followed shortly after with a 100 percent test burn. The results of this testing in the coming months will provide crucial data for evaluating the viability of long-term biomass energy production at the plant. Should the testing confirm technical feasibility, the next steps will involve identifying cost-effective fuel sources and assessing the overall economic and risk factors for continued operation.

Parties' Positions

No specific comments were submitted regarding the Boardman testing.

Staff Position and Recommendation

Staff is of the opinion that a great deal of valuable data and information will be gained from the biomass testing at Boardman that will benefit future resource planning. However, PGE is proposing no new action regarding the firing of biomass at Boardman and therefore Staff recommends no action be taken on this Action Item.

Staff recommends that the Commission take no action regarding PGE's Action Item 3(d), continuing its efforts to assess the technical and economic feasibility of re-powering Boardman as a biomass facility.

Flexible Capacity - Action Items 3(e) and 3(f)

The Company plans to build on the flexible capacity analysis contained in the IRP to better understand its flexible capacity needs and develop alternatives to address those needs, including market-based solutions. PGE recognizes that an important part of this analysis involves better modeling of sub-hourly energy and capacity needs. The Company explicitly identifies being involved in discussions for development of an Energy Imbalance Market (EIM) as part of this Action Item.

Parties' Positions

RNW recommends that the next flexibility study emphasize the broad range of supply side options, from market opportunities to energy storage. RNW comments that it is important that PGE find ways to capture intra-hour benefits that can be reflected in its hourly modeling. This will enable PGE to better consider flexible capacity options like energy storage and demand response.

ODOE supports Staff's comments that energy storage technologies should be included in some resource portfolios evaluated in the IRP, "especially in light of the poor decremental capacity capability brought out in the Company's flexibility study."¹⁷

PGE's Position

Energy storage resources are considered in the IRP, although not in portfolio analysis. At the time that the candidate portfolios for the 2013 IRP were constructed, PGE believed that it was premature to include battery storage as an energy or capacity resource for portfolio analysis because of unknowns and uncertainties regarding costs and key performance factors, including scalability, cycling efficiency, and resource life. This decision was also based on their assessment that the cost of energy storage resources was not competitive with other alternatives that could provide similar capacity and flexibility benefits. Finally, the Company is of the opinion that until certain modeling improvements are made to their portfolio analysis, they don't have the capability to thoroughly evaluate storage resources.

Notwithstanding the modeling challenges, PGE agrees that energy storage technologies should be evaluated in more depth in the next IRP and proposes to present a review of California's energy storage procurement activities as part of a future IRP stakeholder meeting. PGE will also provide analysis evaluating the costs and benefits of potential energy storage resources within PGE's system.¹⁸

PGE also proposes to conduct an evaluation of new analytical tools which will facilitate the optimization of flexible resources. Primarily, the tools in question will allow analysis at the sub-hourly level, a function that PGE's current system tools do not provide.

Staff Position and Recommendation

Staff wants to see more intra-hour modeling in future IRPs and updates. This is a key to many aspects of near future planning. The ability to perform accurate intra-hour modeling will affect not only long term planning, but daily operations and annual power costs. The ability to model the power grid in a sub-hourly fashion could also inform and

¹⁷ Staff's opening comments, LC 56, p.6

¹⁸ Portland General Electric reply comments, LC 56, p.15

help to evaluate demand response initiatives, such as price-sensitive rate design and EIM costs and benefits.

Staff would also like to see a commitment on PGE's part to thoroughly evaluate the costs and benefits of joining the PacifiCorp-CAISO EIM as a way of augmenting their system flexible capacity, and to compare the option of joining the CAISO EIM with other EIM options they might be considering.

Staff strongly supports PGE's investigation and evaluation of software analytical tools that will allow a better understanding of the sub-hourly effects of flexible resources and capacity.

Staff recommends that the Commission acknowledge PGE's Action Item 3(e) to continue to study its flexible capacity ability and options, with a further directive from the Commission that PGE provide a cost-benefit analysis of joining the PacifiCorp-CAISO EIM.

Staff recommends that the Commission acknowledge PGE's Action Item 3(f) to evaluate new analytical tools for intra-hour modeling and optimizing their flexible resource mix.

Long Term Gas Supply

PGE proposes to investigate options and strategies for long-term procurement of natural gas.

Parties' Positions

No Parties have stated a position on this subject although all parties generally support the enabling studies as a whole.

Staff Position and Recommendation

Staff sees the value in potential risk reduction that may be gained through long-term natural gas procurement strategies. However, PGE is not proposing any specific action or deliverable and therefore Staff sees no reason for Commission action on this item.

Staff recommends that the Commission take no action on PGE's Action Item 3(g) to investigate options and strategies for long-term natural gas procurement.

Transmission – Action Item 4

PGE includes Action Item 4 in its Action Plan regarding transmission. Since the Company is not adding any major generation resource in this Plan, it does not anticipate any new major transmission requirements. The Company notes that it will continue to meet its transmission requirements over the planning horizon through the use of transmission services, as needed, obtained through Bonneville Power Authority (BPA).

Staff Position and Recommendation

Since the Company makes no specific proposal regarding new transmission resource acquisition, Staff is of the opinion that this Action Item requires no action on the part of the Commission regarding acknowledgment.

Staff recommends that the Commission take no action on PGE's Action Item 4 related to transmission services in the Action Item time frame.

Other Issues

Non-physical RPS Compliance

The 2013 IRP does not include an updated analysis on the potential for meeting RPS requirements with non-physical compliance methods. In Chapter 7 of the IRP, the Company discusses the need to acquire additional renewable resources to comply with the RPS, but offers no discussion of other alternatives to physical compliance.

As a response to Staff's opening comments which pointed out this deficiency, PGE responded with a re-distribution of its 2011 IRP update which discussed REC strategy at length.

Parties' Positions

No other parties commented on this issue.

PGE's Position

PGE notes that Chapter 4 of PGE's 2011 IRP Update, "Renewable Portfolio Standard", was focused in its entirety on addressing PGE's potential RECs strategy and RPS compliance alternatives. No deficiencies were identified with that chapter at the time it was filed and the Company states that nothing has materially changed since that time that would alter their analysis, observations, and conclusions.

Staff Position and Recommendation

Staff does not agree with the Company that the decision to comply with the RPS through physical compliance is a one-time decision. Staff appreciates the analysis and conclusions regarding RPS compliance plans that were developed for the 2011 IRP update. However, Staff expects the Company to revisit the conclusions regarding physical vs. non-physical compliance in every IRP. Changing conditions may lead to different conclusions in the future.

Staff reminds the Company that Order No. 10-457 states that:

In its next IRP Update and in the next planning cycle, PGE **must** evaluate:

(1) The use of unbundled renewable energy credits (RECs) in its strategy to meet RPS Requirements for the entire planning period; and

(2) Alternatives to physical compliance with renewable portfolio standard (RPS) requirements in a given year, including meeting the RPS requirements in the most cost-effective/ least risk manner that takes into consideration technological innovations, expiration or extension of production tax credits, and different levels of integration costs for renewable resources.¹⁹ (*emphasis added*)

Staff recommends that the Commission adopt the requirement that alternatives to physical compliance to Oregon's RPS be re-evaluated in every IRP henceforth.

CO2 Price Risk Analysis - compliance with IRP Guideline 8a

In opening comments ODOE raised concern that the upper range of reasonable CO2 estimates may not have been explored. PGE's range of CO2 regulatory prices ranged up to the highest compliance case as developed by Synapse Energy Economics, Inc. of \$124/ton in 2014 dollars. ODOE notes that this price is less than half of the \$295/ton proposed by Organization for Economic Cooperation and Development (OECD).

However, in its Final Comments, ODOE recognizes that PGE correctly explained in comments that the CO2 trigger point scenario in its 2013 IRP resulted in a 2050 CO2 price of approximately \$565 per ton. Since this value is significantly higher than the \$295 per ton price suggested by ODOE originally, ODOE withdrew its concern for this issue.

¹⁹ Order 10-457 (Docket LC 48), Section G(2), page 24.

Renewable Contribution to Capacity

The determination of a renewable generator's contribution to system capacity has taken on new importance in the last several years. Originally, this value was primarily important as a planning consideration in determining the Company's load-resource balance, and the potential need for new generation resources. However, in recent years this value has also been referenced to determine both the incremental cost of compliance with the state RPS, and as a factor in setting capacity rate payments for Qualified Facilities (QFs) under PURPA contracts. The growing importance in how this quantity is determined has led to increased debate over its calculation methodology.

Parties' Positions

ODOE states its opinion that it "appreciates PGE's work to model the capacity contribution of solar photovoltaic resources using the Effective Load Carrying Capability methodology in the development of this 2013 IRP".²⁰

ODOE also expresses its desire for the Commission to "open a docket to establish the appropriate methodology for calculating capacity contribution of variable energy resources". ODOE notes that this value is now used

"not only to evaluate resource portfolio options in the IRP, but also to calculate avoided cost rates for wind and solar qualifying facilities (see Docket No. UM 1610) and to determine the incremental cost of utility compliance with Oregon's Renewable Portfolio Standard (see Docket No. UM 1616)."²¹

ODOE notes further that

"...(d)ecisions in both of those dockets pointed to the IRP process as the forum in which the methodology for determining the capacity contribution should be considered".²²

RNW would not support acknowledgment of the 2013 IRP if it meant final approval of the generic wind capacity value selected (5 percent). This value is based on two years of data at a single wind site which RNW finds insufficient for determining this value. RNW asks for a clear directive from the Commission as to whether these values are to be set in the IRP and, if so, what methodology will be used to derive these values. RNW

²⁰ ODOE opening comments, Docket LC 56, pp3-4.

²¹ ODOE final comments, Docket LC 56, p2.

²² *Ibid*

expresses support for Staff's suggestion for a more comprehensive wind capacity value analysis.²³

SBUA offers a similar complaint against the use of limited data to determine wind capacity at peak. SBUA suggests that PGE consider a broader geographic scope in its determination of this value.

PGE's Position

PGE believes that the methods used in the 2013 IRP for determining capacity contribution for Variable Energy Resources are reasonable and appropriate. PGE points out that they use two years of the hourly Biglow Canyon Project actuals because Biglow Canyon is the only operating wind plant that it owns and 2011 was the first full year of full operation.

PGE may become a summer-peaking utility early next decade and their system will become more constrained in the summer prior to that point. Thus, future QF generators may warrant more than the 5 percent contribution to peak than assigned it in this IRP, but PGE believes this assumption needs more study and analysis. PGE offers a possibility to start at the 5 percent level and transition to a higher percentage over a ten year period.²⁴

Staff Position and Recommendation

Staff understands the importance that the "contribution to peak capacity" value has to all parties. Staff believes that since this value is now being referenced in setting rates and estimating potential costs to ratepayers that a common, standard methodology needs to be vetted and adopted for use by all three utilities.

Although past dockets have usually relied on the IRP process to set the value for peak contribution, this method has resulted in methodological approaches that are different from utility to utility, and has also led to different understandings about the very definition of "contribution to peak". Parties have expressed frustration at attempts to come to a resolution on this issue within the IRP process, partly due to the fact that the process is not a contested case proceeding and thus does not lend itself to testimony and Commission resolution.

Staff recommends that the Commission open an investigation into determining a renewable generator's capacity contribution to peak, the outcome of which is expected to be a calculation method that can be adopted by all utilities for the purpose of QF rate setting and RPS incremental cost determinations.

²³ Staff opening comments, Docket LC 56, pp4-5

²⁴ PGE reply comments, LC 56, p.28.

In the interim, Staff recommends that the Commission continue to use each Company's determination of capacity contribution at peak as stated in their most current acknowledged IRP.

Carbon Reduction Considerations

Parties' Positions

RNW notes that at least two of the tested portfolios result in much better carbon performance at only a slightly higher cost than the preferred portfolio. RNW opines that "... (b) y placing greater probability on futures in which carbon and gas are more costly ... , PGE and the Commission may well see portfolios with lower emissions as least cost, least risk."

Staff is not recommending any Commission action on this issue but will consider RNW's observation during the analysis of PGE's next IRP.

Natural Gas Price Forecast

Staff notes that in PGE's analysis, the front three years of PGE's natural gas price forecast does not differ across the high, base, and low gas price scenarios. Staff remains concerned that the result of this assumption could be a bias toward a natural gas resource choice brought about by underestimating the cost risk of gas-dependent portfolios. While Staff agrees with PGE that this concern is inconsequential in this particular IRP, Staff is more concerned about the impact it may have in future IRPs where the Company is seeking acknowledgement of a new energy resource (as is anticipated in PGE's 2015 IRP).

Staff is not recommending any Commission action on this issue at the current time, but will re-examine PGE's natural gas forecast assumptions in the next IRP.

General Comments on PGE's Analysis Process

Parties' Positions

RNW

RNW is concerned that costs and performance specifications can change quickly in the renewable energy field, and that the relatively slow process of evaluating the IRP can result in stale data. To alleviate this issue, RNW recommends PGE engage a

“consultant that specializes in pricing those resources”.²⁵ RNW would also recommend that PGE conduct cost sensitivity analyses that determine a trigger point on renewable costs that would result in a change of the preferred portfolio.

RNW is of the opinion that PGE should test at least two specific resources that were not modeled in the 2013 IRP. The first is Montana wind utilizing either current or upgraded existing transmission. The second is energy storage technology, which was considered but not modeled for the 2013 IRP, despite its strong performance in PGE’s flexible capacity RFP.

RNW believes that resource cost and portfolio construction double-charges for flexibility –first, a cost is incurred by pairing capacity additions to each individual renewable resource, instead of on a portfolio basis, and this is coupled with the addition of a system integration cost in addition to the incremental reserve capacity cost.

RNW states that for peaking capacity and flexibility analyses, demand response and storage “should be considered on par with gas plants for meeting those needs if they compete favorably in an RFP.” Also, the benefits of DR and storage should be better acknowledged throughout the entire planning and procurement cycle.

Finally, RNW states the desire that in its next IRP, PGE depict which portfolios do better in which futures. RNW points out that although stakeholders and the Commission may consider all 32 futures worthwhile to test, they may also have different views of the relative likelihood of any particular one occurring. RNW would like to see all of the outcomes in order to make their own judgment regarding likelihood of particular outcomes.

ODOE supports RNW’s recommendation that PGE conduct cost sensitivities or a trigger point analysis that would indicate how lower renewable resource costs would change the preferred portfolio.²⁶

PGE’s Position

PGE recognizes the difficulty in keeping pace with price and performance changes of renewable resources. The Company states that it welcomes suggestions from stakeholders about how to better forecast these costs across the planning horizon.²⁷

The Company recognizes that storage capability and pricing is also changing rapidly. PGE agrees in their reply comments to include additional resources such as batteries in

²⁵ Renewable Northwest opening comments, LC 56, p.2

²⁶ Oregon Department of Energy final comments, LC 56, p.3

²⁷ Portland General Electric reply comments, p.5

future IRP portfolio analyses. At the same time, PGE is willing to consider recommendations for additional sources of resource cost and performance information for future IRPs. However, in PGE's experience such professional research typically costs several thousands of dollars and ultimately may not provide additional insights beyond those represented in the Black & Veatch work.²⁸

PGE notes that in the IRP it modeled Montana wind under the assumption of additional required transmission capacity at incremental rates. The Company stated its willingness to consider other transmission assumptions for Montana wind resources, if such information and cost data is reasonably available and reliable.²⁹

PGE notes that RNW identifies two portfolios ("Diversified Balanced Wind/CCCT" and "Diversified Baseload Gas/Wind") that appear to perform similarly to PGE's preferred portfolio ("Baseload Gas/RPS only"), while also achieving lower levels of CO2 emissions over the analysis time period.³⁰ The Company notes that these portfolios contain the addition of 560 MW of nameplate wind beyond the amount included in the preferred portfolio (which did not add new renewables beyond RPS physical compliance). PGE acknowledges that these two portfolios perform well³¹ and one of them (Diversified Baseload Gas/Wind) is among the top-three performing portfolios. PGE selected the preferred portfolio because it performed best with regard to expected cost, and achieves similarly favorable risk and reliability performance when compared to the other two candidates. However, as it indicated in the IRP, PGE will re-examine all of the top performing portfolios from this IRP in the next resource plan.

Regarding additional trigger-point analysis, PGE agrees with RNW's suggestion that such an analysis be used to determine the price at which renewables become competitive in the preferred portfolio. Such an assessment will reveal how sensitive portfolio results are to variations in resource price assumptions.³²

Finally, the Company agrees that the RFP process should seek to acquire resources that provide the performance characteristics and attributes identified in the IRP preferred portfolio and Action Plan and should not be exclusionary with respect to resource technology or fuel types, as practical.

²⁸ *ibid*

²⁹ Portland General Electric reply comments, p.17

³⁰ *ibid*, p.30

³¹ *ibid*, p.31

³² *ibid*, p.17

Staff Position and Recommendation

Staff agrees with all of RNW's observations regarding PGE's IRP process. Staff is of the opinion that the points brought up by RNW will be excellent areas for discovery and discussion in the next IRP.

Staff sees no need for Commission action on any of these observations at this time.

CLIMATE CHANGE and EPA 111(d) Considerations

Parties' Positions

NWEC

NWEC agrees with Staff's suggestion to develop a new IRP guideline that would require the utility to identify and plan to meet the risks presented by climate change. NWEC states that "identifying and modeling the risks associated with climate change is a prudent addition to the IRP planning process given the impacts that we know are already upon us in the Pacific Northwest."³³

CUB

CUB believes that PGE is in relatively strong position for 111(d) compliance but would like to see further analysis of Colstrip coal plant options, even though it recognizes that PGE is a minority owner of the plant.

RNW

RNW appreciates and supports Staff's suggestion that the next IRP investigate life cycle carbon emissions associated with increased use of gas resources as well as climate change impacts facing PGE's system, as context for making least-cost, least-risk decisions for the long term.

PGE's Position

PGE agrees that it needs to consider potential impacts and possible compliance options in relation to 111(d) reduction targets. PGE is actively participating in the 111(d) rule process and will continue to do so. PGE does not support the adoption of a new guideline regarding environmental impacts of potential carbon regulation. PGE notes that:

"Given the many uncertainties of the current proposed rule, the many parties involved, and the long time line for a resolution, it is not possible to "fully analyze the effect" of [the proposed] EPA Section 111(d) rules on future resource acquisitions."³⁴

³³ NorthWest Energy Coalition, final comments, p.3

³⁴ Portland General Electric reply comments, p. 21

Staff Position and Recommendation

Staff maintains its concern that all of the far-reaching effects of climate change, beyond simply the immediate regulatory effects of EPA's 111(d) rule, are not currently accounted for in the planning cycle. Staff expects PGE to work with Staff and stakeholders in developing options for how the Company will model and analyze all known and expected requirements arising from EPA's 111(d) and 111(b) rules. While it is true that 111(d) may never be implemented, it is also true that if implemented, EPA's 111(d) rules could be final in less than a year from now. Therefore, it is reasonable to begin exploring the various options for how the Company will model necessary compliance over the longer term.

In addition to exploring the direct effects of the EPA rule, Staff encourages the Company and stakeholders to begin exploring how to analyze the more far-reaching potential physical impacts of climate change on normal daily operations. The physical impacts of climate change could impact utility operations particularly on the generation and transmission side which implicate risk to existing assets and future resource choices. It is reasonable to consider climate change impacts on the utility's asset base and its resource choices as part of the IRP. Initial discussions with the Company and the stakeholders could explore the type and scope of future analysis.

Staff recommends that the Commission direct PGE to work with Staff and stakeholders to explore options to model and perform analysis in its next IRP related to what will be known and expected about the requirements of Sections 111(b) and 111(d) of the federal Clean Air Act.

Final Recommendation

RNW supports acknowledgment of PGE's IRP with the caveat that the Commission issue an opinion regarding the forum and method for determining a renewable generator's contribution to peak capacity. RNW also recommends that the Commission use this review process to press PGE toward improvements in its IRP methodology that will better account for the benefits of increased carbon emission reduction, limiting exposure to increased regulatory and gas price risks, and alignment with PGE customer preferences.

NWEC finds the 2013 IRP Action Plan to be a reasonable plan to utilize available resources and recommends acknowledgement.

CUB recommends that the Commission acknowledge the proposals in the Action Plan with one exception. CUB does not recommend acknowledgement of the section on EE, Action Item 2(a).

ODOE does not make a recommendation regarding overall acknowledgement of the IRP. ODOE does make the following recommendations regarding specific actions resulting from this proceeding:

ODOE recommends that:

1. The Commission should find that PGE's CO₂ risk analysis complied with IRP Guideline 8;
2. The Commission should open a docket to evaluate and establish the methodology for determining capacity contribution of variable energy resources; and
3. The Commission should instruct PGE to include in its 2015 IRP one or more resource portfolios that include storage, and an analysis of how sensitive portfolio results are to different resource cost assumptions, particularly for solar and storage.

PROPOSED COMMISSION MOTION:

Portland General Electric's 2013 IRP be acknowledged with modifications as recommended by Staff and as contained in this report and summarized in Attachment A to this report.

ATTACHMENT A

PGE'S 2013 IRP ACTION PLAN WITH STAFF RECOMMENDATIONS AND MODIFICATIONS

1. **Supply Side Actions**
 - a. **Major Resources -- No action**
 - b. **Hydro Contract Renewals -- Acknowledge**
 - c. **Dispatchable Standby Generation (23MW) – Acknowledge**
2. **Demand Side Actions**
 - a. **Energy Efficiency (114 - 124 MWa) – Acknowledge with revised target of 114MWa, with the condition that this target increase to the full 124MWa in the event that the statutory cost limitations are relieved through legislative or regulatory action, and to proceed with an investigation related to industrial EE limits imposed by SB 838**
 - b. **Demand Response (25 MW) – Acknowledge with directive that CVR be included in portfolio analysis beginning with 2015 IRP**
3. **Enabling Studies**
 - a. **Third Party Review of Forecast Methodology – No action**
 - b. **Emerging EE Study with ETO – No action**
 - c. **Distributed Generation Study – Acknowledge with condition that all DG resources be studied, not solar alone.**
 - d. **Boardman Biomass Study – No action**
 - e. **Assessment of Flexible Capacity – Acknowledge**
 - f. **Evaluation of Tools For Optimizing Flexible Capacity – Acknowledge**
 - g. **Long Term Natural Gas Supply Options Study – No action**
4. **Transmission – No action**

Additional Commission Directives:

- 1. Staff recommends that the Commission direct PGE to hold workshops with Staff and stakeholders in the next IRP cycle for the purpose of developing one or more portfolios utilizing distributed resources, demand-side resources and storage for portfolio analysis in the next IRP;**
- 2. Staff recommends that the Commission direct the Company to include a portfolio-level analysis of CVR in its next IRP;**
- 3. Staff recommends that the Commission adopt the requirement that alternatives to physical compliance to Oregon's RPS be re-evaluated in every IRP henceforth;**
- 4. Staff recommends that the Commission open an investigation into determining a renewable generator's capacity contribution to peak, the outcome of which is expected to be a calculation method that can be adopted by all utilities for the purpose of QF rate setting and RPS incremental cost determinations. In the interim, Staff recommends that the Commission continue to use each Company's determination of capacity contribution at peak as stated in their most current acknowledged IRP.**
- 5. Staff recommends that the Commission direct PGE to work with Staff and stakeholders to explore options to model and perform analysis in its next IRP related to what will be known and expected about the requirements of Sections 111(b) and 111(d) of the federal Clean Air Act.**

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

LC 56

In the Matter of

PORTLAND GENERAL ELECTRIC
COMPANY,

ORDER

2013 Integrated Resource Plan.

DISPOSITION: PLAN ACKNOWLEDGED WITH REQUIREMENTS

I. INTRODUCTION

Portland General Electric Company (PGE or Company) seeks acknowledgement of its 2013 Integrated Resource Plan (IRP). This filing is in accordance with Public Utility Commission of Oregon (Commission) Order No. 07-002, as corrected by Order No. 07-047, and further modified by Order No. 12-013, which requires all regulated energy utilities operating in Oregon to engage in integrated resource planning.

With certain requirements and directives, we acknowledge PGE's 2013 IRP and its preferred portfolio as presenting the best combination of expected costs and associated risks and uncertainties for the Company and its customers, and as satisfying the procedural and substantive requirements of this Commission.

A. Requirements for Integrated Resource Planning

The Commission requires regulated energy utilities to prepare integrated resource plans within two years of acknowledgment of the last plan. Utilities must involve the Commission and the public in their planning process prior to resource decision-making.

Substantively, the Commission requires that energy utilities: (1) evaluate resources on a consistent and comparable basis; (2) consider risk and uncertainty; (3) make the primary goal of the process to select a portfolio of resources with the best combination of expected costs and associated risks and uncertainties for the utility and its customers; and (4) create a plan that is consistent with the long-run public interest as expressed in state and federal energy policies.¹

B. Effect of Acknowledgement of an IRP on Future Ratemaking Actions

The Commission's role in reviewing an IRP is to determine whether the IRP meets the substantive and procedural guidelines in Order Nos. 89-507, 07-002 and 12-013. The

¹ See Order No. 07-002.

Commission generally does not address the need for specific resources, but rather determines whether the utility has proposed a portfolio of resources to meet its energy demand that presents the best combination of cost and risk.² Commission acknowledgement of an IRP means only that the Commission finds that the utility's preferred portfolio is reasonable at the time of acknowledgement.³

In Order No. 89-507, the Commission described its role in reviewing and acknowledging a utility's least-cost plan:

The establishment of Least-Cost Planning in Oregon is not intended to alter the basic roles of the Commission and the utility in the regulatory process. The Commission does not intend to usurp the role of utility decision-maker. Utility management will retain full responsibility for making decisions and for accepting the consequences of the decisions. Thus, the utilities will retain their autonomy while having the benefit of the information and opinion contributed by the public and the Commission.

* * * * *

Acknowledgment of a plan means only that the plan seems reasonable to the Commission at the time the acknowledgment is given. As is noted elsewhere in this order, favorable rate-making treatment is not guaranteed by acknowledgment of a plan.⁴

This order does not constitute a determination on the ratemaking treatment of any resource acquisitions or other expenditures undertaken in accordance with PGE's 2013 IRP. As a legal matter, the Commission must reserve judgment on all ratemaking issues. Notwithstanding these legal requirements, we consider the integrated resource planning process to complement the ratemaking process. In ratemaking proceedings in which the reasonableness of resource acquisitions is considered, the Commission will give considerable weight to utility actions that are consistent with acknowledged integrated resource plans. A utility is also expected to explain actions they take that are inconsistent with Commission-acknowledged plans. We further clarified in our Order No. 12-252 that just as acknowledgement does not guarantee favorable ratemaking treatment, a decision to not acknowledge an action item does not constitute a preliminary determination of imprudence. The purpose of the IRP process is to provide the utility with the information and opinion of the stakeholders and of the Commission based upon the information presented by the utility. The question of whether a specific investment made by a utility in its planning process was prudent will be fairly examined in any subsequent rate proceeding.

II. PGE's 2013 IRP

The Commission's IRP Guidelines state that a utility must file its IRP two years from the date of acknowledgement of the previous plan. PGE received acknowledgement of its 2009 IRP on November 23, 2010 in Commission Order No. 10-457. The Company filed annual updates in November 2011 and 2012. After receiving Commission approval for an extension, the Company filed this IRP on March 27, 2014.

² See *id.* at 25.

³ See *id.* at 16.

⁴ See Order No. 89-507 at 6, 11. The Commission affirmed these principles in Docket UM 1056. See Order No. 07-002 at 24.

In developing its 2013 plan, PGE worked with an IRP advisory group comprised of major stakeholders representing the environmental community, major industrial customers, irrigation customers, state legislators, Commission representatives, and others.

PGE conducted four public meetings and three technical workshops during 2013 to allow for stakeholder input and participation in the development of the IRP. A draft IRP was distributed to stakeholders on November 22, 2013 and PGE received substantial comments from Renewable Northwest (RNW), Citizen's Utility Board (CUB), Northwest Energy Coalition (NVEC), Small Business Utility Advocate (SBUA), Oregon Department of Energy (ODOE), and separate comments from OPUC Staff.

PGE worked with the stakeholders and a consultant (E3) to develop low-carbon portfolio alternatives to evaluate in the IRP. In addition, PGE completed or updated several studies which helped inform the IRP preferred portfolio selection. Among these studies were:

- A study of dynamic and flexible capacity, as required by Order No. 12-013;
- Extensive supply-side cost estimates for generation and storage from Black & Veatch;
- An updated and expanded wind integration study;
- A new customer preferences survey; and
- Development of stochastic load and wind data sets for use in the reliability study.

The primary function of the IRP is to evaluate the Company's load and resource balance for the planning horizon, and to identify the proper additional resources that might be necessary to provide reliable service to the expected load in this time period. PGE's load-resource balance was projected through 2033 under the assumption of average load growth of 1.3% per year. The Company's conclusion was that loads and resources were well balanced through 2019 (beyond the current Action Plan time frame) thus requiring no new major resource acquisitions at this time.

Although the load-resource balance indicates no need for major generation resources, PGE did identify several courses of action to: acquire small amounts of supply-side resources (namely, renewal of existing hydro contracts and acquisition of 23 MW of additional dispatchable standby generation); secure cost-effective demand-side resources (energy efficiency and demand response); and to perform several studies in preparation for the next IRP cycle.

PGE notes that although no major resources are needed in the Action Plan time frame (2013 - 2017), the Company will have to implement resource actions in the intermediate term (2018 - 2020) in order to meet the Renewable Portfolio Standards (RPS) requirements and to replace energy from the closure of the Boardman coal facility in 2020. The 2015 IRP should reflect this upcoming resource need.

III. COMPLIANCE WITH COMMISSION'S IRP GUIDELINES

The following organizations and entities filed written comments about PGE's IRP: the Oregon Department of Energy (ODOE), the Citizens' Utility Board of Oregon (CUB), the Small

Business Utility Advocates' (SBUA), the NW Energy Coalition (NVEC), Renewable Northwest (RNW), and the Commission's Staff (Staff). All participants who filed comments generally recommended, or did not oppose, an acknowledgement by the Commission of PGE's IRP. However, some of the participants offered several general observations on the Company's analysis. In particular, RNW expressed concern that the cost and performance specifications can change quickly in the renewable energy field and that the relatively slow process of evaluating the IRP can result in stale data. RNW then recommended that PGE retain a consultant with expertise in pricing such resources. RNW also recommended that PGE conduct cost sensitivity analyses that determine a trigger point on renewable costs that would result in a possible change of the preferred portfolio. ODOE supports this latter recommendation.

RNW also wants PGE to test at least two specific resources that were not modeled in the 2013 IRP: Montana wind and energy storage technology. RNW further opines that, for peaking capacity and flexibility analyses, demand response and storage should be considered on par with gas plants if they compete favorably in a Request For Proposal (RFP). RNW also states that the benefits of demand response and storage should be better recognized throughout the entire planning and procurement cycle. Finally, RNW asks that PGE be required in its next IRP to show the outcomes of all "futures" and depict which portfolios perform better in the various futures.

Staff states that it generally supports RNW's and ODOE's observations and has several areas that it wants PGE to examine in greater detail in future IRPs. Staff would like PGE to include more resources, such as distributed solar photovoltaic (PV), combined heat and power, utility scale solar, biomass, battery storage and conservation voltage reduction, in the portfolio analysis. Staff believes that including these additional resources in future IRPs would allow PGE and the IRP participants to quantitatively assess the effects of these resources on the cost and performance of a portfolio. Staff notes PGE has expressed a general willingness to include such additional resources in its future IRPs. Staff concludes by recommending the Commission direct PGE to hold workshops with Staff and stakeholders in the next IRP cycle for the purpose of developing one or more portfolios utilizing distributed resources, demand-side resources, utility scale solar, biomass, conservation voltage reduction, and storage for portfolio analysis in PGE's next IRP.

The participants also made recommendations on selected Action Items as discussed in the next section.

IV. DISCUSSION: ACTION ITEMS

The Company requests acknowledgement of its IRP with an Action Plan to implement its Preferred Portfolio. The Action Plan includes the following items:

1. Supply Side Actions – Retain legacy resources if economic
 - a. Major resources: no new major supply-side resources;
 - b. Hydro contract renewals; and
 - c. Additional 23 MW of Dispatchable Standby Generation (DSG) by 2017.

2. Demand-side Actions

- a. 124 MWa of cost-effective Energy Efficiency (EE) by 2017; and
- b. 25 MW of additional Demand Response (DR) by 2017 administered by third-party provider EnerNOC.

3. Enabling Studies: perform research to inform next IRP

- a. Third party review of load forecast methodology;
- b. Assessment of emerging EE in conjunction with the Energy Trust of Oregon (ETO);
- c. Assessment of distributed generation potential;
- d. Continue feasibility studies of biomass at Boardman;
- e. Assessment and development of operational flexibility;
- f. Evaluation of new analytical tools for optimizing flexible resource mix; and
- g. Assessment of longer-term gas supply options to hedge price volatility.

4. Transmission requirements

1. Supply Side Options:

A. Major Resources

PGE states that its annual average supply-demand position is “generally balanced to slightly surplus” until 2019. Because of this, PGE requests no new major, supply-side resource actions in this IRP.

1. Participants’ Positions

In its opening comments, Renewable Northwest (RNW) asserts that if nothing is changed for PGE’s preferred portfolio, PGE would ask the Commission to acknowledge 790 MW of new baseload gas plants in its next IRP. Northwest Energy Coalition (NWEC) supports RNW’s claim in its final comments. RNW further claims that PGE’s reliance on gas-fueled resources would necessarily increase (up to 60% of its energy and capacity) with the addition of these gas plants, with the result that PGE’s reliance on a single resource (gas) would dramatically increase. The negative outcome would be more risk based upon the history of price volatility with natural gas.

RNW further observes that PGE’s preferred portfolio has a higher carbon emission profile than other portfolios that are based upon renewables. RNW recognizes that the latter portfolios would be higher in overall cost. Along these lines, RNW asks the Commission to require PGE in future IRPs to present winning portfolios that make greater use of clean energy.

In its final comments, the Citizens’ Utility Board (CUB) generally supports PGE’s IRP as well as its Action Items. However, in its opening comments CUB explains in detail that there is currently a funding cap on industrial energy efficiency (EE) measures that PGE has assumed away in its analysis. CUB urges the Commission to not acknowledge PGE’s EE goals [Action Item (2)(a)] until the Company develops a plan to meet its IRP targets in light of the industrial

EE cap. CUB also observes that PGE owns a minority interest in the Colstrip coal plant located in Montana and that the plant may be impacted by the Environmental Protection Agency's (EPA) proposed Section 111(d) rules. CUB would like to see more analyses involving operating restrictions and shutdown scenarios for the Colstrip coal plant, even though it recognizes that PGE is a minority owner in the plant.

Staff agrees with PGE's Action Plan conclusion that, based upon PGE's load-resource analysis, no new major resources will be needed in the relevant time frame. More generally, Staff concludes that the Company has satisfied the Commission's IRP guidelines and directives, albeit minimally so in some circumstances. Further, Staff shares RNW's concern that the preferred portfolio shows a heavy reliance on gas-fired resources. PGE's analysis assumes a natural gas price forecast that does not differ across the high, base, and low gas price scenarios. Staff is concerned that the result of this assumption could be a bias toward a natural gas resource based upon an underestimation of the cost risk of gas-dependent portfolios. Staff recommends that the Company seriously review renewable-based portfolios that are comparable in risk and cost to the preferred gas-based portfolio. Staff also agrees with CUB regarding Colstrip and states its expectation that PGE will thoroughly examine and analyze various shutdown scenarios for the coal plant as part of its next IRP process.

2. Resolution

We agree with Staff's conclusion and acknowledge that PGE's Action Plan supports the conclusion that no new major resources are needed in the relevant time frame (through 2017).

We also adopt Staff's recommendation that in future IRPs PGE carefully review and consider renewable-based portfolios that are comparable in risk and cost to a portfolio that is based upon natural gas. We also adopt CUB's and Staff's recommendation that PGE thoroughly examine and analyze various shutdown scenarios for the coal plant in its next IRP process.

B. Hydro Contract Renewals

1. Participants' Positions

PGE has numerous contracts for specified project shares of hydro facilities. Several of these contracts are expiring or being modified during the 20-year IRP planning horizon. PGE's action plan calls for it to seek to renew some of these expiring contracts to the extent it is cost-effective to do so. These contracts include:

- Wells: PGE has a contract with Douglas County PUD for 147 MW of capacity and 85 MWa of energy that expires at the end of August, 2018.
- NextEra: PGE receives 3% of the output of two hydro projects for a total of 58 MW (30 MWa) under a contract that expires in 2015.
- Portland-Hydro: PGE receives 10MWa of energy and 36 MW of capacity through August 2017.

RNW was the only participant to file comments on this Action Item. In its opening comments, RNW supports the Commission granting PGE the flexibility to capture these

renewals without engaging in a full Request for Proposal (RFP) process (so long as they are cost-competitive relative to low-carbon flexible capacity bids.

Staff supports the Company's proposal to seek to renew all cost-effective hydro contracts that expire during the IRP planning horizon. Staff also agrees with RNW that PGE should generally pursue renewables that are cost-effective and competitive.

2. *Resolution*

We agree that PGE should seek to renew its expiring hydro-facility contracts to the extent it is cost-effective to do so and we acknowledge the Company's pursuit of cost-effective hydro contract renewals as stated in Action Item 1(b).

C. Dispatchable Standby Generation: acquire an additional 23 MW

1. *Participants' Positions*

PGE's Dispatchable Distributed Generation (DSG) program uses diesel-fueled back-up generators at commercial and industrial sites to supply capacity for its portfolio and enhanced reliability. PGE can remotely start the generators to both displace the owner's load and supply excess power to the grid. PGE proposes to add 23 MW of DSG (for a total of 116 MW) by 2017.

NWEC was the only participant, other than Staff, that expressly referenced DSG in its comments, where it stated its general support for the program. In its public meeting memo, Staff stated it recognized the value of PGE's DSG program, encouraged PGE to maintain it and recommended the Commission acknowledge PGE's Action Item (1)(c) to obtain an additional 23 MW of DSG capacity by 2017.

2. *Resolution*

We support PGE's stated intent to continue its DG program and also expressly acknowledge PGE's Action Item to add 23 MW of DSG by 2017.

2. Demand-Side Actions

A. Energy Efficiency (EE)

1. *Participants' Positions*

PGE states that it plans to continue with its actions related to demand side procurement. PGE developed targets for cost-effective Energy Efficiency (EE) in conjunction with the Energy Trust of Oregon (ETO) through the year 2032. The Company, in conjunction with the ETO, determined that, for the Action Item planning horizon (2017), about 124 MWa (158 MW) could be acquired based upon current cost-effectiveness tests. For comparison purposes, the Company considered a scenario regarding achievable EE without regard to cost-effectiveness restraints. The Company found that this alternative portfolio did not materially differ from the base case in terms of EE savings but was far more expensive.

CUB does not recommend that the Commission acknowledge the EE section of PGE's Action Plan. In its opening comments CUB explains that there is currently a funding cap on industrial energy efficiency (EE) measures that PGE has assumed away in its analysis. CUB urges the Commission to not acknowledge PGE's EE goals [Action Item (2)(a)] until the Company develops a plan to meet its IRP targets in light of the industrial EE cap.

NWEC shares CUB's concern regarding the current limitation on ETO's acquisition of cost effective conservation from large (industrial) customers. NWEC asks the Commission to urge the Company to work with shareholders to find a solution to this issue before the end of 2014. However, unlike CUB, NWEC does not recommend the Commission not acknowledge the EE section of the Action Plan. NWEC further recommends that PGE continue to collaborate with ETO to identify what EE technologies may become available and what future measures may become least cost.

In response, PGE states it recognizes CUB's concern about the ETO funding constraint and it will continue to work with shareholders to find a resolution to it. However, PGE did not think it was practical in an IRP setting to try to predict the outcome of future policy debates and possible legislative actions. PGE also committed to focus on planning for and acquiring all cost effective energy.

SBUA disagrees with the use of the Total Resource Cost test (TRC) and asserts it will cause the elimination of long-recognized EE measures.

Staff states it has reviewed and supports PGE's EE studies and projections. Staff also supports NWEC's recommendation that PGE continue to collaborate with ETO to identify what EE technologies may become available and what future measures may become least cost. Staff does not support SBUA's concern about the use of TRC test and also notes that this IRP docket is not the appropriate forum to consider the issue.

As to the ETO funding constraint issue, in its public meeting memo Staff relates that the parties to PGE's recent rate case (UE 283) reached agreement to recommend to the Commission that a new docket be opened to consider the issue. Staff further notes that in the absence of some regulatory or legislative action, PGE may be limited by the ETO funding cap. Without remedial action, ETO estimates that as much as 2 MWa per year of EE could be unachievable due to the SB 838 constraints. Accordingly, Staff recommends a reducing the EE target by the worst-case EE scenario of 2 MWa per year. This reduction results in a PGE target acquisition of 114 MWa over the five-year Action Plan time frame.

2. *Resolution*

We support PGE's commitment to working with the ETO to identify and pursue future cost-effective EE measures. We understand the issue concerning the ETO funding cap. We

acknowledge PGE's Action Item (2)(a) with the following amendment: PGE's target EE acquisition goal is revised from 124 MWA to 114 MWA over the Action Plan time frame, with the condition that this target increase to the full 124 MWA in the event that the statutory cost limitations are relieved through legislative, or other appropriate regulatory, action.

B. Demand Response (DR)

1. Participants' Positions

PGE contracted with EnerNoc in 2013 to administer a new Automated Demand Response (ADR) pilot that has two phases. The first phase runs through June 2015, at which time it will be evaluated. If the evaluation is favorable, it will then run through 2016, at which it will be evaluated again. If the second evaluation is positive, PGE will submit the ADR program as an ongoing capacity resource in its 2017 Annual Power Cost Update and Power Cost Adjustment Mechanism. The Company expects the program to deliver 25 MW by the end of the Action Plan window (2017).

Staff identifies several issues related to DR that it believes should be further studied and improved. Staff points to PGE's reliance on a report prepared by the Brattle Group in 2012 which studied DR potential in the Company's service territory. Staff disagrees with some of the assumptions embedded in the report and opines that enrollment levels could be improved with additional outreach to customers.

Staff also recommends that the Company continue to pursue other DR approaches, such as Critical Peak Pricing (CPP) and direct load control, once its computer and equipment upgrades provide the proper functionality. Staff states it will closely watch how events develop under the EnerNoc contract and will continue to work with PGE in this regard. Finally, Staff recommends acknowledgement of Action Item (2)(b).

As an additional matter, Staff presents observations about PGE's Conservation Voltage Reduction (CVR), which was not specifically included as an Action Item. Staff agrees with PGE that it has adequately, if minimally, met the requirements of Commission Order No. 10-457 to commence the process of implementing CVR. However, Staff states its expectation that the results of PGE's current CVR study will allow the company to include it in future IRP portfolio analyses, and recommends as such to the Commission.

2. Resolution

We conclude that PGE's ADR pilot is a worthwhile program but agree with Staff's assessment that it is prudent to work with PGE to identify and resolve issues that may arise with PGE's DR programs generally. We also direct PGE to include a portfolio level analysis of CVR in its next IRP. We further direct PGE to notify Staff of any proposed changes to the EnerNOC contract baseline. We acknowledge Action Item (2)(b).

3. Enabling Studies to inform the next IRP

PGE proposes to perform seven research studies to inform its next IRP. ODOE, CUB, RNW and NWEAC generally support the proposed studies and recommend the Commission acknowledge each. Staff has comments specific to each study as follows.

(a) Third-party review of load forecast methodology

1. *Participants' Positions*

Pointing to recent slow load growth, PGE proposes to retain a third-party to conduct a review of forecast methods, use of historical and forecast data, and basic assumptions regarding the relationships between electricity demand growth and economic trends, population in-migration, customer usage intensity and patterns, and conservation. The Company does not provide specifics about the cost or scope of the proposed study.

While not opposed to the concept of such a study, Staff does not support the retention of a third-party to conduct it. Staff observes that the Company, Staff and the parties who commonly intervene in electric utility dockets have the necessary degree of technical forecasting skill to conduct such a study. Accordingly, Staff does not recommend acknowledgement of PGE's proposal to retain a third-party to study load forecast methodology. Instead, Staff recommends the Commission require PGE to convene a series of workshops with interested parties to examine the Company's load forecast methodology in detail.

2. *Resolution*

We conclude that a study to review PGE's load forecast methodology would be a useful project. However, we agree with Staff that Staff and stakeholders who have been working on this issue have the necessary expertise and experience to provide useful input that the Company can use to improve its load forecasting methodology. Therefore, we do not acknowledge Action Item (3)(a).

(b) Assessment of emerging EE in conjunction with the ETO

1. *Participants' Positions*

PGE proposes to work with the ETO and other parties to better understand future EE opportunities, to assess the potential for emerging/future EE measures and technologies, and identify how best to develop and acquire cost-effective opportunities. PGE does not offer any specific actions or identify specific technologies to be studied.

NWEAC generally supports PGE working with the ETO to study EE opportunities and measures. Staff does as well but observes that PGE has not proposed any specific acquisition goals or activities beyond those expected of a prudent utility. As such, Staff concludes this matter is not appropriate for acknowledgement.

2. *Resolution*

We agree with PGE's proposal to work with ETO to identify and study cost-effective EE opportunities and measures. However, as to acknowledgement of Action Item (3)(b), Staff concludes that PGE has not proposed any specific action to be undertaken in the Action Plan time frame and for that reason we do not acknowledge this Action Item.

(c) Distributed Generation study

1. *Participants' Positions*

PGE proposes to pursue studies and research initiatives with the goal of assessing potential business models and policies that expand the installation of cost-effective distributed generation. PGE expects the focus will primarily be on distributed solar PV.

While not commenting specifically on this Action Item, NWEA, CUB and RNW express general support for policies to expand the deployment of DG. Staff supports acknowledgement of this Action Item but recommends that the studies include all potential DG sources, not just distributed solar PV.

2. *Resolution*

We agree that PGE's proposed DG studies have merit. We acknowledge Action Item (3)(c) with the caveat that the studies include all potential DG sources.

(d) Boardman biomass technical/economic viability

1. *Participants' Positions*

PGE proposes to further assess the technical and economic feasibility of re-powering Boardman as a biomass facility after the cessation of coal-fired operations at the plant. The Company sets forth a timeline for upcoming test burns and associated milestones and activities. It is expected that tests involving the co-firing of coal and biomass together will occur sometime in 2015, followed shortly after by a 100% test burn. Should the testing support technical feasibility of burning biomass, next steps will focus on identifying sufficient cost-effective biomass fuel sources and assessing the overall project economic and risk mitigation value.

Staff supports PGE's plan for continued assessment of the technical and economic feasibility of burning biomass fuel at the Boardman facility. However, Staff points out that PGE is not proposing any new action concerning the burning of biomass over the time frame of the Action Plan and for that reason Staff recommends the Commission not acknowledge Action Item (3)(d).

2. *Resolution*

We agree that PGE's plan to continue to assess the possible use of biomass fuel at the Boardman facility is a worthwhile endeavor. Biomass is fuel source that has great potential. However, because PGE is not proposing to undertake any new actions regarding the burning of biomass at the Boardman facility, we do not acknowledge Action Item (3)(d).

(e) Assessment and development of operational flexibility

1. *Participants' Positions*

PGE plans to build on work already under way to better understand its dynamic capacity needs and alternatives to address those needs with both generational/operational means, as well as market-based solutions. PGE recognizes this will involve better modeling and evaluation methods of intra-hour energy, capacity and ancillary services needs, as well as exploring participation in an evolving regional marketplace [such as an "Energy Imbalance Market" (EIM)].

RNW and ODOE generally support PGE's Action Item. RNW does recommend that the flexibility study review a broad range of supply side options, from market opportunities to energy storage. Staff and ODOE comment that energy storage technologies should be included in some IRP resource portfolios. Staff would recommend that PGE perform more intra-hour modeling in future IRPs and updates. Staff believes intra-hour modeling is a key to many aspects of near-future planning as well daily operations and power costs. Staff would also like the Commission to direct PGE to thoroughly evaluate the costs of benefits of joining the existing PacifiCorp-CAISO EIM in addition to other EIM options the Company may consider. Staff recommends the Commission acknowledge Action Item (3)(e).

PGE responds that it would be premature to include energy storage technologies for portfolio analysis because of unknowns and uncertainties regarding costs and performance factors such as scalability, cycling efficiency, and resource life. However, PGE agrees that energy storage technologies should be evaluated in its next IRP.

2. *Resolution*

We acknowledge Action Item (3)(e). We agree with PGE and the participants that an assessment and development of operational flexibility is an important consideration going forward. The Company needs flexible resources in order to follow the output of "variable energy resources" (VERs), which currently is primarily wind generation. In making this acknowledgement, we direct PGE to consider the costs and benefits of joining the PacifiCorp-CAISO EIM as it explores its EIM options and to report back to the Commission with its findings within two months of the issue date of this order.

(f) Evaluation of new analytical tools for optimizing flexible resource mix to integrate load and variable resources

1. *Participants' Positions*

PGE states that a key issue is how to optimize the mix of flexible peaking and storage resources to minimize costs in a system with increasing levels of VERs and proportionally shrinking flexible capacity capability. The Company states that to accomplish this optimization will require IRPs to look at intra-hour operational parameters that were formerly exclusively of concern to real-time and day-ahead system operators.

Staff agrees with the Company and recommends the Commission acknowledge Action Item (3)(f).

2. *Resolution*

We agree that determining how to optimize the mix of flexible peaking and storage resources will be an important consideration for future IRPs. We acknowledge Action Item (3)(f).

(g) Assessment of longer-term gas supply options to hedge price volatility

1. *Participants' Positions*

PGE notes that it is becoming increasingly gas-intensive and observes that gas prices are projected to remain relatively low and stable. PGE proposes to examine potential strategies, costs, and risks of pursuing longer-term supply sources for acquiring and managing natural gas (giving examples of storage, long-term contracts, and gas reserves).

No participant expressly commented on this Action Item. Staff generally supports continued exploration and study of long-term natural gas procurement strategies but observes that PGE is not proposing any specific action in regard within the time frame of the Action Plan and for that and Staff recommends we not acknowledge Action Item (3)(g).

2. *Resolution*

We agree that with gas-fired plants being a major proportion of PGE's resource portfolio it would be wise for the Company to assess gas supply options to manage gas price volatility. However, since PGE proposes no specific action or deliverable warranting acknowledgement, we do not acknowledge Action Item (3)(g).

4. Transmission

1. Participants' Positions

PGE states that it has determined its best alternative for meeting transmission requirements for its remote resources and to provide access to wholesale power markets over the current planning horizon is to retain and acquire service under Bonneville Power Administration's (BPA) Open Access Transmission Tariff (OATT). No participant commented on this Action Item. Staff observes that PGE proposes no specific action in relation to this matter within the time frame of the Action Plan and for that reason Staff recommends the Commission not acknowledge it.

2. Resolution

PGE is not proposing any new action in relation to this matter, therefore we do not acknowledge Action Item (4).

V. OTHER ISSUES

1. Non-Physical RPS Compliance Alternatives

1. Participants' Positions

In its comments, Staff observed that PGE's IRP omits an updated analysis on the potential for meeting the Renewable Portfolio Standard (RPS) requirements through non-physical compliance methods. Staff recommended that the Company must analyze all possible RPS compliance options in every IRP. Staff gives the example of the purchase unbundled RECs as one alternative compliance method. Staff recommends that the Commission adopt the requirement that alternatives to physical RPS compliance be re-evaluated in every future IRP.

In response, PGE notes that Chapter 4 from its 2011 IRP update considered such alternatives. The Company notes that no deficiencies were identified with that chapter at that time and its analysis and conclusions remains valid.

2. Resolution

In our Order No. 10-457, we directed PGE to evaluate alternatives to physical compliance with RPS requirements in a given year. We adhere to this previous requirement and expressly direct PGE to consider and evaluate alternatives to physical compliance with RPS requirements in every future IRP.

2. Renewable Contribution to Capacity

1. *Participants' Positions*

Several commenters note the new importance assigned to the determination of a renewable generator's contribution to system capacity. ODOE observes this calculated value is used to: evaluate IRP resource portfolio options, to calculate the avoided costs rates for wind and solar qualifying facilities, and to determine the incremental cost of utility compliance with the RPS. From this premise, ODOE requests the Commission open a docket to establish the appropriate methodology for calculating the capacity contribution of "variable energy resources" (VERs).

RNW states that it would not support acknowledgement of PGE's 2013 IRP if it meant final approval of the 5% generic wind capacity value selected. RNW expresses support of a more comprehensive wind capacity value analysis.

Staff agrees with the positions set forth by RNW and ODOE. Staff notes that past IRP dockets have generally relied upon the IRP process to set the value for peak contribution but each utility uses different methods to calculate this value. Staff's experience is that participants to the IRP process become frustrated with using that procedural vehicle to determine the value because the IRP process is not viewed as a contested case proceeding. Accordingly, Staff recommends the Commission open an investigation into determining a renewable generator's contribution to peak capacity but in the meantime the Commission should continue to use each utility's capacity value from its most recently acknowledged IRP.

PGE stands by the methods used in its 2013 IRP for determining the VER capacity contribution value.

2. *Resolution*

This matter does not involve an Action Item that requires acknowledgement. However, we recognize the increasing importance and use of the value assigned to a renewable generator's contribution to system capacity. We understand the participants' desire for a more targeted and robust review of the methods used by the utilities to calculate this value. We adopt Staff's, RNW's and ODOE's recommendation to open an investigation to allow for a more comprehensive review of the methods employed by the utilities to calculate this value. We expect the outcome of the investigation to be a calculation method that can be adopted by all utilities for the purpose of setting QF rates and determining RPS incremental costs. In the interim, PGE will continue to use its determination of capacity contribution at peak as stated in its most currently acknowledged IRP.

3. Climate Change and Section 111(d) Considerations

1. Participants' Positions

Staff expresses a concern about the potential far-reaching effects of climate change upon a utility's system operations. All other participants expressed a similar concern. Some participants recommended the Commission adopt a new IRP Guideline related to climate change or Section 111(d) or both.

PGE agrees that it must consider in the next IRP the potential impacts and possible compliance options relating to federal EPA Section 111(d) CO₂ reduction targets. PGE further notes it has been actively evaluating EPA's proposed rule and has participated in meetings with various stakeholders. PGE further states it agrees that addressing potential risks and impacts to power generation and the provision of electricity due to climate change concerns should be an IRP consideration. But, PGE states it does not support a new IRP Guideline for either climate change concerns or Section 111(d) outcomes. PGE states that both of these topics impact several gas and electric utilities in Oregon and that it would be more appropriate to consider them as part of a broader discussion than one issue in one company's IRP proceeding.

Staff agrees with PGE that the current docket is not the proper forum to consider changes to IRP guidelines. However, Staff expects PGE to work with it and the stakeholders to develop options for how the Company will model and analyze all known and expected requirements arising from potential Section 111(b) and (d) rules. Staff also encourages PGE and the stakeholders to begin the process of exploring how to analyze the potential physical aspects of climate change on normal daily operations. Finally, Staff states its appreciation for PGE's acknowledgement of the importance of these issues.

2. Resolution

Climate change, as related to the utility's system operations and to Section 111(b) and (d) issues, is a matter that utilities should consider in their IRPs. We support the Company, the Staff and the stakeholders working together to develop the scope of an analysis of climate change impacts on system resources and operations. Finally, the Commission directs PGE to work with Staff and the stakeholders to explore options to model and perform analysis in its next IRP related to known, and expected, Section 111(b) and (d) requirements.

VI. CONCLUSION

Portland General Electric Company's 2013 Integrated Resource Plan, as highlighted in this order, reasonably adheres to the principles of resource planning established in Order No. 07-002 and related orders and is acknowledged with the following requirements:

1. PGE shall hold workshops with Staff and stakeholders in the next IRP cycle for the purpose of developing one or more portfolios utilizing distributed resources, demand-side resources, utility scale solar, biomass, and storage for portfolio analysis in the next IRP.

2. PGE's Energy Efficiency acquisition goal be reduced to 114MWa with the condition that this target shall increase to the full 124 MWa in the event that the statutory cost limitations are relieved through legislative or regulatory action.
3. PGE to include a portfolio-level analysis of CVR in its next IRP.
4. PGE to notify Staff of any proposed changes to the EnerNOC contract baseline.
5. PGE shall hold a series of workshops with interested parties to examine the Company's load forecast methodology in detail.
6. PGE shall include all potential DG resources, not only distributed solar in its DG study.
7. PGE will re-evaluate non-physical compliance to Oregon's RPS in each IRP.
8. PGE shall work with Staff and stakeholders to explore options to model and perform analysis in its next IRP related to what will be known and expected about the requirements of Sections 111(b) and 111(d) of the federal Clean Air Act.

VII. ORDER

IT IS ORDERED that:

1. The 2013 Integrated Resource Plan filed by Portland General Electric Company on March 27, 2014 is acknowledged with the requirements set forth in this order.
2. Portland General Electric will file its next Integrated Resource Plan no later than March 27, 2016.

Made, entered, and effective _____.

Susan K. Ackerman
Chair

John Savage
Commissioner

Stephen M. Bloom
Commissioner