BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

LC 56

In the Matter of PORTLAND GENERAL ELECTRIC 2013 Integrated Resource Plan	STAFF'S FINAL COMMENTS

Summary from Initial Comments:

As noted in the initial comments, Staff finds that Portland General Electric's (PGE or the Company) 2013 IRP generally adheres to the Guidelines and relevant Orders put forth by the Commission related to least-cost, integrated resource planning. Nevertheless, Staff identified several specific areas of concern that warranted further examination and analysis. For the most part, between subsequent additional discovery and explanations provided by the Company in their reply comments, Staff believes the issues of concern have been adequately addressed for this IRP.

The following is a list of the topics and issues Staff raised in the initial comments. The remainder of these final comments will address the topics one by one.

- General compliance with Guideline 1
- Energy Efficiency issues and compliance with Guideline 6
- Demand Response issues and compliance with Order 10-457 and Guideline 7
- Environmental issues and compliance with Guideline 8
- Distributed Generation and compliance with Guideline 12
- Load forecast issues
- Natural gas forecast issues
- RPS compliance alternatives

General Compliance with Guideline 1:

Guideline 1 states in relevant part:
"All resources must be evaluated on a consistent and comparable basis."

In Order 07-002 establishing the IRP Guidelines, the Commission notes:

> *We do not want utilities to limit their consideration to currently available resources, but rather to include all those that are expected to become available. We prefer the IRP be inclusive of all such resources and allow the parties to debate in the planning process whether it is reasonable to rely on a new technology.*[1]

Staff notes that the terms "consideration" and the directive to "include" all resources in the IRP as used above still provides a great deal of latitude to the Company. The direction given to the Company allows compliance with the guideline over a wide range of analysis. Staff's concern with the Company's treatment of some resources, especially those utilizing newer technology, is about the level or degree of consideration lent to these resources in the IRP.

The particular resources that Staff would have liked to see addressed at greater length in the IRP are distributed generation, solar, biomass, battery storage, and "conservation voltage reduction" (CVR). Staff agrees that the Company has met the minimum requirements for compliance with Guideline 1 in regards to these resources.

However, Staff believes that these resources will play a more prominent role in prospective portfolio choices as the technologies mature and become more cost effective. Staff encourages the Company to continue to monitor these resources and evaluate them in greater depth in future IRPs. In particular, Staff encourages the Company to include these resources in future portfolio analysis to better understand the potential economic impact of these resources on the Company's generation portfolio. Staff welcomes PGE's agreement to more fully investigate energy storage in future IRPs as stated in its reply comments.[2]

Energy Efficiency Issues:

In initial comments Staff indicated it was continuing to look at issues relating to lost opportunity measures, declining energy efficiency (EE) beyond 2016, and how PGE calculates the risk reduction value of EE. Staff has reviewed the Company's responses to data requests on each of these issues and has come to the conclusion that lost opportunity measures and projected efficiency acquisition levels are being handled consistent with current Energy Trust policies and projections. Staff understands and generally supports how PGE is testing the risk reduction value of EE in this IRP.

CUB argues that the EE target of 124 MWa by 2017 contained in Action Item 2.a is too high because it does not take into account that Energy Trust may not be able to acquire all cost effective conservation from large industrial customers due to the spending limit imposed by Senate Bill 838 (SB 838) for customers with load greater than one average megawatt. These customers do not contribute to SB 838 energy efficiency programs and as a result, once a threshold is exceeded, the Energy Trust plans to limit the amount of funding that can be allocated to them.

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[1] *See* Order No. 07-002 at 4, Docket No. UM 1056.
[2] See PGE Reply Comments, Docket LC 56, at p. 15

Staff agrees with PGE in that although it is likely Energy Trust will hit the threshold level for PGE's large customers this year, the issue may be resolved by some other means, such as in the pending PGE rate case. If the issue is not resolved by some other means, Staff notes that once the threshold is exceeded, Energy Trust will have a period of time to bring the spending back to below the threshold amount. Staff does not believe that targets should be reduced in anticipation of potential reductions in industrial acquisitions.

Regarding Small Business Utility Advocate's (SBUA) concern about the "total resource cost" (TRC) test[3], current PUC policy is to use the TRC with specific exceptions defined in Docket No. UM 551, Order No. 94-590, and this will be used until the policy is modified. Staff is of the opinion that this is not the docket to address cost effectiveness policy.

Demand Response Issues and Compliance with Order No. 10-457 and Guideline 7:

Guideline 7 directs the Company to "…*evaluate demand response resources, including voluntary rate programs, on par with other options for meeting energy, capacity, and transmission needs…"* In the initial comments, Staff noted that Order No. 10-457 further directed the Company to provide a more comprehensive treatment of "demand response" (DR) resources and to consider CVR in the least cost portfolio. The Company's reply comments and responses to data requests in this docket have provided further information on these subjects.

Based on the responses from the Company, Staff is now satisfied that PGE adequately evaluated demand response in its analysis, as required in Guideline 7.

Data submitted to Staff in response to several data requests have addressed Staff's initial concern regarding PGE's utilization of demand response. Documents supplied show that current market and operational conditions do not provide as robust demand response opportunities as are present in other markets across the country.

However, this same data shows some initial movement toward favorable demand response market conditions here in Oregon. In particular, PGE's increase in summer load (moving the Company's load towards a dual peak)[4] as well the need to integrate intermittent resources may offer more opportunity for demand response.

PGE currently has firm and non-firm demand response resources, emergency resources, automated demand response, price responsive demand response, and utilization of customer-side back up generation units. Staff does have some concerns regarding the future scale and build-out trajectory of these resources, but until the data demonstrates a more robust need for demand response Staff will reserve requests for action on this issue.

Below Staff presents comments on specific demand response program areas:

[3] See SBUA's Initial Comments, Docket LC 56, at p. 3
[4] See PGE's 2013 IRP at p. 36

Critical Peak Pricing
Staff reviewed the results of the Critical Peak Pricing (CPP) pilot and noted that a CPP program is not determined to be cost effective with the existing computer systems. PGE notes that the new computer systems will be in place in 2017, which should greatly improve the cost effectiveness of a CPP program. Staff recommends that PGE continue to move toward exploring a full scale CPP program once upgraded computer systems are in place.[5]

Staff supports PGE closely considering the recommendations from the CPP summary report dated May 15, 2014 completed by DNV-GL related to program evaluation and future program implementation. Of the recommendations, Staff is particularly interested in PGE exploring how participation and retention in the programs can be increased by providing specific and timely feedback to customers, and by providing on-going education and support to help program participants navigate the complexities of their new rate.

Demand Response Potential Study
Staff reviewed the confidential Brattle Group Study PGE provided entitled, "*An Assessment of Portland General Electric's Demand Response Potential"* dated November 28, 2012. PGE provided the following information for the Brattle Group study: a) participation assumptions; b) availability derate factors; and c) estimates of program costs.

Staff disagrees with the achievable enrollment levels that PGE provided to Brattle Group. PGE assumed that participation levels never exceed the enrollment level observed in the first year of PGE's residential CPP pilot. PGE also had Brattle Group assume no growth in participation rates over the study horizon, as observed in the existing Time of Use (TOU) program. As confirmed in the Company's response to Staff DR 12, PGE does nothing to advertise its TOU program, except to electric vehicle owners. Staff is skeptical that the assumed participation rate is the best PGE can do.

Brattle Group notes that in other successful programs in the country, the participation rates are between 20-70 percent for opt-out programs and 20-40 percent for opt-in programs, depending on program and customer class. Staff recognizes that the regulatory and market landscape in PGE's service territory is different than other areas of the country and in some ways disadvantages demand response. Those conditions are detailed in the Brattle Group Study.[6]

However, Staff observes that there are other factors in PGE's customer base that could favor demand response programs, including an environmentally conscious customer base which might respond well to messaging that highlights environmental benefits of DR. Staff would like to see PGE be more reasonably optimistic about the type of participation they might expect in demand response programs.

[5] *Ibid.,* at pp. 63-64
[6] Low energy prices with little volatility, generation capacity surplus, winter peaking, low frequency of extreme load events

Staff questions the "availability derate factors" PGE used in the cost effectiveness assessments of both their CPP program and in the Brattle Group Study. As suggested by Brattle Group[7], Staff believes that PGE should revisit and provide a basis for these in future assessments.

Two-Way Communication
Staff believes that two-way communications is not entirely or always necessary to communicate a demand response signal or to verify load drop. Given the current size of PGE's demand response resource, Staff agrees that in the immediate term PGE benefits from having two-way communication and control of demand response assets – such as demonstrated in the Salem Smart Grid water heater initiative.

While this approach is more expensive, two-way communication and control may provide additional value given that many of PGE's more advanced demand response programs are in the pilot phase. Two-way communications allows PGE to collect more robust data during each demand response event to better understand and assess asset performance, customer behavior, and end-user program acceptance.

However, as PGE builds its demand response capability, and as their demand response resources grow in size, PGE should consider assessing whether two-way communication is necessary to building all types of cost effective demand response. Staff believes that two-way communications may be necessary for certain energy products that can be supplied by demand response (such as voltage regulation); however, for other demand response products, such as price responsive demand response, two-way communications may not be necessary.

Plug-In Adaptors
Staff noted a concern regarding PGE's preference to using plug-in adapters for use in its direct load control demand response programs. In response to Staff's data requests, PGE noted that there continues to be communication protocol interoperability issues between various appliance manufacturers. PGE's response to this issue has been to create a work-around by utilizing plug-in adapters. PGE also notes its participation in the National Institute of Standards and Technology (NIST) demand response communication protocol working groups as another effort to help alleviate the confusion of multiple protocols in the marketplace.

However, regardless of the particular communication protocol utilized by an appliance manufacturer, PGE should work with the market to assure end-use customers in PGE's territory understand the opportunities PGE offers and could offer its customers who do purchase an appliance with the needed protocol to interact with the PGE system.

To this end it seems that PGE had a brief exchange with the Northwest Energy Efficiency Alliance (NEEA) about potential work on demand response-enabled water heaters. Staff encourages PGE to further impress upon NEEA and NEEA's other funders the importance of market transformation for demand response capable consumer products.

Advance Metering Infrastructure (AMI)

[7] "An Assessment of Portland General Electric's Demand Response Potential", The Brattle Group, Nov. 28, 2012, at pages 37-38

Staff noted initial concern about whether PGE is currently leveraging its Advance Metering Infrastructure (AMI) to enable customers to benefit from participating in demand response programs and activities. PGE responded by noting that most customers can access interval meter data through a PGE-sponsored web portal. However, apparently customer access of this data is not currently normal practice for a majority of PGE's customers.[8]

Staff does not view this as an indication that customers are not interested in interval metering data but more likely that customers are not fully aware of the information available and how to retrieve it. Once PGE has developed better back-office customer data management systems capable of utilizing more of the AMI data, Staff recommends PGE explore how it can communicate to customers about using their smart meters to manage their energy usage and identify opportunities to benefit the customer and the PGE system.

EnerNOC Contract
Staff requested a copy of the contract between PGE and EnerNOC, the company currently responsible for PGE's automated demand response program. Staff has several concerns regarding this contract. Staff is foremost concerned about the concept of "vendor lock," whereby PGE's reliance on EnerNOC's proprietary system may require continued contractual obligation to EnerNOC to assure that PGE does not lose this valuable demand response resource.

To mitigate this possible issue Staff recommends PGE explore requiring the use of an open demand response protocol as EnerNOC brings forward future capacity nomination to the program. Staff is also concerned with a provision of the contract that allows for adjustments to the baseline calculation. Staff recognizes the inherent difficulty in crafting demand response baseline calculations and that some adjustment may be needed because of weather or change in how the demand response resource is utilized or dispatched.

However, because baseline calculations are integrally important to program performance and ultimately payment to EnerNOC, Staff requests PGE inform the Commission whenever a proposal is made to change the baseline calculation under this contract. Lastly, the contract with EnerNOC pays a reservation or capacity nomination payment to EnerNOC each month for the amount of capacity EnerNOC is required to deliver. Outside of an actual demand response event Staff was unable to discern how PGE would verify that EnerNOC can deliver the energy represented by the nominated capacity. This concern is compounded given the duration of the contact. If Staff has misread the contract then PGE is invited to verify the capacity nomination made by EnerNOC.

Conservation Voltage Reduction (CVR)
Order No. 10-457 directs the Company to *"[c]onsider Conservation Voltage Reduction (CVR) for inclusion in its best cost/risk portfolio and identify in its action plan steps it will take to achieve any targeted savings."*

In its reply comments the Company has identified the steps it is taking in evaluating the cost effectiveness of CVR as an energy conservation resource. Staff agrees that the Company has met the minimum requirements for compliance with the Order; however, once again Staff notes that

[8] See Staff Exhibit XXXX – PGE's response to DR No. 016 in Docket LC 56

the "consideration" the Company has given to CVR for inclusion in its best cost/risk portfolio is minimal. A more comprehensive consideration would be to include CVR in the portfolio analysis in order to gain a better understanding of the economic effects of CVR on a system basis. Staff understands that PGE has recently concluded a pilot CVR program and is actively analyzing the results for a November 2014 report. Staff encourages the Company to utilize the results of this pilot program analysis in the next IRP and to incorporate CVR into its portfolio analysis.

The Company's 2014 Smart Grid report states that, *"CVR is more beneficial in the winter due to the increase in resistive loads (e.g., electric furnaces) when compared with summer load composition; however, benefits are realized year-round"*. [9] Staff believes that including CVR in the portfolio analysis would allow the Company to better characterize and quantify those benefits.

Summary
Staff appreciates the strides the Company has made to date in terms of pilot pricing and load control programs. Staff encourages the Company to continue to move forward with DR programs and revisit the assumptions described above.

Compliance with Guideline 8:

In initial comments Staff identified several items that it would like to see investigated in more detail. These included:

- Modeling a carbon market mechanism that is regional as opposed to federal;
- Preparing a more comprehensive report of climate change planning activities;
- Explanation of how PGE is incorporating the risks of climate change into its planning;
- Describing what climate change adaptation and mitigation actions PGE is conducting on its own behalf and on behalf of is customers; and
- A report on any climate change-centered customer engagement activities PGE is currently undertaking.

Staff requested PGE conduct a Section 111(d) modeling exercise but given the scope of the challenge Staff understands why PGE objected to this request. EPA's issuance of a proposed rule under the Clean Air Act (CAA) 111(d) is a significant federal action and will require a similarly significant response from PGE and the entire state of Oregon. PGE was not in possession of the proposed rule prior to modeling carbon dioxide compliance costs or to use the new information to develop carbon compliance scenarios in the current IRP cycle. The OPUC Staff, the Oregon Department of Environmental Quality, and the Oregon Department of Energy are currently working together with PGE to better understand the implications of EPA's proposed CAA 111(d) rule.

[9] PGE's 2014 Smart Grid Report, at p. 33

Staff believes PGE will, in time for filing its 2015 IRP, have a better understanding of how this new federal action will affect PGE's compliance costs. Such clarity will also provide, as yet, the best insight into and data needed to develop better carbon dioxide compliance scenarios. With the closure of Boardman in 2020, PGE becomes better situated to shield itself and its customers from possible carbon dioxide compliance costs.

PGE did model the potential carbon prices in their IRP. PGE also identified a trigger price that would affect PGE resource dispatch and Staff is satisfied regarding PGE's compliance with Guideline 8.

Environmental Issues:

Staff believes that it may be time, given the climate data and increased occurrence of extreme weather events we are now presented with, that simply modeling carbon pricing and criteria pollutants is not enough to protect PGE and its ratepayers from the risks of climate change. Staff issued a number of data requests on PGE during the course of this proceeding in an attempt to better understand what climate change mitigation and adaptation activities PGE is currently undertaking to shield itself and its ratepayers from the inevitable costs of a warming and rapidly changing climate. Staff is concerned about this issue because climate data indicates an increased potential threat to daily life from climate change through 2100.[10]

Emerging data from PGE's records show that its system is beginning to experience a dual peak when traditionally PGE has been a winter peaking system.[11] Climate models predict that over the coming century the Northwest will experience higher maximum summer temperatures.[12] If this prediction is correct, line losses and peak demand to serve air conditioning load will very likely increase. PGE needs to take these potential effects into account in their planning.

Models also show an increase in the number of forest fires and the length of the forest fire season throughout the western states.[13] This change may affect transmission lines and transmission corridors that PGE is dependent on for energy delivery.

Decreased snow pack will affect many aspects of the Northwest hydrological system all of which may have serious implications for PGE and its customers.[14] A decreased snow pack means

[10] See Intergovernmental Panel on Climate Change Fifth Assessment; See also Intergovernmental Plan on Climate Change, Climate Change 2014: Impacts, Adaptation and Vulnerability.
[11] See PGE 2013 IRP, at p. 36
[12] See USGS, Climate and Land Use Change Research and Development Program, National Climate Change Viewer, Full NEX-DCP30 model, available at, http://www.usgs.gov/climate_landuse/clu_rd/nex-dcp30.asp, See also U.S. National Climate Assessment; See also Intergovernmental Panel on Climate Change, Fifth Assessment Report, See also Intergovernmental Panel on Climate Change, Climate Change 2014: Mitigation of Climate Change.
[13] See The US Forest Service, An Overview available at http://www.fs.fed.us/documents/USFS_An_Overview_0106MJS.pdf; See also USGS, Climate and Land Use Change Research and Development Program, National Climate Change Viewer, Full NEX-DCP30 model, available at, http://www.usgs.gov/climate_landuse/clu_rd/nex-dcp30.asp, See also U.S. National Climate Assessment; See also Intergovernmental Panel on Climate Change, Fifth Assessment Report,

increased stream flow seasonal variability and additional endangered species compliance obligations at hydropower units owned by PGE or from which PGE takes service. Decreased stream flows will likely trigger greater reliance on ground water reserves which may mean greater pumping loads on PGE's system. Many times these ground water pumps are situated on long rural radial distribution lines which can significantly affect line voltage and substation equipment integrity. In addition, increased summer heat may cause distribution line sagging in highly urbanized areas, so distribution reliability indices may drop.

Models also show increased rainfall intensity is possible. An increase in cloud cover will affect lighting demand and may lead to increased flooding as well. [15]

These are just a few examples of how climate change could affect the Northwest. If these changes occur, PGE's customers will be forced to adapt therefore changing how and when they consume and use electricity. PGE needs to remain aware of these potential impacts on its generation and distribution system and plan accordingly.

Staff believes that PGE has made positive steps to meet some of the challenges of climate change through resource diversity and de-carbonization of its resource stack. However, Staff believes that climate change adaptation and mitigation requires further steps to limit exposure to costly risks that will affect how PGE delivers energy and services to its ratepayers in the future. Staff also recognizes that at this point in time PGE does not have a regulatory or legislative mandate that specifically requires PGE to assess or to take action to mitigate or adapt to climate change risks. However, Staff believes it would be in the long-term best interest of PGE and their customers to take initial steps to assess and better understand the risks presented and thereby develop at least an initial high-level strategy or roadmap to inform its future actions.

In its response to Staff's initial comments PGE noted a survey which shows that its customer base is more environmentally conscious then the average utility customer. This survey also demonstrated customer satisfaction with PGE's environmental stewardship and leadership. By taking steps to identify climate change risks PGE may be able to also identify how to coalesce such stewardship and community support into an opportunity to mitigate climate change risk thereby saving money for ratepayers in the long term.[16]

Therefore, Staff recommends PGE and Staff work together in the development of a new IRP guideline that would require the utility to identify and plan to meet the risks presented by climate change. This new guideline would direct the utility to identify and model the risks associated with climate change and develop adaption and mitigation measures and plans to meet those risks. Staff believes that PGE should be commended for its action to reduce the carbon intensity in its resource stack while balancing the need to provide reliable, low cost power. In their IRP PGE

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[14] See USGS, Climate and Land Use Change Research and Development Program, National Climate Change Viewer, Full NEX-DCP30 model, available at, http://www.usgs.gov/climate_landuse/clu_rd/nex-dcp30.asp, See also Intergovernmental Panel on Climate Change, Fifth Assessment Report.

[15] See USGS, Climate and Land Use Change Research and Development Program, National Climate Change Viewer, Full NEX-DCP30 model, available at, http://www.usgs.gov/climate_landuse/clu_rd/nex-dcp30.asp, See also Intergovernmental Panel on Climate Change, Fifth Assessment Report.

[16] See PGE's 2013 IRP, Appendix H.

lists some 10 activities that have and continue to result in lower carbon intensity of delivered energy.

Lastly, Staff notes that PGE's portfolio is transitioning from coal to a greater reliance on natural gas. Staff believes that it will become important to monitor the carbon lifecycle cost of PGE's natural gas purchases and natural gas-derived electricity purchases. EPA currently conducts a voluntary natural gas well fugitive emissions reporting program called Natural Gas Star. Additionally EPA is exploring a rulemaking on reporting and mitigating natural gas well fugitive emissions. The rapid development and advancements in "shale" gas may mean that this new gas source has a higher lifecycle carbon content than initially anticipated.

PGE should be, as the Commission Staff is, interested in knowing more about shale gas and its long term effects on carbon content of the energy delivered to PGE's end-use customers. As part of the new guideline work proposed by staff herein, attention should be paid and accommodations made for carbon lifecycle costs of the fuel choices made by PGE.

Distributed Generation and compliance with Guideline 12:

The PUC's IRP Guideline 12 states:

"Electric utilities should evaluate distributed generation technologies on par with other supply-side resources and should consider, and quantify where possible, the additional benefits of distributed generation."

In initial comments Staff stated that it thought the Company failed to meet the requirements of Guideline 12. In its reply comments, the Company has clarified its efforts in analyzing and considering "distributed generation" (DG), primarily in terms of solar photovoltaics (PV). With the additional information, Staff agrees that the Company has fulfilled the requirement of Guideline 12. However, Staff believes that the Company's compliance is minimally acceptable, and that future IRPs should examine distributed generation in more detail and to fully evaluate the benefits of DG.

Distributed generation technologies go far beyond solar PV. Staff encourages PGE to examine all potential DG sources and technologies, including renewables and also cogeneration and combined heat and power (CHP). Staff encourages the Company to fully explore the many benefits of DG and would like to see more potential DG analyzed in the IRP. Distributed generation has the potential to reduce or eliminate costs, complexities, and inefficiencies of transmission and distribution systems. This may become particularly salient as the region begins to experience the effects of climate change.

Load Forecast Issues:

PGE's load forecast relies heavily on the trends identified by their medium term regression-based forecast model. This is the same medium term regression used in the 2014 general rate case (Docket No. UE 283). Staff has closely examined the base forecast as part of Docket

No. UE 283. In the opening testimony of that docket, Staff presents a comprehensive critique of the current model. PGE and Staff currently are working cooperatively to identify opportunities to improve the accuracy of this forecast.

In general, Staff expects that the long term growth in PGE's load will be less than that in their filed forecast. On page 23 of PGE reply comments, PGE claims that low recent growth rates are a short term phenomenon related to the 2008 recession. However, their position appears to imply that the rapid growth in the 1990s is as relevant to future growth as the current market behavior. It is more plausible, in Staff's view, that structural and technological changes in the past two decades have fundamentally changed the relationship between economic growth, climate, and energy use. Staff is continuing to provide PGE with feedback and technical analysis regarding such changes.

PGE has proposed a third party review of the load forecast methodology. The OPUC, PGE, and other Oregon interveners have a high degree of technical forecasting skill and experience. A continued commitment from PGE to work cooperatively with Staff and other interveners would be more effective at establishing and sustaining long term improvements in PGE's forecast than the proposed third party review would be.

Natural Gas Forecast Issues:

For the most part, Staff agrees with PGE's reply comments regarding the natural gas price forecast, though the Company's comments do not fully respond to Staff's concerns. Staff's trepidations about the natural gas price forecast are general in nature and meant for consideration for future IRPs rather than issues that Staff hopes to see changed in this IRP. In this light, Staff would like to reiterate that it is generally satisfied with the Company's natural gas price forecasting methodology.

However, Staff restates its opinion that when the front three years of PGE's natural gas price forecast do not differ across the high, base, and low gas price scenarios, the result could be a bias toward a natural gas resource choice by underestimating the cost *risk* of portfolios of gas heavy 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 next IRP). Therefore, Staff does not agree with the Company's characterization that the "years in question" are 2014 to 2016 (i.e. the front three years of the forecast in *this* IRP) as this is focused on the 2013 IRP which is not the focal point of Staff's comments about this issue.

Furthermore, Staff agrees with PGE that both upside and downside risk in gas prices need to be considered, but the Company's comments miss Staff's point that, by not varying gas prices in the front years, the *spread* (both up and down) of the expected costs of the portfolios will be underestimated. This spread is obviously important since the Company chose a portfolio as its preferred portfolio that, although not having the lowest cost, did have a smaller cost spread than the lowest cost portfolio.[17] Therefore, Staff's point was not that costs would be biased upwards

[17] Note in page 6 of the IRP the Company states "(w)hen considering overall cost, risk, and reliability performance, the top three performing candidate portfolios are: Baseload gas/RPS only, Diversified Baseload Gas/Wind, and

or downward, but that portfolio/resource choice could be biased toward natural gas due to the underestimated cost *risk* of these options. Staff would prefer PGE use a high and low estimate for the front three years of the forecast as well. This would not only assuage the concern about underestimating cost risk, but also have the added benefit of aligning PGE's methodology with the other utilities operating in Oregon.

Staff understands PGE's concern that updating the natural gas price forecast between the draft IRP and the actual IRP is problematic and also agrees with PGE that in this specific IRP there was not a resource choice-altering difference between the May 2013 and December 2013 forecasts. However, in times where gas price expectations change in a material manner from one forecast vintage to the next (which has happened in the past and could possibly happen again), using obsolete forecasts could be problematic for a recommendation of acknowledgement. Again, Staff's concerns about the natural gas price forecast vintage are geared toward a problem that could arise and not a problem that materially impacts resource or portfolio choice in the 2013 IRP.

RPS Compliance Alternatives:

Staff appreciates that PGE has added chapter 4 from the 2011 IRP update to the record. However, Staff is still of the opinion that the Company has not adequately evaluated the use of unbundled RECs as an alternative to "physical compliance" with the RPS *in this IRP*.

Like in all other matters, Staff expects PGE to comply with the RPS in a manner that comprises the best combination of cost and risk for Oregon customers. This option may include using unbundled RECs for compliance. This issue was addressed in the Company's latest Renewable Portfolio Implementation Plan in Docket UM 1683 and Staff expects the Company to plan for alternatives other than "physical compliance" to comply with the RPS in future IRPs as well.

Staff leaves it up to the Company to determine the decision criteria for building/contracting RPS resources vs. purchasing unbundled RECs for the final 20 percent[18] of compliance that can be satisfied with unbundled RECs, but is not satisfied with the assumption that no additional unbundled RECs will be purchased. The timing of new built/contracted RPS resources can be impacted by the use of unbundled RECs for compliance, which Staff feels is an important option that was meant to be explored *in each IRP*.

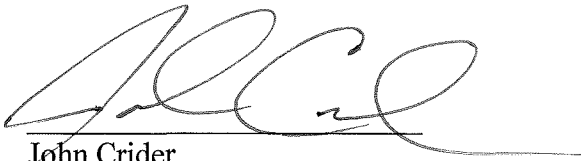
Staff does not agree with the Company that the decision to comply with the RPS through physical compliance is a one-time decision that does not need to be re-evaluated as conditions change. That being said, Staff is not suggesting that physical compliance is not the least cost/least risk option, only that the Company needs to continue to analyze other options as conditions do change.

This concludes Staff's final comments.

Natural Gas." The Company excludes the portfolio with the lowest expected costs (Market w/ Physical RPS) from this list due to its cost risk and reliability concerns.

[18] Or a portion of the 20% of overall compliance.

Dated at Salem, Oregon, this 25th day of July, 2014



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CERTIFICATE OF SERVICE

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

Dated this 25 day of July, 2014 at Salem, Oregon.

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