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November 5, 2018

***Via Electronic Filing***

Public Utility Commission of Oregon  
Attention: Filing Center  
201 High Street, Ste. 100  
P.O. Box 1088  
Salem, OR 97308-1088

**Re: UM 1934 – Reply Comments of Portland General Electric Company**

Attention Filing Center:

Enclosed for filing on today's date, please find Reply Comments of Portland General Electric Company.

Please note, Pages containing highly confidential information will be sent via overnight mail to the Commission, and served to parties who have signed the Protective Order in this docket.

Please direct any questions regarding this filing to Jimmy Lindsay at [jimmy.lindsay@pgn.com](mailto:jimmy.lindsay@pgn.com) or (503) 464-8311.

Sincerely,

A handwritten signature in blue ink that reads "Loretta Mabinton". The signature is written in a cursive style.

Loretta I. Mabinton Associate General Counsel

LM: al

Enclosure

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

**UM 1934**

In the Matter of

PORTLAND GENERAL ELECTRIC  
COMPANY

2018 Request for Proposals for Renewable  
Resources.

**REPLY COMMENTS OF  
PORTLAND GENERAL  
ELECTRIC COMPANY**

**I. INTRODUCTION**

Portland General Electric Company (“PGE”) submits these comments in response to the October 25, 2018 comments filed by the Public Utility Commission of Oregon (“Commission”) Staff, Alliance of Western Energy Consumers (“AWEC”), Citizen’s Utility Board (“CUB”), and Northwest and Intermountain Power Producers Coalition (“NIPPC”), and also in support of PGE’s Request for Acknowledgment of the Final Short List of Bidders (“Request”) in the 2018 Request for Proposals for Renewable Energy Resources (“RFP”). A majority of the parties in this proceeding, including CUB, Renewable Northwest (RNW), NIPPC and NW Energy Coalition (NVEC), recommend acknowledgment of PGE’s final shortlist.<sup>1</sup> The final shortlist reflects the least cost, least risk resources for customers to be acquired through a fair and transparent solicitation for clean, affordable and reliable resources.

**II. REQUEST FOR PROPOSALS**

PGE’s solicitation was fair, transparent, competitive, and complied with the Commission’s Competitive Bidding Guidelines (“Guidelines”). The RFP scoring methodology, minimum requirements, and process were reviewed by parties in UM 1934 during the RFP design phase. PGE incorporated modifications and guidance by the Commission, Commission Staff (“Staff”), and other parties to the Final RFP design<sup>2</sup> which was approved by the Commission in Order No. 18-171.<sup>3</sup> The solicitation and bid evaluation were conducted in conformance with the approved RFP design and the Commission’s Guidelines. The Independent Evaluator (“IE”) found<sup>4</sup> that:

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<sup>1</sup> See October 25, 2018 Comments of the Oregon Citizens Utility Board at page 1, NIPPC Initial Comments at page 1, Renewable Northwest Comments on Final Short List at page 1, and NW Energy Coalition Comments at page 1.

<sup>2</sup> See Portland General Electric Company Request for Proposals – Final Draft, May 17, 2018.

<sup>3</sup> Order No. 18-171 entered on May 21, 2018 – Request for Proposals Approved with Modifications and Guidance.

<sup>4</sup> Bates White Final Closing Report (“IE Report”) at pages 2-3.

The selected bids were the top offers that were able to meet all RFP qualification criteria. PGE's analysis shows that all three projects are projected to deliver cost savings to ratepayers under reference case assumptions as well as many other alternate scenarios.

The selected bids are the best-qualified offers from a reasonably competitive process...

Our independent analysis confirmed that the selected bids were reasonably priced...

The RFP aligns with the Company's Integrated Resource Planning (IRP) process, including the revised renewable action plan filed on November 9, 2017 and acknowledged by the Commission in December of 2017. The Initial and Final Shortlist analyses used current assumptions from the IRP process. The models and processes used to select the Final Shortlist were the same models that the Company uses in its IRP process. We participated in the entire RFP process from design, through bid receipt and analysis, to the selection of the Initial and Final Shortlists.

The IE neither included a recommendation for nor a recommendation against acknowledgment of the final shortlist in the IE Report. However, the IE's report is unambiguous that the RFP and final shortlist were consistent with the Guidelines, the RFP design, PGE's acknowledged IRP, and transparent, fair and inclusive. PGE understands that Staff advised the IE to ensure that a fair and transparent process was followed, and to allow the Commission to make a determination regarding final shortlist acknowledgment. Staff informed PGE that Staff does not expect for the IE, or is the IE required, to weigh in on final shortlist acknowledgment. The Commission recently discussed the IE's role in the two public meetings on Pacificorp's shortlist, and in the Commission's final order in that proceeding.<sup>5</sup> As a result, the IE did not include an opinion on whether the shortlist should be acknowledged in the Report in this docket.<sup>6</sup>

The resources on the IE's and PGE's final shortlist are the same resources, and the IE agrees with the results of PGE's Individual Offer Analysis and Portfolio Analysis.<sup>7</sup> PGE worked closely with the IE throughout the evaluation process. Consistent with the IE recommendation<sup>8</sup> PGE commenced negotiations with all three counterparties on the final shortlist. PGE provided one final shortlist bidder additional time to resolve a significant commercial contingency associated with its project.<sup>9</sup> [Begin Confidential] [REDACTED]

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<sup>5</sup> UM 1845; Order No. 18-178.

<sup>6</sup> Contrary to the insinuation in AWEC's comments that "...the Report is silent on whether the Commission should acknowledge this final shortlist....Given that PGE's and Pacificorp's RFPs were similarly competitive, it may be that the IE does not explicitly recommend acknowledgement of PGE's shortlist due to the economics of the bids". See Comments of AWEC at pages 2-3. AWEC conveniently ignores the IE's findings, including that "PGE's analysis shows that all three projects are projected to deliver cost savings to ratepayers under reference case assumptions as well as many other alternate scenarios". IE Report at page 2.

<sup>7</sup> PGE's ranking had prioritized both Individual Offer Analysis and Portfolio Analysis results, the IE suggested that portfolio modeling results should guide bid preference order when results are in conflict (Portfolio Analysis does not include an assessment of commercial risk through non-price scoring).

<sup>8</sup> IE Report at page 4.

<sup>9</sup> [Begin Confidential] [REDACTED]

[End Confidential]

[Redacted] [End Confidential]. The details associated with this bidder are included in Highly Confidential/Confidential Appendix B.

### III. REPLY

#### A. Fair and Transparent Process and Compliance with RFP Design

PGE conducted the RFP and evaluation in accordance with the approved 2018 RFP design, and the Guidelines.<sup>10</sup> In its Opening Comments (“Staff Opening Comments”), Staff stated a concern regarding the application of PGE’s shortlist identification process.<sup>11</sup> Specifically, Staff questioned whether PGE included 150 MWa<sup>12</sup> of non-benchmark resources on its initial shortlist.<sup>13</sup> To the contrary, PGE included approximately 320 MWa of non-benchmark resources on its initial shortlist. This result can be observed in Table 5 and Table 6 of the IE Report. The acknowledged RFP provided that:

For the short list, PGE intends to include Bids representing a minimum of 150% of the renewable energy requested in this RFP, and at least 150% non-Benchmark bid, subject to receipt of a sufficient quantity and quality of Bids. Once the short list has been developed pursuant to the scoring criteria outlined above, PGE will refine bid evaluations in the following areas to determine the final short list...<sup>14</sup>

The context clearly shows that the requirement to have a minimum of 150% of non-Benchmark bids was for the initial short list, a requirement PGE satisfied. Staff also suggests that the approved RFP design was not followed in selecting the shortlist. In Staff Opening Comments, Staff implied that the only criteria to advance from an initial shortlist to a final shortlist were: (1) Capacity Factor Analysis, (2) Security for Performance Analysis, and (3) Portfolio Analysis. Staff’s enumerated criterion is incomplete. In addition to Staff’s identified shortlist analysis steps, the approved RFP also included: (4) best and final price updates,<sup>15</sup> (5) final shortlist pre-qualification assessment,<sup>16</sup> (6) owner’s cost analysis,<sup>17</sup> and (7) permitting review.<sup>18</sup> Contrary to

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<sup>10</sup> PGE does not address every comment that was submitted by parties in this docket, not because we agree with all such comments, but because we focus our reply comments on the items relevant to the Commission’s shortlist acknowledgement proceeding. For example, PGE does not address NIPPC’s comments relating to a transmission workshop because the workshop is not relevant to the Commission’s discussion. In any event, PGE has reached out to the Commission to get the workshop scheduled.

<sup>11</sup> Staff Opening Comments at page 4.

<sup>12</sup> Potentially confusing an initial shortlist commitment PGE made in the RFP. See Final RFP at page 34.

<sup>13</sup> Staff Opening Comments at page 4: “Further, PGE did not have sufficient viable, non-benchmark aMWs on its initial shortlist.”

<sup>14</sup> 2018 Final RFP at page 32.

<sup>15</sup> 2018 Final RFP at page 24.

<sup>16</sup> 2018 Final RFP at page 24.

PGE notes that many of PGE’s RFP eligibility requirements were not required to be satisfied at bid submission at the recommendation of stakeholders. Rather, several eligibility requirements relating to transmission, interconnection, permitting, project finance, and credit could be satisfied by the bidder following selection to PGE’s initial shortlist.

Staff's suggestion, PGE applied these final shortlist analyses to all bids, as applicable, that were on the initial shortlist.

Concerns<sup>19</sup> that the final shortlist only includes projects that complied with the approved RFP requirements are misplaced. Including non-compliant bids on the final shortlist bids would require a break from the approved RFP design, lead to confusion, and would be unfair to all bidders who submitted RFP compliant bids or chose not to participate because they could not meet the requirements of the RFP. As NIPPC points out, bidders who fairly competed under the approved RFP requirements should not be penalized for participating in the RFP approved by the Commission.<sup>20</sup>

In Staff Opening Comments, Staff also questions whether PGE complied with Guideline 9(b). PGE's 2018 RFP has complied with all the Guidelines, including this Guideline. Guideline 9(b) requires that:

Selection of the final shortlist of bids should be based, in part, on the results of modeling the effect of candidate resources on overall system costs and risks. The portfolio modeling and decision criteria used to select the final shortlist of bids must be consistent with the modeling and decision criteria used to develop the utility's acknowledged IRP Action Plan. The IE must have full access to the utility's production cost and risk models.<sup>21</sup>

PGE's portfolio analysis, described in detail in the 2018 Final RFP and its Appendix H, evaluated the cost and economic risk of candidate resources and portfolios in a manner consistent with PGE's acknowledged 2016 Integrated Resource Plan ("2016 IRP") and IRP Action Plan. The totality of the portfolio model was shared with the IE.<sup>22</sup> Staff's concern may reflect a desire for PGE to include in its portfolio analysis, portfolios with non-conforming bids. Given the considerable resources dedicated to performing portfolio analysis, PGE is only able to evaluate a limited number of bids. Including just one non-conforming bid in PGE's portfolio analysis would have doubled the number of possible portfolios to study. PGE considered it more appropriate to include more portfolios with RFP final shortlist eligible resources than replacing those portfolios with additional combinations of non-conforming bids.

The 2018 RFP was conducted fairly, transparently, in accordance with the Commission's Guidelines and approved RFP design.<sup>23</sup> The bid eligibility requirements for all bids were clearly

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<sup>17</sup> 2018 Final RFP at page 24.

<sup>18</sup> 2018 Final RFP at page 32.

<sup>19</sup> Staff Opening Comments at page 3, AWEC comments at page 3.

<sup>20</sup> NIPPC Opening comments at page 1.

<sup>21</sup> Order No. 14-149, Appendix A, at page 3.

<sup>22</sup> See IE Report at page 3.

<sup>23</sup> Other parties agree that PGE conducted this RFP as designed and in accordance with the Guidelines. For example, NIPCC states that "PGE, with the Commission's oversight and approval, designed and managed the RFP. The IE concludes that the RFP was fairly run, based on these parameters." NIPPC Initial Comments at page 9.

identified and applied fairly to all bids. The IE agreed with all PGE’s decisions regarding bidder non-conformance.<sup>24</sup>

B. Opportunity to Procure Clean Resources

In this 2018 RFP, PGE proposes to procure long-term renewable resources, bundled with the associated renewable energy credits (RECs), to further the “glide path” to RPS compliance, to provide energy and capacity necessary to support the 2020 cessation of the coal-fired operations at the Boardman Coal Plant, and to reduce customer costs through access to low cost energy resources.

This 2018 RFP is an important step towards meeting PGE’s long-term decarbonization goals. The timing of the solicitation was, in part, driven by expiring federal tax credits and an expectation that renewable resources could be procured at competitive prices. The bids received in this solicitation confirmed and exceeded this expectation. Renewable resources have been offered to PGE at prices significantly below that forecasted in the 2016 IRP and 2016 IRP Addendum (Addendum) filings. As discussed in additional detail below, the final shortlisted resources are forecasted to be less expensive than wholesale energy market purchases. All final shortlisted resources rely upon the expiring 100% federal production tax credit to provide low priced offers for PGE’s customers.

As recognized in the 2016 IRP, PGE faces large increases in RPS compliance requirements beginning as early as 2025. PGE’s proposed procurement strategy is consistent with achieving PGE’s “glide path” to compliance as outlined in the Addendum. As acknowledged in Order No. 18-044, PGE intends to initiate its ‘glide path’ to compliance efforts by acquiring long-term renewable energy resources through this 2018 RFP.

PGE’s proposed renewable procurement aligns with PGE’s near-term capacity and energy needs. As identified and updated in PGE’s Request, PGE faces near-term capacity needs following the cessation of coal-fired operation at the Boardman Coal Plant. Capacity and energy needs continue to grow through the 2020s following contract expirations.<sup>25</sup> The 2018 RFP provides PGE with a low-cost opportunity to address near and pressing needs with clean resources.

PGE’s final shortlist aligns with the glide path strategy identified and acknowledged in the 2016 IRP Revised Renewable Action Plan. Incremental renewable procurements support PGE’s long-term RPS strategy and significantly reduces PGE’s forecasted RPS compliance costs through securing low-cost renewable resources supported by available federal tax credits. PGE’s proposed least-cost, least-risk procurement strategy, described further below, would secure just [Begin Confidential] [redacted] [End Confidential] of PGE’s forecasted 2040 outstanding RPS

<sup>24</sup> See for example, IE Report at page 4, and at page 21, and Staff Opening Comments at page 3.

<sup>25</sup> PGE Request, at page 28.

obligations. The least-cost, least risk procurement takes measured action toward meeting future RPS needs while leaving substantial flexibility for future renewable procurement activities.

AWEC opposes PGE's proposed near-term actions towards meeting PGE's and the State of Oregon's long-term goals. Despite the identification of low-cost renewable resources and Commission acknowledgment of the 2016 IRP Revised Renewable Action Plan, "AWEC does not believe PGE should select even one"<sup>26</sup> renewable resource. Instead, "AWEC recommends that PGE discontinue the RFP process."<sup>27</sup> PGE finds these recommendations unreasonable and disappointing. PGE remains committed to helping our customers and the communities we serve achieve the clean energy future they desire. The benefits of such a future are real - we must do our part to reduce the threat of climate change, improve air and water quality and live a more sustainable way of life. And, as discussed in more detail below, PGE strongly believes that taking action today will help achieve those goals at lower costs than alternatives available to customers.

### C. Affordable Results for Customers

PGE's final shortlist results include affordable renewable energy supply options for PGE's customers. The offered prices received by PGE are far lower than those forecasted in PGE's 2016 IRP and would lead to greater customer savings than were identified in PGE's 2016 IRP Addendum and Revised Renewable Action Plan. Securing resources like those on the final shortlist are essential to meeting PGE's and the State's goals to decarbonize the economy in an affordable manner for customers.

#### 1. Competitive Solicitation

The solicitation was competitive.<sup>28</sup> Ultimately, the competitiveness of a solicitation should be judged on the quality of the offers made. In this instance, PGE received low price, low risk renewable resource offers which are included in the final shortlist. Of the top eight bids placed on the initial shortlist after best and final offers were received, only two were ultimately found to be non-conforming and the remaining six bids were included on the final shortlist. PGE received bids of diverse technology, commercial structure, and geography.<sup>29</sup> This resource diversity remains present in PGE's final shortlist.

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<sup>26</sup> AWEC comments at page 7.

<sup>27</sup> AWEC comments at page 4.

<sup>28</sup> IE Report at page 2. See also NWEA's comments at page 1 "...improved the bid range and the depth and breadth of the Final Short List."

<sup>29</sup> The bids were for projects in multiple states (Oregon, Montana, Nevada and Washington), and diverse renewable resources (wind, solar, geothermal and battery storage). PGE Request at page 10.

## 2. Forecasted Customer Savings

The resources included in the final shortlist are expected to result in customer savings. AWEC, the lone voice against acknowledgment of the final shortlist, would have the Commission believe that the RFP ‘yielded resources of questionable value to ratepayers.’<sup>30</sup> AWEC’s comments are in stark conflict with the IE Report stating that “PGE’s analysis shows that all three projects are projected to deliver cost savings to ratepayers under reference case assumptions as well as many other alternate scenarios.”<sup>31</sup> PGE’s 2016 IRP and IRP Addendum recognized the long-term value associated with near term renewable additions lowering the long-term cost of RPS compliance by diminishing the need for long-term RPS additions when those resources may be more expensive. The renewable resources offered in the 2018 RFP are forecasted to lead to additional customer savings beyond RPS compliance because they replace more expensive forecasted market purchases in the wholesale energy market. Staff comments seek additional information regarding “how much better off customers would be if this RFP is pursued” relative to a counterfactual of non-action.<sup>32</sup> This result can reasonably be approximated within PGE’s RFP Portfolio Analysis by comparing the forecasted cost of PGE’s recommended least-cost, least-risk portfolio to a counterfactual with no near-term procurement supplemented by an additional 100 MWa of replacement renewables in 2025.<sup>33</sup> PGE’s recommended resource procurement is forecasted to save customers \$321 MM relative to a non-action counterfactual, considerably more than the stand-alone simple cost savings associated with PGE’s recommended resource procurement.<sup>34</sup>

AWEC suggests that a positive portfolio cost and risk metric indicates that the risks of this procurement outweigh the potential benefits.<sup>35</sup> AWEC is mistaken. AWEC appears to treat PGE’s cost and risk metric as a risk adjusted cost value, when in fact, the cost risk metric is simply a metric that balances expected cost and risk, as measured by standard deviation, to identify the resources that deliver lowest expected costs while minimizing risk. It would be inappropriate to mistake this metric for a risk adjusted cost. All top-performing portfolios in PGE’s analysis have a negative mean portfolio net cost across all futures, further reinforcing PGE’s finding that the identified resources are forecasted to reduce customer costs even when considering the minority of zero-carbon futures with positive portfolio net cost outcomes.

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<sup>30</sup> AWEC comments at page 9.

<sup>31</sup> IE Final Report at page 2. See also NWECC’s comments at page 1 that “... PGE has presented thorough portfolio and sensitivity analysis supporting the Final Short List showing favorable net costs and low rate impacts.”

<sup>32</sup> Staff Opening Comments at page 5.

<sup>33</sup> RPS compliance cost results are best identified within an IRP that dynamically evaluates how near-term renewable procurement impacts the timing of long-term RPS compliance additions recognizing the effects of PGE’s REC bank.

<sup>34</sup> Assumes Standard Study Assumptions, inclusive of capacity and energy fill. [Begin Confidential] [REDACTED]

[REDACTED] [End Confidential]

<sup>35</sup> AWEC comments at page 4.



PGE is not suggesting that the decision to procure additional renewable resources should be made lightly. The acknowledged Revised Renewable Action Plan presented in the 2016 IRP Addendum recommended pursuing ‘approximately 100 MWa’ of incremental renewable resources. [Begin Confidential] [REDACTED]

[End Confidential] PGE has three procurement options available:

1. Limited Procurement – Procure only 29 MWa, well short of the 100 MWa target.
2. Volume Prioritized Procurement - Procure approximately 100 MWa.
3. Least Cost, Least Risk Procurement - Procure [Begin Confidential] [REDACTED] [End Confidential] MWa, at a significantly low cost, and low risk to customers.

PGE’s ‘Least Cost, Least Risk Procurement’ option is clearly supported by PGE’s Portfolio Analysis and Individual Offer Analysis and is the clear top performing resource action consistent with PGE’s approved RFP design and methodology.<sup>36</sup>

Final shortlisted resources are currently offered at very competitive prices that PGE expects will be unavailable following the expiration of federal tax credits<sup>37</sup>. All final shortlisted offers benefit substantially from 100% federal production tax credits (“PTC”) safe-harbored equipment. Following the expiration of the PTC, the cost of otherwise PTC eligible renewable resources will rise for as long as is necessary for technological and market improvement to overcome the value associated with federal tax credits. Contrary to AWEC’s comment, there’s nothing circular in this logic. Loss of the PTC is expected to increase prices available today by approximately \$16/MWh. As shown in the attached response to AWEC Data Request No. 007, the cost of PTC eligible wind resources are forecasted to fall by approximately \$2/MWh by 2025 due to the technological improvements. This forecasted decrease in resource cost is strongly outweighed by the \$16/MWh loss in PTC value.<sup>38</sup>

AWEC rightly notes that the assumptions regarding 2025 renewable prices impact PGE’s portfolio results. PGE’s portfolio analysis included two assumptions regarding the price of future renewables: a base case consistent with the 2016 IRP Update and a sensitivity assuming future prices are available at the same price as they are today. As described in PGE’s Request, PGE believes the IRP assumption is more informative given the fundamental cost pressure that tax credit expirations are expected to impose in the near-term. PGE ran its portfolio analysis under standard study assumptions and under average study assumptions that, contrary to

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<sup>36</sup> [Begin Confidential] [REDACTED]

[End Confidential]

<sup>37</sup> The declining capital cost of renewable resources are forecasted to be outpaced by the value of expiring production tax credits.

<sup>38</sup> See response to AWEC 007. All \$/MWh figures reflect real levelized costs or values in 2018 dollars.

AWEC’s assertions,<sup>39</sup> averaged both IRP replacement costs and average offer replacement costs. When looking at both IRP replacement and average offer replacement costs together (PGE Request, Table 4, Average Study Assumptions), all top performing portfolios include more than [Begin Confidential] [Redacted] [End Confidential] MWa of resources.

AWEC further suggests that PGE’s IRP replacement cost assumptions are simply too high to be of value when considering recommended procurement volumes associated with PGE’s portfolio modeling results. Without supporting facts or evidence, AWEC argues that despite acknowledgment of the 2016 IRP Update, “there is no reason to believe that PGE’s IRP assumptions from which the IRP generic fill is derived are accurate or, at least, are more accurate than actual pricing that is available in the market today.”<sup>40</sup> PGE disagrees. As stated above, expiration of the PTC is expected to introduce fundamental cost pressure to otherwise PTC eligible resources of approximately \$16/MWh. PGE has run an additional renewable replacement cost sensitivity identifying Portfolio Analysis results assuming that renewable replacement costs are approximately \$16/MWh higher than the prices available today (as opposed to the 2016 IRP Update assumed costs). As is reported in Table 1, under this sensitivity, the top performing portfolios have the same rank as is produced when assuming an IRP based replacement costs. This additional sensitivity reinforces PGE’s finding that securing more than [Begin Confidential] [Redacted] [End Confidential] MWa is the least-cost, least-risk procurement strategy for customers.<sup>41</sup> When recognizing that the expiration of PTC will increase 2025 replacement energy costs, the top performing resource action would be to pursue the ‘Least Cost, Least Risk Procurement’ option [Begin Confidential] [Redacted] [End Confidential] option is forecasted to be a high cost strategy that significantly increases customer costs due to procurement of higher cost renewables at a later date.

Table 1: Comparison of Top-Five Performing Portfolios Under Alternative Replacement Assumptions

Rank	Average Offer Replacement Cost	Average Offer Replacement Cost Elevated By Lost PTC	2016 IRP Update Replacement Cost
1	F-17	F-17	F-17
2	F-16	F-14	F-14
3	F-6	F-16	F-16
4	F-5	F-3	F-3
5	F-4	F-13	F-13

<sup>39</sup> AWEC comments at page 5.

<sup>40</sup> AWEC comments at page 6.

<sup>41</sup> PGE notes NWECC’s support for the acquisition of ‘more than 100aMW of new renewable resources’.

[Begin Confidential]

<sup>42</sup> [End Confidential] This procurement option is most in keeping with the IRP methodology, the approved RFP design, and the principles of least cost, least risk resource planning and procurement.

D. Proposed Procurement Supports Reliability

PGE's RFP requirements ensure resources procured by PGE support the reliability of PGE's system. PGE's recommended Least Cost Least Risk Procurement option would meaningfully contribute to meeting PGE's forecasted 2021 capacity deficit associated with the cessation of coal fired operations at the Boardman Coal Plant. Considerable attention was rightly dedicated in the approved RFP design and evaluation processes to ensure eligible resources supported PGE's fundamental obligation as a load-serving entity. Consistent with the approved RFP design, PGE assigned unique capacity contribution to each bid and designed the RFP to ensure that the resource could be reliably delivered to PGE's system even under periods of regional transmission constraints.

All resources evaluated in the RFP were assigned a unique capacity contribution specific to the offered technology and output profile. The RFP design attributed benefit to diverse renewable resources through elevated capacity contribution calculation results. In Staff Opening Comments, Staff questions whether this resource benefit is sensitive to PGE's load forecast.<sup>43</sup> PGE has found that its RFP results are not significantly sensitive to load forecast results and provides additional analysis in Appendix A.

Consistent with PGE's RFP requirements, all final shortlisted offers have demonstrated a viable, achievable plan to deliver to PGE's system using long-term firm service. Long-term firm service is the only transmission product currently offered by Bonneville Power Administration (BPA) that provides transmission capacity for the life of the project or contract. As discussed in this Docket, without long-term firm service, PGE's customers face the increased risk of unavailable firm transmission capacity that must be delivered on lower quality transmission products including non-firm service.

To provide flexibility for bidders to secure long-term firm transmission rights, PGE's approved RFP design allowed for bidders to secure long-term firm transmission rights as late as

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<sup>42</sup> CUB comments at page 1.

<sup>43</sup> Staff Opening Comments at page 5.

December 31, 2018. Further, the RFP allowed for bidders to rely upon up to three years of conditional firm bridge service. This flexibility was necessary for one bidder to qualify with PGE's transmission requirements and allowed for increased offers on PGE's final shortlist.

[Begin Highly Confidential]

[Redacted]

[Redacted] [End

Highly Confidential] While several bidders proposed reliance upon conditional firm reassessment service, no other bidders proposed reliance upon conditional firm bridge service.<sup>44</sup>

#### IV. Additional Considerations

The IE included constructive feedback on a preferred process for future RFPs. Specifically, the IE Report suggests that PGE's eligibility and non-conformance findings be finalized prior to identification of the initial shortlist. Finalizing eligibility decisions prior to initiating short-list analysis may prevent bids from being eliminated from the initial shortlist due to the presence of alternative bids that are ultimately found to be non-compliant.<sup>45</sup> PGE appreciates, and welcomes this feedback. For this procurement, the approved RFP design did not allow for the recommended process. As encouraged by the Commission, Commission Staff, and Stakeholders, PGE delayed the bidder demonstration of many eligibility requirements to the shortlist stage. The benefit of this decision was to allow for additional time for all bidders to complete RFP requirements.<sup>46</sup> As a result, additional due diligence and eligibility determinations were required after the initial shortlist was identified. The IE rightly notes that this RFP design

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<sup>44</sup> This should address the clarification requested by Staff regarding Conditional Firm Bridge. See Staff Opening Comment at page 2.

<sup>45</sup> IE Report at page 21.

<sup>46</sup> At least one final shortlisted offer took advantage of this time to demonstrate compliance with the RFP requirements.

had to accommodate a fast timeline necessary to capture the expiring production tax credit for customers.<sup>47</sup>

## V. CONCLUSION

The Commission's acknowledgment of PGE's final shortlist will enable PGE to secure long term value for customers, continue to pursue compliance with SB 1547 and make progress toward meeting PGE's goal to reduce greenhouse gas emissions by more than 80% by 2050. The 2018 RFP had ample participation,<sup>48</sup> and provided PGE a competitive selection of resources for customers. The resources on the final shortlist are forecasted to provide net customer benefits under all scenarios analyzed. The final shortlist represents the least-cost, least risk resources to implement the 2016 IRP Revised Renewable Action Plan.

PGE respectfully requests Commission acknowledgement of the 2018 RFP final shortlist by December 4, 2018 to enable PGE to timely finalize negotiations with final shortlist bidders and ensure capture of expiring federal tax credits for the benefit of PGE's customers.

DATED this 5th day of November, 2018.

Respectfully submitted,



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<sup>47</sup> IE Report at page 21.

<sup>48</sup> The IE describes the RFP as "reasonably competitive". See IE Report at page 1.

## Appendix A

### Additional Analysis

#### (1) Load Forecast Analysis

In Staff Opening Comments, Staff requested an additional portfolio analysis sensitivity to study how portfolio analysis results might be affected by high and low load forecasts. As PGE explained in response to Staff Data Request No. 020, PGE did not include load growth sensitivities in the RFP portfolio analysis because PGE's load growth assumptions have a relatively small effect on PGE's forecasted capacity needs. PGE did include in the portfolio analysis, Qualifying Facility (QF) completion rate sensitivities which provided larger, more meaningful impacts on PGE's forecasted capacity needs to examine portfolio performance across different near-term need scenarios.

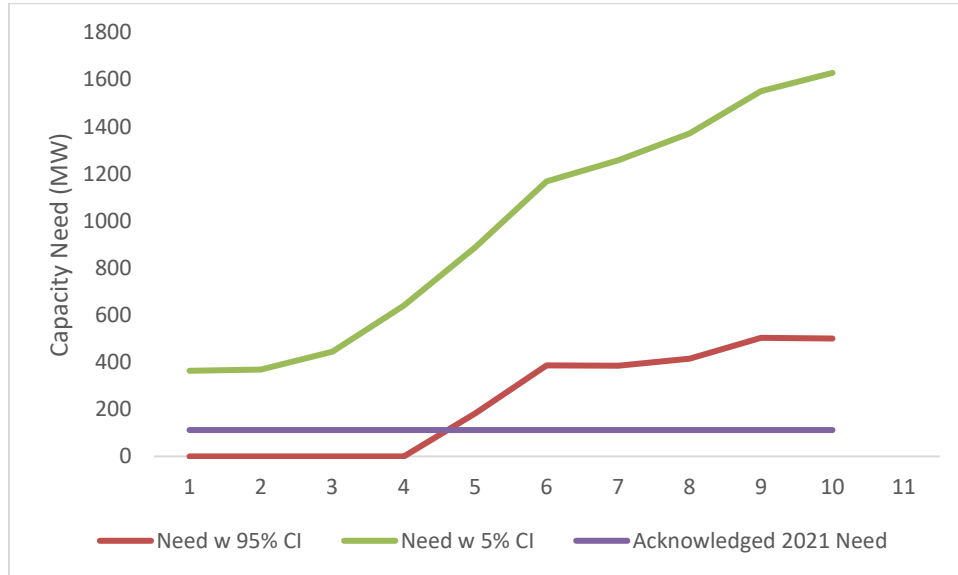
The main reason that load forecast sensitivities have limited impact on PGE's portfolio analysis is because changes in load forecasts do not change portfolio costs or portfolio energy benefits. A change in load forecast only impacts the portfolio's capacity contribution and associated capacity value. Lower load forecasts reduce PGE's forecasted capacity deficit. Higher load forecasts increase PGE's forecasted capacity deficit. In all forecasts, PGE's capacity deficit is expected to increase sharply in 2025 following the expiration of several power purchase contracts.

PGE's RFP design credits portfolios for their capacity contribution up to the capacity deficit acknowledged in the 2016 IRP Update of 112 MW in 2021. While PGE forecasts the capacity deficit to increase throughout time, PGE believes that assigning a capacity value to fulfill unbounded future capacity needs would be inappropriate and unnecessarily expose customers to additional forecast and economic risk. To diminish these risks and to preserve optionality on a going forward basis, PGE's RFP analysis attributes up to 112 MW of capacity value to resources and portfolios.

Staff also suggests that a transparent method of identifying a low and high load forecast would be the use of the 95 percent confidence interval of PGE's econometric load forecast models including both model and parameter uncertainty. PGE does not find Staff's proposed method to be ideal for testing sensitivity to load forecasts as it captures only statistical parameters rather than insight driven scenarios. PGE considers the regression's 95 percent confidence interval used to evaluate near-term capacity need an extreme stress test. Nevertheless, for the purposes of responding to Staff's request in this Docket, PGE includes the capacity need sensitivities associated with the 95 percent confidence interval of PGE's econometric load forecast models.

Figure 1 includes the acknowledged 2021 capacity need in addition to the capacity need sensitivities under the load confidence interval requested by Staff.

Figure 1: Capacity Need Sensitivities Under Load Confidence Interval<sup>[a]</sup>



[a] All portfolios credited with capacity contribution up to acknowledged 2021 need.

PGE analyzed these capacity need sensitivities in its portfolio model. As discussed above, PGE assigned capacity value to all portfolios but did not assign more capacity value than could be provided to fill the acknowledged need. For the 95% confidence interval analysis, no capacity value was attributed for 2021-2024. Furthermore, for these sensitivities, PGE relied upon the capacity contributions calculated under the reference load forecast. The capacity contributions would be expected to slightly adjust under the sensitivities for the 95% load confidence interval. However, as the sensitivities do not affect the seasonal timing of PGE’s need (as opposed to the magnitude), these small effects would not affect top portfolio results.

Table 2 below identifies the top five portfolios under the reference case load forecast in addition to the two load forecast sensitivities requested by Staff. As can be observed in the table, PGE’s near-term load forecast assumptions have small effects on PGE’s portfolio analysis. The only change observed in the top performing portfolios is the improved performance of portfolio F-3 under the 95% confidence interval load forecast relative to other top performing portfolios.

Table 2: Top Performing Portfolios Under Alternative Load Forecasts

Portfolio Rank	95% Confidence Interval (Upper Bound) Load Forecast	Reference Load Forecast	95% Confidence Interval (Lower Bound) Load Forecast
1	F-17	F-17	F-17
2	F-3	F-14	F-14
3	F-14	F-16	F-16
4	F-16	F-3	F-3
5	F-13	F-13	F-13

(2) Net Costs and Incremental Costs Metrics

In Staff Opening Comments, Staff suggests that portfolio net costs are a superior metric to compare and measure portfolio performance.<sup>49</sup> Staff indicates that using an incremental customer cost metric to compare portfolio performance would not be consistent with the aims of the RFP design. PGE agrees. In response to Staff Data Request No. 029, PGE clarified that “Incremental customer costs are *not* a more accurate metric to identify top performing resources than the total costs and benefits of the portfolio. Incremental customer costs are a useful metric that measures the magnitude of cost impacts associated with a resource addition and provides helpful contextual information about potential impacts to customers.” (Emphasis Added). As clarified in PGE’s response to Staff Data Request No. 029, incremental customer costs were included in the Request to provide context for the Commission and Stakeholders and provide an estimate of near and long term rate impacts associated with PGE’s proposed actions. However, portfolio net costs are used to measure and compare portfolio performance for the very reasons Staff lists in Staff Opening Comments.

(3) Alternative Risk Metrics

PGE has performed additional analysis regarding portfolio risks in response to observations and questions in Staff Opening Comments. Staff identifies its concern that the portfolio analysis standard deviation risk metric “misidentifies all risk as bad.”<sup>50</sup> PGE has performed additional analyses to provide more insight into the portfolio risk metrics and results.

Staff is correct that a standard deviation risk metric includes, and is potentially penalized by, the distribution of observations whose forecasted costs are ‘good’ or lower than the expected value. Staff is also correct that a simple standard deviation metric is not normalized to account

<sup>49</sup> Staff Opening Comments at page 5.

<sup>50</sup> Staff Opening Comments at page 6.



for portfolio size or expected value. While Staff has supported the use of a standard deviation as a preferred risk metric in the recent past,<sup>51</sup> PGE is open to continuing discussions regarding the best measures to reflect portfolio risk.

Staff also suggested PGE apply a ‘Coefficient of Variation’ (CV) risk metric.<sup>52</sup> However use of a CV metric is limited to data sets measured on a ratio scale without negative values. The portfolio net cost distribution ranges from positive to negative and includes no meaningful absolute zero value, therefore the CV metric cannot be applied in this analysis.

In an effort to characterize only those risks related to futures worse than the expected value, PGE has included a sensitivity using a semi-variance metric. The semi-variance metric characterizes the distribution of observations higher than the expected value. Semi-variance is calculated using the portfolio cost across the futures for which the cost exceeded the reference case’s net cost. The semi-variance directly measures high cost outcomes and considers the asymmetrical impact that higher than expected electricity costs have on customers relative to lower than expected costs. As can be observed in Table 3, relying upon a semi-variance risk metric as opposed to a standard deviation, does not significantly affect the portfolio analysis ranking results. This can be attributed to the fact that the distributions of the portfolio net costs are rather symmetric.<sup>53</sup>

As recommended by Staff, PGE ran additional mean/standard deviation sensitivity weightings. The 50/50, as originally weighted, results showed that the top performing portfolio volumes capture available, cost-effective renewables without elevating the risk associated with over procurement. As can be observed in Table 3, greater weighting on the net cost metric favors larger portfolios with greater savings forecasted under reference case conditions. Furthermore, greater weighting on the risk metric favors slightly smaller portfolios due to the elevated risk associated with larger energy volumes accompanying large portfolios. PGE continues to favor an even balance between cost and risk metrics in the 2018 RFP analysis.

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<sup>51</sup> See for example, LC 66, Staff’s Initial Comments, page 28, footnote 78.

<sup>52</sup> Staff Opening Comments at page 7.

<sup>53</sup> PGE checked each portfolio’s net cost distribution across the futures, using a Normal quantile-quantile plot (Normal QQ plot).

Table 3: Cost and Risk Weighting and Metric Sensitivity Results

Cost/Risk Weighting (%/%)	Top 5 Portfolios	40/60	50/50	60/40
<b>Net Cost/Standard Deviation</b>	1	F-17	F-17	F-14
	2	F-3	F-14	F-13
	3	F-16	F-16	F-16
	4	F-6	F-3	F-15
	5	F-14	F-13	F-17
<b>Net Cost/Semi-variance</b>	1	F-17	F-17	F-14
	2	F-16	F-14	F-13
	3	F-3	F-16	F-16
	4	F-6	F-3	F-17
	5	F-14	F-13	F-3

(4) Ordinal vs. Cardinal Performance Metrics

Staff in Staff Opening Comments stated its support for Portfolio Analysis results that are presented in a cardinal rather than ordinal measure.<sup>54</sup> The Standard Study Assumptions and the Average Sensitivity Analysis results were presented in a cardinal measure in the PGE’s portfolio analysis. PGE’s analysis and recommendations were based on the net cost/risk weighted metric where the difference between portfolios was measured and cardinally weighted. Table 4 on page 26 of the Request presents the rankings of the portfolio analysis from the Standard Study Assumptions and the Average Sensitivity Analysis. The Average Sensitivity Analysis considers the net cost/risk metric value for portfolios across all study input assumptions (36 different cases). PGE took the average cardinal measured value to determine the portfolio’s average net cost/risk metric. The ranking presented in Table 4 is reflective of these averages. The fact that the results from the Average Sensitivity Analysis are similar to the Standard Study Assumptions provides confidence in PGE portfolio ranking. In contrast, the IE’s representation in Table 8 on page 25 of the IE Report identifies the frequency of a portfolio’s placement in the top 5 across all sensitivities. PGE agrees that frequency counts and ordinal measures can be misleading and this difference in method is part of the reason for the ranking difference between PGE and the IE. PGE agrees with Staff that results should be viewed on a cardinal measure and the top five portfolios under PGE’s Standard Study Assumptions and Average Study Assumptions are measured and ranked consistent with this view.

<sup>54</sup> Staff Opening Comments at page 7.

**Appendix B**

**Highly Confidential/Confidential Commercial Update**

[Begin Highly Confidential]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[End Highly Confidential]

[Begin Confidential] [Redacted] [End Confidential]

**Response to AWEC Data Request No. 007**

October 18, 2018

TO: Jesse O. Gorsuch  
Alliance of Western Energy Consumers’

FROM: Jimmy Lindsay  
Manager, Resource Strategy

**PORTLAND GENERAL ELECTRIC  
UM 1934  
PGE Response to AWEC Data Request No. 007  
Dated October 11, 2018**

**Request:**

**Other than an assumption that tax credits will expire in the near term, did PGE rely on any other assumptions or analyses for its conclusion that “renewables are unlikely to be as cost effective in the next ten years as they are today”? See PGE’s Request for Acknowledgement of Final Short List of Bidders in 2018 at page 26.**

**Response:**

Yes. Please refer to page 28 of the 2016 IRP Update and Appendix B of the 2016 IRP Update. The table below identifies the forecasted \$/MWh cost for ‘Gorge Wind’ resources for advancing commercial online dates beginning in 2020 consistent with assumptions from the 2016 IRP Update. Cost initially increase due to the expiration of federal tax credits, before declining consistent with forecasted capital cost declines.

**Generic Gorge Wind Real Levelized Delivered 2018\$/MWh:  
Based on the COD year**

COD year	2018\$/MWh
2020	\$46.41
2021	\$49.03
2022	\$51.87
2023	\$54.72
2024	\$60.89
2025	\$60.45
2026	\$60.02
2027	\$59.78
2028	\$59.36
2029	\$59.13
2030	\$58.92