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October 3, 2018

Via Electronic Filing

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

Re: UM 1934 - Request for Acknowledgment of the Final Short List of Bidders in Portland General Electric Company's 2018 Request for Proposals for Renewable Resources

Attention Filing Center:

Portland General Electric Company (PGE) submits the enclosed Request (Request) for Public Utility Commission of Oregon Acknowledgment of the Final Short List of Bidders in the 2018 Request for Proposals for Renewable Resources (2018 RFP). PGE has also attached Bates White's (the Independent Evaluator) Final Closing Report to this Request.

Please direct any questions regarding this filing to Jimmy Lindsay at <u>jimmy.lindsay@pgn.com</u> or (503) 464-8311.

Sincerely,

Loretta I. Mabinton Associate General Counsel

LM: sj

Enclosures

BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM 1934

In the Matter of

PORTLAND GENERAL ELECTRIC COMPANY

Application for Acknowledgment of the Final Short List in 2018 Request for Proposals for Renewable Resources. REQUEST FOR ACKNOWLEDGMENT OF THE FINAL SHORT LIST OF BIDDERS IN 2018 REQUEST FOR PROPOSALS FOR RENEWABLE RESOURCES

I. INTRODUCTION

In accordance with the competitive bidding guidelines (Competitive Bidding Guidelines)¹ adopted by the Public Utility Commission of Oregon (Commission), Portland General Electric Company (PGE) requests that the Commission acknowledge the final short list of bidders (Request) in PGE's 2018 Request for Proposals for Renewable Resources (2018 RFP).²

In this 2018 RFP, PGE proposes to acquire long term renewable resources, bundled with the associated renewable energy credits (RECs), to reduce the cost to customers of meeting Oregon's long-term Renewable Portfolio Standards (RPS) requirements. At PGE, we are committed to helping our customers and the communities we serve achieve a clean energy future and providing leadership to advance the state's energy goals. In 2016, PGE collaborated with environmental groups and customer advocates to pass one of the most progressive clean energy laws in the nation. The resulting landmark legislation – the Oregon Clean Electricity and Coal Transition Plan – sets a target of 50 percent renewable energy by 2040 and transitions Oregon off

¹ OPUC Competitive Bidding Guidelines set forth in Appendix A of OPUC Order No. 06-446, dated August 10,

^{2006,} as modified by OPUC Order No. 14-149, dated April 30, 2014 (OPUC Docket UM-1182).

² Order No. 14-149 at 14 (adopting mandatory acknowledgement of final short list of a utility solicitation).

coal-fired electricity by 2035. In the near term, PGE is continuing to pursue renewable resources to meet our customers' needs and decarbonize our portfolio.

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 the solicitation confirmed and exceeded this expectation. Renewable resources have been offered to PGE at prices significantly below what was forecasted in the 2016 IRP and 2016 IRP Addendum (Addendum) filings. As discussed in additional detail below, the final short-listed resources are forecasted to offer a less expensive source of energy than would be otherwise purchased in the wholesale energy market. All final short-listed resources rely upon expiring federal production tax credits which are a significant driver of value for PGE's customers, and address long-term portfolio energy, capacity, and RPS compliance needs.

As recognized in PGE's 2016 Integrated Resource Plan (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 compliance³ as outlined in the Addendum⁴. 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.

In addition, the accelerated timing and design of the 2018 RFP provides PGE customers the best opportunity to benefit from expiring federal Production Tax Credits (PTCs)⁵ and

³ The 'glide path' spreads compliance cost impacts on customers.

⁴ See 2016 IRP Addendum at page 9. The Commission acknowledged the updated 2016 IRP Addendum by Order No. 18-044.

⁵ In order for a project to be eligible to capture 100% of the available PTCs, PGE and the project bidder must be prepared to execute procurement agreements by the end of 2018 to allow for a 24-month construction period.

Investment Tax Credits (ITCs) while simultaneously addressing energy and capacity needs that PGE will face following Boardman's cessation of coal fired operations in December 2020.

PGE, in collaboration with Staff, stakeholders and interested parties, designed the 2018 RFP in compliance with the Competitive Bidding Guidelines. PGE conducted the solicitation in accordance with the Commission approved 2018 RFP⁶ and with the active participation of and oversight by the Commission selected independent, third-party evaluator⁷, Bates White, as an Independent Evaluator (IE), ensuring a fair and transparent procurement process for all bidders. The IE, in accordance with the Competitive Bidding Guidelines and as directed by the Commission:

- Attended Pre-RFP Issuance workshops on March 2, 2018.
- Consulted with PGE during PGE's preparation of this 2018 RFP and submitted its assessment of the final draft RFP to the Commission on April 6, 2018.
- Reviewed and commented on PGE's Redline of the Draft RFP, and at the Commission's request, prepared an assessment⁸ of the 'open issues' prior to Commission approval of this 2018 RFP.
- Reviewed 'mock bids' to test the integrity of the evaluation models and reviewed final scoring and evaluation criteria.
- Conferred with OPUC staff.
- Oversaw the 2018 RFP process to ensure it was administered fairly.
- Separately evaluated and scored PGE's Benchmark bids.
- Reviewed all correspondence between bidders and PGE's RFP Evaluation Team.
- Reviewed all bids to ensure conformance with the 2018 RFP's identified requirements.
- Reviewed and edited all memoranda sent to bidders of non-compliant bids.
- Independently scored all bids to determine whether the selections for the initial and final short-lists were consistent with the bid evaluation criteria.
- Compared the results of the IE's scoring with PGE's scoring.
- Prepared a Final Closing Report for the Commission after PGE selected the final short list. The IE's report provides its assessment of all aspects of the solicitation

⁶ See Order No. 18-171

⁷ On May 9, 2017, PGE filed an application for the selection of an Independent Evaluator. On June 27, 2017, the <u>Co</u>mmission adopted Staff's recommendation to appoint Bates White, LLC as the IE.

process and the IE's involvement, including detailed bid scoring and evaluation results.

PGE received bids from eight counterparties, who together offered twenty-six distinct proposals, and included three Benchmark bids. The process, designed in conformance with the Competitive Bidding Guidelines, required the Benchmark bid to be received and evaluated prior to PGE's receipt of all other bids. Following the receipt and scoring of all offers, PGE identified an initial short list containing six unique projects representing a total energy volume of 438 MWa, with 320 MWa of non-benchmark resources. PGE identified the initial short list after performing Individual Offer Analysis and assigning both price and non-price scores. Following the identification of the initial short list, PGE received best and final offers, performed additional due diligence to confirm conformance with the 2018 RFP requirements, and updated scores to identify PGE's final short list. Finally, PGE performed Portfolio Analysis on all final short list offers. The Portfolio Analysis results were used to supplement Individual Offer Analysis results to identify the top performing bids and determine appropriate procurement volumes.

PGE working in collaboration with the IE, requested clarifying and additional information from bidders, as each bid package required, to properly determine compliance with 2018 RFP requirements, evaluate offers and identify execution risks. Throughout the process, PGE proactively engaged with bidders by conducting both pre- and post-issuance workshops and answering questions raised from bidders during the bid submittal process. PGE identified the final short list projects from the initial short list after performing both price (updated for best and final offer prices) and non-price analysis (relying upon bidder responses to final due diligence requests), incorporating feedback from the independent wind expert's review of variable energy resource assessments, independent owner's cost analysis, making short list RFP compliance determinations and completing portfolio and risk analysis. This 2018 RFP was conducted fairly and transparently for bidders. The final short list includes bids that provide customers with least cost and least risk resources that support RPS while taking full advantage of the expiring federal tax credits (PTCs and ITCs).

II. COMMISSION ACKOWLEDGMENT OF 2016 IRP ADDENDUM

In the Addendum⁹, PGE proposed issuing a request for proposals for qualifying renewable resources for approximately 100 MWa to help meet near-term needs, initiate a longterm RPS compliance 'glide-path' and to capture for customers benefits relating to expiring federal tax credits for eligible renewable resources. Additionally, the Addendum included several key requests for proposal design components to promote the selection of cost-effective renewable resources for the benefit of customers.

The Addendum recommended selection of renewable resources that were able to contribute to PGE's forecasted near and medium-term energy and capacity needs while providing immediate value to customers in addition to reducing the long-term RPS compliance costs studied in the 2016 IRP and the Addendum.

The Addendum recommended including a cost-containment screen within the request for proposal design to encourage only the selection of short-listed bids that are forecasted to be cost effective energy and capacity resources. The proposed screen would prevent the procurement of renewable resources to meet future RPS compliance needs if the resource's forecasted energy and capacity value was exceeded by the project's forecasted cost.

The Addendum proposed further reducing customer costs related to a near-term renewable procurement through PGE's commitment to return the value of RECs to customers prior to year 2025. PGE proposed extracting value from RECs generated prior to 2025 through

⁹ The Commission acknowledged the Addendum in Order No. 18-044.

sales in the wholesale REC marketplace, through voluntary retail purchases, or by satisfying carbon-related compliance obligations should such policy be enacted prior to the resource online date.

In the Commission acknowledgement of the Addendum, the Commission included the following five conditions:

- PGE shall provide updates to its energy, capacity, and renewable energy needs inclusive of Qualifying Facility and unbundled REC sensitivity analysis. The results shall be included in PGE's RFP docket and with PGE's RFP analysis.
- 2. PGE shall update its long-term RPS glide path analysis in future IRPs.
- PGE shall address issues specific to Montana wind through its RFP design and RFP workshop process.
- 4. PGE shall explain its cost containment mechanism in its RFP design and RFP workshop process.
- Staff may open a docket to study mechanisms to deliver near-term REC value to customers.

Through PGE's 2018 RFP design, workshop process, separate compliance filings and through this Request, PGE has satisfied the Commission's conditions one, three, and four, as discussed below. Condition two is expected to be satisfied following successful procurement of additional renewable resources and the filing of PGE's 2019 IRP. Condition five will be satisfied following collaboration with Commission Staff to open a docket to study mechanisms to deliver near-term REC value to customers.

III. COMMISSION APPROVAL OF 2018 RFP

On March 2, 2018, PGE hosted two Pre-RFP Issuance workshops, one with bidders and the other with stakeholders, which were available to attendees both in person and via Webex/telephone, to discuss PGE's proposed 2018 RFP design. The workshops allowed for Q&As, and answers were made publicly available on the 2018 RFP website. On March 9, 2018, PGE filed the Draft Request for Proposal (Application). In the Application, PGE proposed a specific RFP design consistent with the Addendum including a detailed description of the proposed cost containment-screen, a detailed description of PGE's price scoring and non-price scoring methodology, bid compliance requirements, proposed form contracts, and detailed appendixes explaining PGE's Portfolio Analysis and Portfolio Analysis sensitivities. The Application was reviewed by the IE and Stakeholders who provided PGE with opening comments on March 30, 2018. On April 6, 2018 PGE received the IE's initial assessment. Following PGE's Reply Comments on April 13, 2018, Staff issued the Staff Report on April 23, 2018. On May 11, 2018 PGE filed the final 2018 Request for Proposals for Renewable Resources. On May 25, 2018, following the May 21, 2018 Special Public Meeting, the Commission approved this 2018 RFP in Order No. 18-171. In response to feedback received from Stakeholders, Staff, the IE, and the Commission, PGE incorporated several changes to the final RFP design. The more significant changes were:

- Allowing bidders to demonstrate a viable and achievable plan to secure long-term firm transmission as late as the end of 2018.
- Allowing bidders to rely upon conditional firm bridge transmission products for three years after project COD.
- Allowing bidders to deliver to PGE's system using fifteen-minute schedules.
- Removing non-price deductions for redlines to the form PPA contract terms and conditions relating to 'Specified Energy.'
- Allowing bidders additional time to provide necessary interconnection study documents.
- Performance of price and non-price weighting sensitivity analysis.
- Allowing short list bidders to provide best and final offers.

- Including a planning horizon and generic fill sensitivity in the 2018 RFP's Portfolio Analysis design.
- Including a minimum of 150 MWa of non-benchmark resources on the initial short list.

PGE appreciates the feedback from the Commission, Stakeholders, and IE during the crafting of the 2018 RFP design as it allowed for a more competitive and inclusive renewable solicitation and provided greater clarity for all parties involved.

IV. 2018 RFP SELECTION PROCESS AND RESULTS

This 2018 RFP was well received by the market – PGE received proposals from eight bidders offering 26 bid alternatives for wind, solar, geothermal and storage projects, and several hybrid technology bids. A total of 1,702 MW of new wind capacity, 330 MW of new solar capacity, 12 MW of new geothermal capacity, and 141 MW of new energy storage capacity were bid into this 2018 RFP. The bids received presented a diversity of choice for PGE in terms of resource type and geography – project sites were in Oregon, Washington, Montana and Nevada. The bids included a total of sixteen Power Purchase Agreements, five utility-ownership offers and five hybrid commercial structures.

The following Table 1 summarizes all offers received in the 2018 RFP solicitation, the number of commercial structures submitted, and bid performance (i.e. as it relates to satisfying thresholds and inclusion on the initial and final short list).

Bid Number	Unique Project	Structure	Technology	Location	MW [a]	Bid Submittal Thresholds	Initial Short List	Final Short List
1	А	PPA	Wind/Solar/Battery	Oregon	140	Х	Х	Х
2	А	РРА	Wind	Oregon	100	Х	Х	Х
3	Р	РРА	Wind	Oregon	200	Х	Х	
4	В	Ownership	Wind	Oregon	200	Х	Х	
5	С	РРА	Geothermal	Nevada	12	Х		
6	D	PPA	Solar/Battery	Oregon	65			
7	D	РРА	Solar/Battery	Oregon	65			
8	F	PPA	Solar	Oregon	75	Х	Х	
9	E	РРА	Solar/Battery	Oregon	75	Х	Х	
10	F	Ownership	Wind	Oregon	102	Х		
11	G	РРА	Solar/Battery	Washington	100			
12		РРА	Solar/Battery	Washington	100			
13	H [b]	Hybrid	Wind	Oregon	300	Х	Х	Х
14		Hybrid	Wind/Battery	Oregon	300	Х	Х	Х
15		Hybrid	Wind/Solar/Battery	Oregon	350	Х	Х	Х
16	I	Ownership	Wind	Washington	250	Х		
17	I	PPA	Wind	Washington	250	Х	Х	
18		PPA	Wind	Montana	200	Х		
19		PPA	Wind	Montana	200	Х	Х	Х
20		PPA	Wind	Montana	200	Х		
21	- J	PPA	Wind	Montana	750			
22		PPA	Wind	Montana	750			
23		Ownership	Wind	Montana	200	Х		
24		Ownership	Wind	Montana	500			
25		Hybrid	Wind	Montana	400	Х		
26		Hybrid	Wind	Montana	750			

Table 1: Offers Received in PGE's 2018 RFP

[a] – The Nameplate MW does not include the battery energy storage facilities.

[b] – Unique Project H is PGE's Benchmark Resource

A. Bid Submittal Thresholds

The Benchmark bids were submitted for evaluation on June 8, 2018 and were reviewed

for conformity with this 2018 RFP initial bidder eligibility requirements, and then scored and

sealed before other bids were received by PGE, consistent with the Competitive Bidding

Guidelines. All remaining bids were received on June 15, 2018. Following PGE's completion and submission of the Benchmark bid analysis, PGE reviewed third party bids for conformance with the 2018 RFP initial bidder eligibility requirements. These threshold requirements are outlined in the 2018 RFP Appendix H, Exhibit A, "2018 RFP Scorecard Template Thresholds." In some cases, PGE sought clarification/additional information from the bidders. The IE reviewed all bid information, the requests for clarification and/or additional information and the responses from the bidders. PGE and the IE identified and agreed that certain bids were nonconforming and failed to meet the 2018 RFP's initial bidder eligibility requirements for one or both of the following reasons: lack of system impact study agreement and/or lack of a viable plan to secure long-term firm transmission rights. All bids that were initially found to be nonconforming were granted a "cure" period, during which the bidders could remedy their bids (through modification or clarification) in order to conform to the 2018 RFP requirements. When presented with non-conforming notices, two bidders "cured" the bids in question and became compliant with the 2018 RFP requirements. In total, two unique projects and another four bid variants did not "cure" their proposals. These bidders withdrew their bids and PGE returned the associated bid fees of all withdrawn bids.

B. Individual Offer Analysis: Price and Non-Price Scoring

All conforming bids were scored within PGE's Individual Offer Analysis and assigned a price and non-price score. Price scoring employed the methodology described in Section 8.6 of this 2018 RFP. Non-price scoring employed the methodology described in Section 8.8 and detailed in the non-price scoring rubric included in Appendix H of this 2018 RFP. During the Individual Offer Analysis, PGE sent clarifying questions and follow ups to bidders to ensure

PGE possessed all required information to score the bids accurately. The IE was included in this question and answer process for all bidders.

Within Individual Offer Analysis, price scoring is designed to identify those projects whose costs are lowest relative to the value they return to PGE's customers. Those bids that offered the lowest priced energy received strong price scores. Those bids that offered low price energy but also delivered elevated value to PGE – through on-peak generation, diversity relative to PGE's existing portfolio, or flexible dispatch of battery energy storage resources – also received strong price scores. Within Individual Offer Analysis, the size of the project did not directly contribute to a resource's assigned price score as that is addressed through PGE's Portfolio Analysis process.

Non-price scoring is designed to identify those project that have the most mature development plan and present low execution and commercial risk to PGE's customers. The qualities reviewed in non-price scoring are critical for the undertaking of a successful project, but the qualities cannot be easily reflected as a cost impact. As such, PGE's Individual Offer Analysis identified a non-price score for each bidder consistent with the non-price scoring rubric in Appendix H of this 2018 RFP. When price scores are combined with non-price scores within Individual Offer Analysis, PGE can identify those projects that are both least cost and least risk, consistent with the Commission's standard for resource selection. Non-price scoring is essential as that is the only aspect of the evaluation that identifies risk of new projects being built and capable of delivering. As a result, non-price scoring should be considered throughout the resource procurement decision to best protect PGE customers.

C. Determination of Initial Short list

On August 10, 2018, PGE completed its initial evaluation and scoring of conforming bids and on August 13, 2018 the IE also completed its independent review. PGE then applied a costcontainment screen, as required under Section 8.7 of the 2018 RFP, to remove any non-costeffective bids. PGE identified one project that did not pass the cost-containment screen and therefore excluded that bid from the initial short list. From the remaining cost-effective and conforming bids, PGE selected all bids with total scores greater than 600 to be on the initial short list. The delineation of bid scores over 600 allowed PGE to include non-benchmark bids on the initial short list representing in excess of 150% of the renewable energy requested, consistent with Section 9 of the 2018 RFP. One unique project and another five bid variants had total scores less than 600 and were not selected for the initial short list.

Consistent with Section 9 of the 2018 RFP, PGE performed price and non-price weighting sensitivity analysis. Following the testing of 50/50, 60/40, and 70/30 price, non-price sensitivity analyses, PGE observed little relative impact on total scores. PGE determined all bids included in the initial short list were the best performing bids regardless of the price, non-price scoring sensitivity weighting applied.

PGE notified all bidders with conforming bids of their selection or exclusion from the initial short list. The initial short list had 11 bids that included diverse commercial structures and resource technologies. Consistent with Section 9 of the 2018 RFP, the initial short list included more than 150 MWa of non-benchmark resources. Specifically, the initial short list included 438 MWa (1,215 MW) of unique bids, and 320 MWa (865 MW) of non-benchmark resources.

D. Final Short List Selection Process

Consistent with the bid evaluation and selection process outlined in this 2018 RFP, PGE performed additional analysis and due diligence to select a final short list. PGE performed the following additional analysis on the conforming bids remaining on the initial short list.

1. Best and Final Offer Process

Consistent with the IE's recommendation, PGE incorporated a "Best and Final Offer Process" (BAFO) into the 2018 RFP design¹⁰. The process provided all bidders on the initial short list the opportunity to provide price updates, so long as the total bid's price was reduced relative to the initial offer. The BAFO allowed for price adjustments only. BAFOs could not be used to propose new bid variants, change bid structures, or make significant changes to project design.

On August 17, 2018, PGE received BAFOs from seven of the eleven bids on the initial short list. PGE sought clarification and additional information regarding the best and final offers. PGE, after discussions with the IE, determined that some of the BAFOs, either in part or in total, were outside of the scope of the BAFO, and were not considered. PGE notified all bidders providing BAFOs regarding the conformance of their final price update.

2. Wind and Solar Capacity Factor (Vaisala)

Consistent with the Competitive Bidding Guidelines¹¹, PGE retained an independent renewable energy expert – Vaisala - to provide an analysis and opinion on the eleven initial short-listed Variable Energy Resource (VER) studies proposed and submitted to PGE.¹² Vaisala

¹⁰ See Section 3.3 of the Final RFP.

¹¹ See Order No. 06-446.

¹² We note that some bidders provided a sizeable amount of data, and Vaisala was able to accomplish its assessment of those projects in an efficient way. Other bidders did not provide sufficient information which necessitated rounds of additional requests for data, which did not make Vaisala's assessment as efficient as it could have been.

provided reports on each VER study, each of which outlined adjustments related to the gross energy estimate, the gross to net conversion process, the uncertainty evaluation, and the combination of the three. Vaisala proposed adjusted net capacity factors (NCF) to the bidders' original resource evaluations. PGE incorporated the adjusted NCFs into the price scoring model for all initial short-listed bidders. PGE noted that while the overall scores were impacted from the NCF adjustment, the ranking of the eleven bids on the initial short list did not change.

3. Owner's Cost (Burns & McDonnell)

PGE assigned a generic owner's cost to all utility-ownership resources during the initial short list analysis. For the final short list analysis, PGE contracted with Burns & McDonnell, an engineering and construction firm, to provide an independent assessment of the approximate owner's cost for bids with utility-ownership. Burns & McDonnell provided estimates and projections relating to performance, construction costs, and operating and maintenance costs based on experience, qualifications, and judgement as a professional engineering firm. PGE incorporated the estimated owner's cost for the utility-ownership bids into the price scoring model. PGE noted that while the overall scores were impacted from incorporating the estimated owner's cost, the ranking of the eleven bids on the initial short list did not change.

4. BPA Transmission Service Requests

This 2018 RFP requires bidders to secure long-term firm transmission (LTF) to both minimize risk and support reliability for customers at reasonable costs. As discussed in this Docket and reflected in the approved 2018 RFP design, non-LTF products are inferior and have limited availability because of their non-firm nature. It is not consistent with prudent utility practice to procure long-term resources, either by contract or ownership, without assured delivery over the life of the contract or asset. Non-LTF products (including conditional-firm reassessment and short-term firm products) limit the economic benefit of the resources and introduce an unacceptable reliability risk.

PGE required bidders on the initial short list who had requested new transmission service or planned to redirect existing transmission rights on the BPA system to submit the form "Transmission Reservation & Available Transfer Capability Analysis Request." BPA's response allowed PGE to determine whether off-system bids had an achievable plan to secure long-term firm transmission rights to BPAT.PGE prior to the end of 2018 consistent with Sections 4.3 and 6.1.6 of the 2018 RFP.

5. Initial Short List Requirements

Following additional due diligence and bidders' responses, PGE reviewed all initial short list bids for conformance with all 2018 RFP eligibility requirements (including those requirements effective prior to final short list). These threshold requirements are outlined in the 2018 RFP Appendix H, Exhibit A, "2018 RFP Scorecard Template Thresholds." Based upon feedback received from the Commission, the IE and various stakeholders during the 2018 RFP approval process, PGE's RFP requirements were designed to give bidders additional time and flexibility to satisfy the RFP's eligibility requirements. During the due diligence process, PGE sought some clarification and additional information from the bidders. Following PGE's short list due diligence process, PGE and the IE found three projects totaling 525 MW did not meet the 2018 RFP eligibility requirements for one or both of the following reasons: lack of facilities study report and or a viable plan to secure long-term firm transmission. All non-conforming bids were excluded from further consideration.

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6. Final Short List Price and Non-Price Scoring

All initial short list bids that were found to be compliant with the 2018 RFP eligibility requirements were placed on PGE's final short list. Bid non-price scoring was refreshed based on the additional information received by PGE during final project due diligence. PGE's final short list includes three bids, plus three bid variants. The final short list includes 249 MWa (690 MW) of bids, 213 MWa (590) MW) of which are under power purchase agreements. The results of PGE's final short list are included in Table 2:

 Table 2: PGE's 2018 RFP Final Short List:

Bidder	Unique Project	Bid Number	Technology	Commercial Structure	2025 MWa	Cumulative 2025 MWa				
1	۸	1	Wind/Solar + Battery	PPA	39	39				
1	А	A	A	A	A	2	Wind	PPA	29	39
		13	Wind	Hybrid [a]	105	144				
6 H	Н	14	Wind + Battery	Hybrid [a]	104	144				
		15	Wind/Solar + Battery	Hybrid [b]	119	157				
8	J	19	Wind	PPA	91	249				

[a] Hybrid commercial structure includes approximately 69 MWa of PPA resources and 36 MWa of Utility owned wind resources.

[b] Hybrid commercial structure includes approximately 83 MWa of PPA resources and 36 MWa of Utility owned wind resources.

Consistent with Section 9 of the 2018 RFP, PGE again performed price/non-price weighting sensitivity analysis. Following the testing of 50/50, 60/40, and 70/30 price, non-price sensitivity analyses, PGE determined that the ranking of final short list bids is unaffected by the price, non-price scoring sensitivity weighting applied.

E. Portfolio Analysis Review Process

All final short list bids were studied further in PGE's Portfolio Analysis. The analysis was consistent with the Portfolio Analysis methodology described in Section 9 of the 2018 RFP and further detailed in Appendix H.¹³ PGE's Portfolio Analysis evaluates the economics of combining resources to meet PGE's identified need. The Portfolio Analysis also tests the economic risk associated with portfolios of resources by testing the forecasted cost and benefit of the resources and portfolios under multiple economic futures. The Portfolio Analysis does not measure a resource's commercial risk. Consistent with the 2018 RFP design, commercial risk is assessed through non-price scoring and is only reflected in PGE's Individual Offer Analysis. For that reason, it was necessary to evaluate both Individual Offer Analysis results and Portfolio Analysis results when identifying top performing resources.

Portfolio performance is measured through the blended cost and risk metric described in Appendix H. Expected portfolio costs are measured as the total portfolio net present value of revenue requirement (NPVRR) under reference case conditions. Portfolio risk is evaluated using the standard deviation of future results. Portfolios are ranked according to a blended cost and risk metric based on 50% of reference case expected cost and 50% of the standard deviation of portfolio costs.

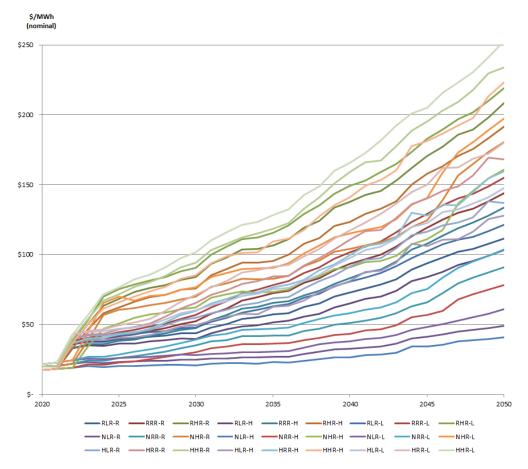
1. Economic Future Assumptions

Before initiating the final short list selection process, PGE forecasted hourly wholesale power prices for 27 economic futures that combine three CO2 price forecasts (zero, reference, and high), three natural gas price forecasts (low, reference, and high), and three regional hydro

¹³ PGE notes Appendix H suggests that the Portfolio Analysis would only study those portfolios selected through optimization methods and through the inclusion of the top 50% of all possible portfolio combinations as measured on a reference cost basis. The Portfolio Analysis used in the 2018 RFP included all possible combinations of resources present on the final short list.

availabilities (low, reference, and high). The assumed economic futures and associated wholesale prices are consistent with the acknowledged 2016 IRP Update¹⁴. Figure 1 illustrates the average annual price for each economic future studied within PGE's Portfolio Analysis.





2. Portfolio Development Phase

PGE created 23 portfolios representing all possible combinations of resources on the final short list. For each portfolio PGE identified a unique capacity value under reference case conditions in addition to the portfolio capacity value under two qualifying facility (QF)

¹⁴ See Section 9 and Appendix F of the 2016 IRP Update.

execution sensitivities. Energy fill volumes necessary to achieve the 100 MWa energy target beginning in 2025 were identified and added as were the capacity fill volumes necessary to close PGE's 2021 capacity deficit. Additional sensitivities were developed to study how the portfolios would be affected by an adjusted 2025 renewable procurement target and energy fill costs equal to the average cost of the bids on the final short list. For all economic futures and study assumption sensitives, PGE calculated portfolio net costs.

3. Portfolio Analysis Results

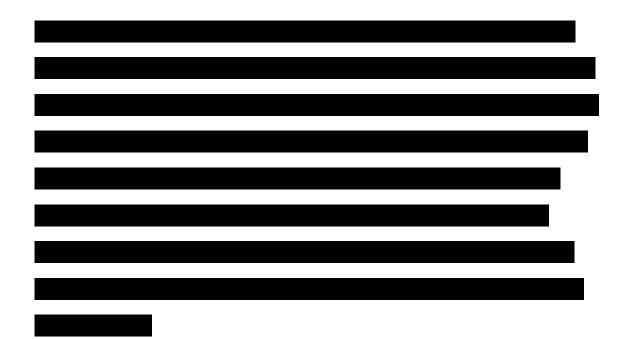
PGE's portfolio results identify the top performing combinations of resources suitable to meet PGE's identified renewable energy target. The order of top performing portfolios and associated resources are different than the order identified in PGE's Individual Offer Analysis. The ordering differences are a result of differences in methodology. The Portfolio Analysis evaluates portfolios on a net portfolio cost and economic risk basis as opposed to a reference cost to benefit ratio used in Individual Offer Analysis. The Portfolio Analysis explicitly considers a resource's size when evaluating portfolios, whereas Individual Offer Analysis includes no scoring effects due to resource size. In addition, Portfolio Analysis is designed to evaluate resource cost and economic risk, whereas Individual Offer Analysis also considers commercial and execution risk through non-price scoring.

PGE's portfolio results are listed below in Table 3. Table 3 identifies portfolio costs under standard study assumptions including a planning horizon through 2051, 100% completion of executed QF projects, a 100 MWa renewable energy target and an energy fill resource whose cost and performance is consistent with a Pacific Northwest Wind resource modeled in the 2016 IRP Update.

Portfolios	Bid Number(s)			Total Energy (MWa) in 2025	Rank
	Resource 1	Resource 2	Resource 3		
F-17			0		1
F-16					2
F-3					3
F-14					4
F-13					5
F-6					6
F-8					7
F-1					8
F-7					9
F-2					10
F-11					11
F-9					12
F-10					13
F-15					14
F-19					15
F-23					16
F-12					17
F-18					18
F-22					19
F-21					20
F-4					21
F-5					22
F-20					23

Table 3: PGE's 2018 RFP Portfolio Analysis Results:

PGE's Portfolio Analysis results, in combination with the Individual Offer Analysis, assist in identifying top performing resources for purposes of pursuing commercial agreements and securing selected resources. The Portfolio Analysis results, which were discussed with the IE, include several informative themes:



2) The portfolio results favor the procurement of diverse resources. All top performing portfolios include either a combination wind, solar, and battery facilities or provide geographic diversity to reduce portfolio costs and risks.

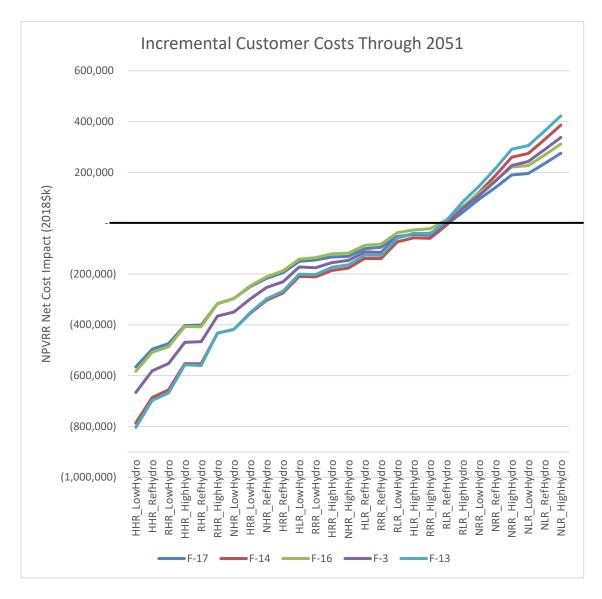
3) Top performing portfolios are cost effective under a broad range of forecasted economic futures. Offers on PGE's final short list are significantly less expensive than PGE forecasted in the Addendum and 2016 IRP Update. Procuring one or more of the top performing resources would create the opportunity to deliver considerable value to PGE's customers. When examining the incremental cost associated with top-performing portfolio (where the costs and benefits of the energy fill and capacity fill resources are removed), PGE's Portfolio Analysis indicates that, over the planning horizon, top performing resource procurement will reduce customer costs. Specifically, the forecasted energy value of the portfolios significantly exceeds the forecasted project costs.

As presented in Figure 2 below, in twenty-one out of twenty-seven economic futures the top five portfolios are forecasted to reduce customer costs. Over the planning horizon the total cost of the top portfolios is exceeded by the savings associated with displacing wholesale energy purchases. Five of the six futures in which net benefits are not forecasted are futures in which regional carbon emissions are never taxed, capped, or otherwise regulated beyond policies in effect today.¹⁵ Were those 'no carbon' policy futures to be realized, PGE's customers would only experience average rate impacts of approximately 0.1% to 1.3%.¹⁶ Average rate impacts would be further reduced through return of REC value in years 2021 through 2024.

¹⁵ State laws passed following the development of the 2016 IRP, including California's recently approved Senate Bill 100, is not included in PGE's 2018 RFP Analysis.

¹⁶ Rate impacts are expressed as an average portfolio rate impact across the portfolio's term without the costs or benefits of energy or capacity fill resources.

Figure 2: Top Five Portfolio NPVRR Results Across Economic Futures Studied in PGE's 2018 RFP



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4. Portfolio Sensitivity Analyses

PGE's Portfolio Analysis results were stress tested through a multitude of sensitivity analyses that considered alternative study assumptions. PGE studied multiple planning horizons including 2040 and 2051. PGE studied how the portfolio results were sensitive to the procurement target by evaluating a 75 MWa target and 125 MWa target in addition to the 100 MWa reference target. PGE studied how the portfolio results were sensitive to the energy fill cost assumptions. Specifically, in addition to the reference assumption of energy fill costs consistent with IRP assumptions, the energy fill was adjusted to be equal to the average cost and performance of the final short-listed bidders. Finally, the Portfolio Analysis included two sensitivities evaluating how the portfolios' recognized capacity value is impacted by multiple QF success rate scenarios.

The different study assumptions were found to have varying levels of effect upon the results. Of the four study assumption sensitivities, the resource target sensitivity was found to have the least effect. Of more consequence were the QF success rate sensitivities and the planning horizon sensitivities that PGE found to have a greater effect on portfolio results. Generally, when fewer QFs are assumed to be successful in achieving COD, the top performing portfolios selected are larger and more diverse. When the planning horizon is reduced from 2051 to 2040 the top performing portfolios generally include more resources of 20 to 25-year terms. The energy fill cost sensitivity was found to have the largest effect on portfolio results. When using the average cost sensitivity, as opposed to the IRP cost sensitivity, portfolio results generally favored portfolios that were smaller than the procurement target and instead used the average cost fill resource to meet the portfolio's identified portfolio needs. This result is intuitive. If it is assumed that future renewable resources can be procured in 2025 for the same price as the bids on PGE's final short list, then small procurements will be favored as they can UM 1934 — PGE's Request for Acknowledgment of Final Short List of Bidders in 2018 RFP — CONFIDENTIAL

later be supplemented without lost opportunity costs. While the sensitivity is useful to review, PGE notes that a major purpose of this 2018 RFP is to secure the benefits of expiring federal tax credits that will otherwise make new renewable projects more expensive in the future. The impetus behind the 2016 IRP, 2016 IRP Addendum, and 2018 RFP is that renewables are unlikely to be as cost effective in the next ten years as they are today. For that reason, PGE appreciates but does not overly emphasize the portfolio results associated with the average bid cost energy fill study assumption.

When looking at all study assumption sensitivities together, the top performing five portfolios identified under standard study assumptions was found to be robust. PGE identified each portfolio's average cost and risk result under all study assumptions sensitivities. The top five portfolio results under PGE's sensitivity analyses were largely consistent with PGE's results under standard study assumptions. As can be observed in Table 4, Portfolio F-6 is also considered a top performing portfolio when averaging cost and risk results for all study assumption combinations.

Standard Study Assumptions			Avera Sensiti Analy	ivity
Portfolios	Rank		Portfolios	Rank
F-17	1		F-17	1
F-16	2		F-16	2
F-3	3		F-6	3
F-14	4		F-3	4
F-13	5		F-14	5

Table 4: Portfolio Analysis Study Assumption Sensitivity Results in 2018 RFP

A. Present Value of Customer Benefits:

Top performing portfolios are forecasted to deliver significant long-term cost savings while contributing to small near-term rate impacts. As was discussed and anticipated in the 2016 IRP Addendum, near-term procurement of renewable resources drives significant value for customers.¹⁷ Resources offered in this 2018 RFP are available at costs significantly below those forecasted in the 2016 IRP. Top performing portfolios are forecasted to have a negative net cost, relative to replacement energy purchases over the resource term. The availability of cost-effective resources reinforces the value proposition of near-term renewable procurement. Furthermore, low priced renewable resources can be acquired with small near-term rate impacts. Table 5 identifies the forecasted portfolio term NPVRR net cost and the year-one and five-year rate impacts for the top-performing portfolios.

Table 5: Long-Term and Near-Term Cost Impact Estimates Associated with Top-

Performing	Resources	in	2018 RFP

Cost Metric	Range of Net Costs and Average Rate Impacts
NPVRR Net Cost (million 2018\$)	\$-82 to -\$139 [a] [b]
Year 1 net cost impact (% of revenue requirement)	1% to 1.5% [a]
2021-2025 average net cost impact (% of revenue requirement)	0.4% to 0.8% [a]

[a] The identified cost impacts exclude the additional value that will be returned to customers for RECs procured prior to 2025.

[b] The identified net customer benefits only include the portfolios' net energy value. Additional benefit related to long-term RPS compliance savings is incremental to this benefit range.

¹⁷ 2016 IRP Addendum, Page 7

B. Capacity and Energy Need Update

On March 8, 2018, PGE filed a 2016 IRP Update, which provided updates to its energy, capacity, and Renewable Portfolio Standard (RPS) needs. Order No. 18-044 included the following condition:

"PGE will provide updates to its energy, capacity, and Renewable Portfolio Standard (RPS) needs within the RFP docket. PGE will update assumptions for qualifying facilities (QF) completion rates and unbundled Renewable Energy Credits (RECs) and incorporate those assumptions in the RFP analysis as sensitivities."

Additionally, on March 28, 2018, PGE made a compliance filing in Docket UM 1934 as

required by the OPUC Order No. 18-044. In this Request, PGE again provides updates to its

forecasted energy and capacity needs under multiple scenarios. Table 6 below identifies PGE's

updated capacity in 2021 and energy needs in 2021 and 2025 by varying sensitivities.

Table 6: Updated Capacity and Energy Need Forecasts and Sensitivities

Sensitivity	2021 Capacity Need (MW)	2021 Energy Need (MWa)	2025 Energy Need (MWa)
Reference	254	29	189
QF Executed 50%	355	113	274
QF Proposed 50%	167	-118	42
Zero Load Growth	230	29	129

Note: Negative Energy Need values indicate an energy-long position from the perspective of the energy availability calculation in the Energy Load-Resource Balance (not based on economic dispatch).

The RPS need sensitivities were examined with respect to: 1) the 2025 physical RPS

shortage (i.e., the shortage in 2025 if PGE does not rely on its REC bank); 2) the first year in

which PGE would run out of RECs and would be unable to comply if it were to rely on its REC

bank, or the REC deficit year; and 3) the remaining RPS shortage in the following year should no

incremental action be taken. Table 7 below provides a summary of the results across each of the sensitivities.

Sensitivity	Physical shortage in 2025 (MWa)	REC deficit year	RPS shortage in following year (MWa)
Reference	87	2031	395
QF Executed 50%	172	2029	424
QF Proposed 50%	0	2035	794
Zero Load Growth	24	2035	504
20% Unbundled RECs	0	2033	20

The QF completion cases show that PGE's near-term physical RPS shortage is highly sensitive to the assumed QF completion rate, as a large quantity of QFs have indicated their intention to contractually commit to come online and produce RECs in the early 2020s. The analysis also found that PGE's longer term RPS needs are less sensitive to the QF completion rate assumption, due largely to the scale of the increase in RPS obligations over time and the expiration of QF contracts.

5. Procurement Strategy & Risks

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PGE's analysis demonstrates that the final short list projects will provide the least cost, least risk resources for customers. The final short list is reasonable, and the Commission should acknowledge the 2018 RFP final short list based on information available in this Docket, and information provided in this Request and the IE's Final Closing Report.

A. Compliance with Guidelines

Under the Competitive Bidding Guidelines¹⁹ each RFP must demonstrate that it can satisfy the Competitive Bidding Guidelines before receiving approval, and in order to receive Commission acknowledgement of the final short list, demonstrate that the solicitation complied with the Competitive Bidding Guidelines.²⁰ The 2018 RFP complied with each applicable Competitive Bidding Guideline.

1. Guideline 1

Guideline 1 requires PGE to issue an RFP for all major resource acquisitions, with durations greater than 5 years and quantities greater than 100 MW, identified in its IRP.²¹ The 2018 RFP was issued to acquire approximately 100 MWa of long-term (minimum 20 year) renewable resource energy supply, bundled with the associated renewable energy credits (RECs), consistent with the Commission acknowledged 2016 IRP Revised Renewable Action Plan²² and satisfies Guideline 1.

¹⁹ In Order No. 18-324, the Commission adopted new Competitive Bidding Rules to supersede the existing guidelines. These Rules, by Commission order, do not apply to solicitations that were underway when the Commission adopted the Rules. See Order 18-324 at 15. Therefore, this RFP was conducted under the Competitive Bidding Guidelines.

²⁰ *Id.*, Appendix A at 2 (requiring Commission approval of an RFP); *see also id.* at 5 (requiring the utility to request that the Commission acknowledge a shortlist after completion of an RFP).

²¹ *Id.*, Appendix A at 1 (Guideline 1).

²² Order No. 18-044.

2. Guideline 2

Guideline 2 allows the Commission to modify the requirements of the Guidelines when there is a "time-limited resource opportunity of unique value to customers," among other reasons.²³ This Guideline is not applicable because modifications were neither required nor adopted for this 2018 RFP.²⁴

3. Guideline 3

Guideline 3 requires a utility to blind all RFP bids if it chooses to submit affiliate bids.²⁵ This Guideline is not applicable because there was no PGE affiliate bid submitted in this solicitation.

4. Guideline 4

Guideline 4 allows utilities to include self-build and ownership-transfer options²⁶ in an RFP, to provide a potential cost-effective alternative for customers, a utility may also consider ownership transfers within an RFP solicitation. In the 2018 RFP, PGE submitted three Benchmark bids associated with the same project.

5. Guideline 5

Guideline 5 requires the use of an independent evaluator to "help ensure that all offers are treated fairly," and that the independent evaluator be both independent and competent.²⁷ The Commission selected Bates White, LLC, to serve as the IE.²⁸ Bates White is independent of PGE and of the bidders and has significant experience as an independent evaluator for state public

²³ *Id.*, Appendix A at 1 (Guideline 2).

²⁴ Although this 2018 RFP was not initiated to acquire a time-limited resource opportunity, the timing of the acquisition of resources in this 2018 RFP enables PGE to take full advantage of expiring PTCs and ITCs for the benefit of customers, consistent with Commission Order No. 18-044.

²⁵ *Id.*, Appendix A at 2 (Guideline 3).

²⁶ Id., Appendix A at 2 (Guideline 4).

²⁷ *Id.*, Appendix A at 2 (Guideline 5).

²⁸ Order No. 17-226 (adopting Staff's recommendation to select Bates White, LLC to serve as IE).

utility commissions, including the Commission. Over the course of the 2018 RFP, the IE worked closely with PGE and Staff to ensure that the solicitation process was both transparent and fair.

6. Guideline 6

Guideline 6 requires that PGE prepare a draft RFP and provide it to all parties and interested persons in PGE's most recent general rate case, RFP, and IRP dockets. Further, Guideline 6 requires PGE to conduct bidder and stakeholder workshops on the draft RFP. PGE provided notice to all required parties on February 23, 2018 and conducted separate bidder and stakeholder workshops on March 2, 2018. The IE participated in both workshops. PGE solicited feedback on both the 2018 RFP design and the standard contracts.

Guideline 6 also mandates that the draft RFP set forth any minimum bidder requirements for credit and capability, along with bid evaluation and scoring criteria, and allows utilities to set a minimum resource size. This 2018 RFP set forth certain minimum bidder requirements: (a) 10 MW minimum project size, (b) achievement of a December 31, 2020 commercial operation date, (c) interconnected with PGE's load or delivery to PGE identified delivery points, and (d) minimum bidder credit qualifications and collateral requirements.²⁹

Consistent with Guideline 6, PGE consulted with the IE in preparing the draft RFP, and the IE submitted two rounds of written comments on the design of the 2018 RFP to the Commission. PGE distributed the initial application in this docket to each of the required parties on March 9, 2018.

The Commission began deliberations on PGE's RFP at the May 8, 2018 Regular Public Meeting. In response to the IE's assessment, stakeholder feedback and in response to the Commission's request, PGE filed an updated redline version of its final 2018 RFP on

²⁹ As described in Section 6.1.4 and detailed in Appendix E – Credit Guidance of the 2018 RFP

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May 11, 2018 and subsequently presented additional redline edits at the May 16, 2018 Special Public Meeting. PGE made additional modifications to the Final 2018 RFP to include new terms, and incorporate guidance provided in OPUC Order No. 18-171.

Following the approval of the Final 2018 RFP, PGE conducted one additional bidder and stakeholder workshop on May 22, 2018 .to provide an overview of the bid submittal process and website interface.

7. Guideline 7

Guideline 7 states that the Commission's review of a proposed RFP "should focus on: (1) the alignment of the utility's RFP with its acknowledged IRP; (2) whether the RFP satisfies the Commission's competitive bidding guidelines; and (3) the overall fairness of the utility's proposed bidding process."³⁰ As required by Guideline 7, the Commission reviewed and approved the 2018 RFP on May 21, 2018³¹ determining that the 2018 RFP complies with Guideline 7.

8. Guideline 8

Guideline 8 requires PGE to submit a detailed score with supporting cost information for any benchmark resource to the Commission and IE prior to opening of bidding. Consistent with Guideline 8,³² PGE submitted a detailed score for its Benchmark bids to the IE for consultation with Commission Staff before opening other third party³³ bids on June 28, 2018. PGE also provided the IE with the Benchmark bids' supporting cost information, including transmission arrangements and all other information necessary to score the Benchmark bids. The IE reviewed the reasonableness of the scores for the Benchmark bids. The Benchmark bids score was

³⁰ Order No. 14-149, Appendix A at 2 (Guideline 7).

³¹ Order No. 18-171.

³² See Order No. 17-345 (as amended by Order No. 17-367).

³³The Benchmark bid was part of a combination bid that included a PPA.

assigned using the same bid scoring and evaluation criteria that was used to score mock bids and third-party bids. After reviewed by the IE, the Benchmark bids were sealed by the IE. The thirdparty bids were received on June 15, 2018 by the IE. However, because scoring of the Benchmark bids was not yet completed, the IE and PGE did not access to the third-party bids files until the Benchmark bids were scored and sealed.

Guideline 8 also provides that, during the RFP process and with IE input, the utility may provide bidder updates where appropriate, and may also update the costs and score for the benchmark bids. After the initial short list, PGE, consistent with the guidance received from the Commission, provided bidders the opportunity to update pricing by providing a best-and-final price (BAFO). All bidders were given the same timeline for submitting the updated price offers and multiple bidders, including the Benchmark bids, availed themselves of this opportunity.

9. Guideline 9

Guideline 9 provides that initial short list bids be based on both price and non-price factors and provide resource diversity. The non-price score "should be based on resource characteristics identified in the utility's acknowledged IRP Action Plan . . . and conformance to the standard form contracts attached to the RFP."³⁴

The 2018 RFP final short list was identified using both price and non-price scoring. Nonprice scoring involved these factors: (1) project development, (2) project physical characteristics, (3) project performance certainty, and (4) credit evaluation.³⁵

This non-price scoring was consistent with PGE's portfolio modeling and decision criteria used to develop the Updated Action Plan 2016 IRP Addendum which called for the

³⁴ Order No. 14-149, Appendix A at 3 (Guideline 9).

³⁵ Final 2018 RFP at Sections 8.8.1 - 8.8.4.

acquisition of approximately 100 MWa of new renewable energy resources which achieve commercial operation by December 31, 2020.

PGE's non-price scoring was consistent with the draft contracts attached to the Commission approved 2018 RFP and included identified requirements such as minimum project size, final commercial operation date deadline, and bidder-credit information. And, as required by Guideline 9, PGE gave the IE full access to PGE's non-price scoring production cost and risk models.

10. Guideline 10

Guideline 10 prescribes the role of the utility and the IE in the RFP process. In accordance with this Guideline, PGE conducted the 2018 RFP process, scored the bids, selected the initial and final short-lists, and will commence negotiations with bidders on the final short list.

The IE independently scored PGE's Benchmark bids and all third-party bids and determined that the selections for the initial and final short-lists were reasonable. The IE also evaluated the unique risks and advantages associated with the Benchmark bids, including an evaluation of the following issues set forth in Guideline 10(d): construction cost over-runs; reasonableness of forced outage rates; end- effect values; reasonableness of operation and maintenance costs; adequacy of capital additions costs; and specificity of construction schedules or risk of construction delays.

Consistent with Guideline 10(e), PGE and the IE compared the results of their respective scoring and evaluation of third party bids and the Benchmark bids. There were no meaningful differences between PGE's and the IE's results.

As provided in Guideline 10(f), PGE also allowed bidders to submit bids with and without an option to renew. PGE also retained an independent third-party expert, Vaisala, to evaluate the capacity factors proposed for each bid selected to the initial short list.

11. Guideline 11

As required by Guideline 11, the IE prepared a Final Closing Report for the Commission, which is being filed concurrently with this Request.

12. Guideline 12

As required by Guideline 12, PGE will make available to Staff and non-bidding parties the bidding information (including the company's cost support for its Benchmark bids) and detailed bid scoring and evaluation results, subject to protective orders limiting the use of the information to acknowledgment of the final short list and to cost-recovery proceedings.³⁶

13. Guideline 13

Guideline 13 requires utilities to request acknowledgement of an RFP final short list, and to explain how the final short list is consistent with the utilities most recently acknowledged IRP Action Plan. Commission acknowledgement is a determination that a final short list "seems reasonable, based on the information provided to the Commission at that time."³⁷ By this Request, PGE seeks acknowledgement of the 2018 RFP final short list. The resources on the final short list are consistent with PGE's 2016 Integrated Resource Plan (IRP) Revised Renewable Action Plan, acknowledged by Commission Order No. 18-044, providing for the development of approximately 300 MW of renewable resources that will qualify for federal wind PTCs and achieve commercial operation by December 31, 2020.

³⁶ See supra n. 8.

³⁷ Order No. 14-358, Appendix A at 16. Acknowledgement does not "provide a guarantee of favorable ratemaking treatment," and the Commission "does not become directly involved in bid evaluation and selection." Supra

B. Overall Fairness of the Solicitation Process

In response to recommendations made by the Commission, Staff, IE and Stakeholders, PGE made several changes to the Final 2018 RFP: (a) adopted a more flexible approach to transmission study requirements, (b) expanded allowance for conditional firm bridge products, (c) maintained flexibility regarding interconnection status when developing the initial short list, (d) performed price and non-price weighting sensitivity analysis, (e) allowed for flexible Power Purchase Agreement (PPA) pricing to pay for fixed transmission and other tariffed costs, (f) used permitting status as a non-price scoring element rather than an initial threshold requirement, (g) allowed Schedule 202 QF projects to participate in the 2018 RFP process, (h) reduced the Asset Purchase Agreement, and Engineering, Procurement and Construction Agreement precommercial operation date collateral requirements from \$200/kw to \$100/kw, (i) reduced the PPA post-COD collateral terms from five years mark-to-market to \$100/kw, (j) extended commitment letter requirement deadlines to the initial short list, (k) allowed for best and final offers from short-listed bidders, (1) included a planning horizon sensitivity analysis, (m) eliminated non-price scoring deduction for projects subject to a Remedial Action Scheme, (n) included a minimum of 150 MWa of non-benchmark resources on the short list, and (o) hosted a Post-Issuance bidder's conference.

PGE proactively engaged bidders to understand and fairly score bids. As Commission Staff has stated in the past "use of an IE, the transparency of the process, and the inclusion of stakeholders . . . all indicate" the fairness of a bidding process.³⁸ The 2018 RFP was overseen by the IE who was very closely involved in the design and development of the 2018 RFP, suggested

³⁸ In the Matter of Portland General Electric Co. Petition for Partial Waiver of Competitive Bidding Guidelines and Approval of Request for Proposals (RFP) Schedule, Docket No. UM 1773, Order No. 16-280, Appendix A at 11 (July 29, 2016).

revisions to the draft RFP, independently scored some bids on the initial short-lists and suggested additional analysis where it deemed necessary.

The 2018 RFP process, PGE's interactions with stakeholders and bidders, and the IE's actions together with the Commission's approval of the 2018 RFP design, all demonstrate that this 2018 RFP was designed in compliance with the Commission's Competitive Bidding Guidelines, and was conducted both transparently and fairly.

V. CONCLUSION

The Commission's acknowledgment of PGE's final short list 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. PGE is committed to providing a path for the Company to provide service to our customers with additional low cost renewable energy resources, while adhering to the promise to provide safe, reliable, and affordable electricity. The 2018 RFP had robust participation and provided PGE a competitive selection process. The resources on the final short list are forecasted to provide net customer benefits. The the final short list included in this Request represent the least-cost, leastrisk resources to implement the 2016 Updated IRP Action Plan.

PGE respectfully requests Commission acknowledgement of the 2018 RFP final short list by December 4, 2018 to enable PGE to timely finalize negotiations with final short list bidders and ensure capture of expiring federal tax credits for the benefit of PGE's customers. DATED this 3rd day of October, 2018.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I served a true and correct copy of **PORTLAND GENERAL**

ELECTRIC COMPANY'S REQUEST FOR ACKNOWLEDGEMENT FINAL

SHORT LIST OF BIDDERS IN 2018 FOR PROPOSALS FOR RENEWABLE

RESOURCES on the date indicated below by electronic mail and/or US mail delivery in

compliance with OAR 860-001-0180, to said persons whose email addresses appear on the

attached OPUC service list for Docket Nos LC 66, UE 335 and UM 1613.

Dated this 3rd day of October 2018.

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THE INDEPENDENT EVALUATOR'S FINAL REPORT ON PORTLAND GENERAL ELECTRIC'S 2018 RENEWABLE REQUEST FOR PROPOSALS

Presented to: OREGON PUBLIC UTILITY COMMISSION

Prepared by Frank Mossburg

October 2, 2018

2001 K Street NW, Suite 500 Washington, DC 20006 202-408-6110

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I. INTRODUCTION AND SUMMARY

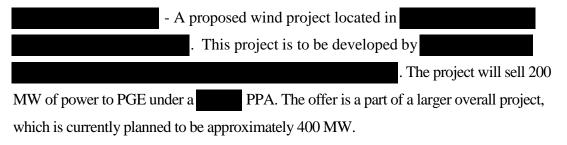
A. INTRODUCTION

This is Bates White's Final Closing Report on Portland General Electric's (PGE or the Company) 2018 Renewables RFP (RFP). Bates White served as the Independent Evaluator (IE) for this RFP. The primary purpose of this report is to provide the Oregon Public Utility Commission (Commission) with the IE's findings with respect to the Company's selection of a Final Shortlist. This report is also intended to provide the Commission with a record of the development and evaluation process for both the Initial and Final Shortlists.

B. THE FINAL SHORTLIST

The Company has selected three projects for the Final Shortlist representing approximately 600 MW. These projects are:

- A proposed 100 MW wind project located in **Constant of Section 2019**. This project is to be developed by **Constant of Section 2019** and will sell power to PGE under a **Constant of Section 2019** power purchase agreement (PPA). **Constant of Section 2019** has also offered an option for this project which included the addition of solar generation and battery energy storage to complement the wind project.



- A proposed 300 MW project located in This project is to be developed by PGE's Benchmark team, which includes personnel from both PGE and **Sector**. The project is divided into two transactions, a 100 MW wind farm that will be sold under a Build Own Transfer (BOT) agreement to PGE, and a 200 MW PPA under which **Sector** will sell energy from the project to PGE. The Benchmark team also offered options which (a) add battery energy storage to the BOT portion or (b) add solar generation and battery energy storage to the PPA portion.

We have the following findings:

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. The RFP received bids from 8 suppliers offering a total of 10 projects representing about 1,950 MW. Some of these projects offered multiple options. In total there were 26 bid options presented. Offers were received from wind, solar, and geothermal projects and several bids were offered with battery storage capability. Offers included power purchase agreements and build-own-transfer agreements.

Our independent analysis confirmed that the selected bids were reasonably priced. Our analysis included the creation of our own cost models for each bid option, a review of PGE's modeling and a review of the terms and conditions of each bid.

One Company-sponsored Benchmark bid was chosen, and we took special care to confirm that selection. We confirmed the accuracy of the Benchmark costs and scoring and provided the Commission with a complete review of all costs of each

offer variant prior to bid receipt. We also confirmed the Benchmark's status by: (a) reviewing the project's Initial and Final Shortlist scores and models, (b) independently scoring the project's non-price characteristics, (c) comparing the cost and output of the project to recent third-party bids, and (d) evaluating the bid costs in our own cost model. We note that the offer has better risk protection than a typical self-build option as two-thirds of the offer is being sold to PGE under a third-party, pay-for-performance PPA, substantially lowering risks to ratepayers.

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. During that time we:

- 1. Reviewed and commented on drafts of the RFP;
- 2. Attended the pre-bid conference;
- 3. Monitored bidder contact, including the answers to bidder questions;
- 4. Confirmed the assumptions, models and processes used in the analyses;
- 5. Confirmed the initial qualification of bidders and the confirmation of proposal details;
- 6. Provided input with respect to bidder disqualifications;
- Reviewed the price and non-price scores and models for the Company's Initial Shortlist process and confirmed the Company's selection of an Initial Shortlist; and

8. Reviewed the models for the selection of the Initial and Final Shortlist and confirmed the Company's selection of the Initial and Final Shortlist.

Throughout the process, we were in constant contact with PGE's evaluation team. The Company was transparent in their discussions with us and provided all the information that we asked within a reasonable timeframe.

C. ADDITIONAL COMMENTS AND RECOMMENDATIONS

We make our findings here with the understanding that PGE and that the inclusion of and that the inclusion of three projects is intended to provide backup in case one or more offers should drop out during contract negotiations.

Moreover, in our opinion, PGE's portfolio analysis shows a clear preference when it comes to project selection. Specifically,

We would expect the Company to adhere to this preference in pursuing agreements and have a clear explanation if their final portfolio does not reflect this ranking. We understand and acknowledge that the Company may have a different view based on the non-price characteristics of the **Section**. In our view, the portfolio modeling results should guide the preference order, with the non-price aspects a secondary consideration. In our view, the main non-price deficits of the **Section**, namely the contingent nature of its offer and a less certain transmission plan, are certainly reason

to acquire a backup offer in case of project failure. However, if these issues can be remedied the Company's portfolio modeling shows the **sector** offer to be a better offer.

This RFP saw a number of disqualifications, mainly due to the requirements surrounding transmission service. These were not completely unexpected as there is limited service available from the Bonneville Power Administration (BPA) territory, where most projects were located. In fact, during the RFP design phase, we did make some efforts to make the RFP's minimum threshold requirements less strict. While we had no objection to any of the disqualifications, all which were based on the requirements laid out in the RFP, the experience did suggest to us two areas of potential improvement for future RFPs.

First, PGE should, when possible, endeavor to allow for more flexibility in transmission planning for RFPs. The requirements here were driven by the sunsetting of the Production Tax Credit (PTC) which required bids to be operational by 2020. PGE essentially required firm transmission service which lined up with this commercial operations date (COD), meaning that offers had to have firm transmission commitments by the end of the year. This requirement disqualified several offers, including some with very attractive prices. We understand the needs for service commitments in this RFP and agreed with PGE regarding disqualifications. However, we would suggest that in future RFPs with more flexible time limits PGE consider ways to be more flexible in its planning and acquisition of projects, specifically with regards to transmission requirements and giving projects more time to make service commitments.

Second, and partially due to the rapid time frame for the RFP, PGE conducted due diligence on all offers essentially on an ongoing basis, asking for information at bid submission and more information at the time of initial shortlisting. For some offers, this resulted in PGE initially determining that the offers were qualified to be evaluated for the Initial Shortlist and then revising this determination. This resulted in very few bids being evaluated for the Final Shortlist. Moreover, had there been additional offers that were qualified to participate in the RFP that did not make the Initial Shortlist, they could have been edged out by offers that were ultimately not qualified. While this did not happen in this particular case, it has the potential to affect future RFPs.

In future RFPs we would recommend that the Company seek a more streamlined process by (a) making any qualification decisions first, (b) conducting initial shortlist scoring, (c) modeling shortlisted offers for the Final Shortlist, then (d) seeking any additional materials needed from their top selections to ensure qualification for the Final Shortlist. This would help reduce the burden on evaluators to review and vet only the offers which the Company seeks to put on the shortlist.

II. IRP APPROVAL TO BID RECEIPT

PGE's 2016 IRP was filed on November 15, 2016 in OPUC Docket LC-66. The IRP was acknowledged by the Commission in October of 2017 with modifications and one exception related to the Company's renewable action plan. In response to that exception, PGE filed a revised renewable action plan on November 9, 2017. The plan included a proposal to conduct a RFP for 100 MWa of RPS-eligible resources to meet PGE's capacity and energy needs by 2021. The Commission acknowledged this request, with conditions, at its December 13, 2017 public meeting and in Order 18-044 issued February 2, 2018.

PGE provided the IE with an initial draft of the RFP on January 31, 2018. We provided initial thoughts and reviewed subsequent revisions. We provided our assessment of the final draft RFP to the Commission on April 6, 2018 and it was filed in Docket UM-1934. In their May 8, 2018 meeting the Commission asked the Company and the IE to make filings in advance of the special public meeting to review the RFP. We were also asked to address a number of questions related to stakeholder comments and Commission concerns. PGE filed a revised draft RFP on May 11, 2018 addressing a number of our concerns and we filed our review and comments on May 15, 2018. We appeared at the Commission's May 16, 2018 special public meeting to answer questions related to our assessment.

The RFP was approved by the Commission, with modifications and guidance, at the May special public meeting. This approval was memorialized in Order 18-171 on May 21, 2018. The Commission ordered modifications to the RFP regarding scheduling requirements, non-price scoring, transmission service requirements modeling sensitivities and delivery requirements in the *pro forma* PPA.

PGE made the required changes to the RFP and issued the final RFP to market on May 22, 2018. We reviewed the changes made and had no objections.

Since PGE issued the RFP in late September the following steps have been completed:

Table 1: Milestone Events to Date

Milestone	Date
RFP Issued to Market	5/22/2018
Bidder's Conference	5/22/2018
Benchmark Bid Due	6/8/2018
RFP Bids Due	6/15/2018
Initial Shortlist Evaluation Completed	8/13/2018
BAFO Price Update	8/17/2018
Final Shortlist Evaluation Completed	9/18/2018
IE Report submitted to OPUC	10/2/2018

PGE held a Bidder's Conference on May 22, 2018. The conference was simulcast online. Bates White attended the conference in person in Portland. PGE personnel walked through the RFP process, including bid qualification and valuation. At the conference, PGE answered several questions regarding the RFP, qualification and bid evaluation. Several questions that could not be answered at the conference were later answered in online postings. Bates White reviewed all questions and answers prior to posting as bidder continued to ask questions until bid receipt. All questions and answers were posted publically on the RFP website so that all bidders would have access to the same information.

III. BENCHMARK BID ANALYSIS

On June 8, 2018, in accordance with the RFP timeline, PGE's Benchmark team submitted their offers to the IE and the PGE evaluation team. The Benchmark team consisted of personnel from PGE as well as ______ The team provided an offer for a single project, the _______. The project has a nominal capacity of 300 MW and will consist of _______ The project offered three variants.

These variants are shown in Table 2.

Table 2: Benchmark Project Summary Data

	Bid		Source	
Bid	Capacity	Sources	MW	Technology
		Build-Own-Transfer	100	Wind
Base	300 MW	Power Purchase Agreement	200	Wind
		Build-Own-Transfer	100	Wind +Battery Storage
Alternate I	300 MW	Power Purchase Agreement	200	Wind
		Build-Own-Transfer	100	Wind
Alternate II	300 MW	Power Purchase Agreement	250	Wind + Solar + Storage

In all cases the project was divided amongst two separate transactions, a power purchase agreement and a build-own-transfer agreement. Variants of the project included both battery storage and solar energy to the planned wind project.

After the bid receipt, Bates White undertook a multi-part review of the offers. First, we reviewed the full contents of the submissions made by PGE. Second, we compared the capital costs and PPA price in the offer to prices received in PacifiCorp's recent 2017R wind RFP. Third, we compared the benchmark capital costs and PPA price to publicly available data from respected sources. Fourth, we compared the forecast capacity factor of the project to 2017R RFP bids and public data. Finally, we reviewed submission documents, including the proposed pro forma PPA and BOT term sheet, to assess the other unique risks proposed by the transaction. We found that the Benchmarks were acceptable based on this analysis. We note that initially the second alternative was deemed non-

compliant because the solar facility would come on-line in 2023, after the deadline established in the RFP. In response to this determination, the Benchmark team (when provided an opportunity to cure the deficiency – a right given to all bidders) altered the in-service date of the solar facility to conform to the RFP requirements.

In addition, as required by the Oregon Competitive Bidding Guidelines, we reviewed PGE's price and non-price scoring of the benchmarks prior to receipt of third-party offers. The price score was based on a comparison of the bid's costs to the value of the energy and capacity the bid would replace. The non-price score was based on criteria laid out in the RFP. Bates White confirmed the price scores by inputting key bid criteria into our own busbar levelized cost model. Additional details about all scores are provided later in this memo. All scoring was confirmed prior to the review of third-party offers, per Oregon's Competitive Bidding Guidelines.

IV. BID RECEIPT AND QUALIFICATION

Bids from third-party bidders were due on June 15, 2018. Bids were submitted via a secure website. Neither Bates White nor PGE had access to the submissions until the closing of the bid window. We delayed opening the offers for several additional days in order to complete and finalize the Benchmark Bid scoring. No bids were rejected for being untimely, and there was no indication that any bidder had offers they wished to submit but were unable to.

Ultimately, eight suppliers submitted a total of ten projects representing almost 1,950 MW—which is about 6.5 times the quantity solicited.¹ The majority of these projects were wind projects, though some solar projects were offered as well, along with a geothermal project. Most contained several options or variants, typically differences in project technology or transaction type (i.e., PPA versus BTA or a combination thereof). Several projects offered an option with battery energy storage. The majority of these projects were located in the territory of the Bonneville Power Administration (BPA). Only one offer was proposed in PGE's territory.

After the receipt of offers, PGE worked with bidders to confirm and collect bid fees. Upon final receipt of bids and bid fee confirmation, PGE went to work confirming bid details with bidders. PGE sent multiple sets of questions to bidders and bidders confirmed project information and provided updated information where their original response was lacking. Bates White was copied on all questions and responses.

Once the bids were confirmed, PGE and the IEs reviewed the offers for qualification purposes. Bids were held to several minimum requirements. Key requirements included: (a) demonstrating that the project could be commercially operational no later than December 31, 2021, (b) having requested interconnection with PGE's system or a third-party system, and (c)

¹ Note that the target in this RFP was 100 average MW (MWa), so an average hourly output. This calculation assumes a capacity factor of about 33%.

demonstrating a clear plan to deliver to PGE's territory with a schedule that allowed for service commitments by the end of the year.

We discussed potential disqualifications with PGE evaluators. Ultimately, two bidders had projects disqualified from consideration for the Initial Shortlist. The disqualified projects were as follows:

Bates White was consulted on the decision to remove each of these bidders and bid options and we agreed with the decision to remove them. Neither bidder voiced major objections to the decision.

In addition, PGE removed some of the bid options presented by the **Constant Constant Constant**

We agreed with

this decision as well.

² See RFP Section 6.2.6.

³ See RFP Section 6.1.6.

V. INITIAL SHORTLIST DEVELOPMENT

After the bids were received and bid details were confirmed, the Company began the Initial Shortlist evaluation. Per the RFP, each bid was scored on price and non-price factors. The total bid score was weighted at a maximum 60% for price and a maximum 40% for non- price factors. The non-price factors were defined as follows:

Table 3: Non-Price Factor Weighting

Non-Price Factor	Non-Price Factor Weighting
Development Criteria	10%
Physical Characteristics	13%
Performance Certainty	12%
Credit Evaluation	5%

Appendix H of the RFP laid out specific point values and requirements within each of these categories. The price score was based on a comparison of the cost of the bid to the benefits of the bid. Costs differed based on the type of bid. For BTA bids the costs were:

- (a) the revenue requirement needed to cover the project's capital cost,
- (b) O&M costs,
- (c) insurance, land lease and other services costs,
- (d) network upgrade costs,
- (e) any transmission services needed to deliver the power to PGE's territory, including

wheeling, line losses, reserves, and balancing costs) and,

(f) the value of the Production Tax Credit. This value was reduced for PGE-owned units due to the fact that PGE does not project to have the taxable income to fully use the PTC as it is earned. PGE presumed that any PTC earned would be carried forward as a deferred tax asset and used in the 2027-2030 time frame. The additional carrying cost for this asset was counted against the PGE-owned offer.

For PPA bids the costs included:

- (a) the PPA price, and
- (b) all applicable transmission costs.

On the benefits side PGE looked at three categories of benefits:

- (a) Energy Value This is the value of the energy that is being purchased from the unit. It is calculated by using the Company's forward price curve and the hourly unit dispatch projections from the bid.
- (b) Capacity Value This is the value of capacity from the project. The quantity of capacity provided by each offer was calculated by using the RECAP model and the output projections from the bidder. The price of capacity was based on the cost of a new simplecycle combustion turbine (SCCT).
- (c) Flexibility Value For projects in which PGE had sufficient control of dispatch the Company used its Resource Optimization Model (ROM) to value that flexibility. The value was based on a comparison of dispatch costs using various time frames (dayahead, hour-ahead, etc.) and the hourly production of the resource.

Costs and benefits were calculated on a real-levelized basis in 2018 dollars per megawatt-hour. Price scores were created by looking at the cost to benefit ratio. These approaches were laid out in the RFP.

A. RANKING THE BIDS

Bates White independently verified the rankings in three ways. First, we reviewed each model on a line-by-line basis to make sure that the details of the bids were properly input and that all bids used the same default assumptions. Second, we reviewed the terms and conditions of the bids and compiled our own non-price scores. Third, we tested PGE's models by inputting key costs of each bid option into our own cost model, which determined an annual \$/MWh annuity cost for the bid option. After we reviewed the bids, we conferred with the Company to come to a consensus on shortlist candidates.

Our simplified cost models were able to match PGE's models reasonably well, with small differences generally owing to the greater precision of PGE's modeling. The table below shows the offers for each project.



The table above allows us to make several findings. First, the bids were clearly the best performing offers. These projects were notable because the bidder offered

. Second, the solar bids

tended to have slightly higher benefits, this is mainly due to the fact that solar offers contribute more supply in the middle of the day and, therefore, bring more capacity benefits. Third, the best benchmark offer, while competitive, was only the **second second** project when ranked solely by the cost/benefit ratio. Fourth, PPAs generally did slightly better than ownership options from the same project. This can be credited, in part, to the Company's accounting for the cost of not being able to use the PTC as it is earned, which tended to add something on the order of **second second**.

PGE used these numbers to create a price score, with the top offer receiving 600 points and the lowest offer receiving a score based on a comparison of its ratio to the best score. Other scores were interpolated.

PGE then added in the non-price scores. Non-prices scores were determined by PGE's evaluation team based on Appendix H in the RFP, including subject matter experts. Bidders could receive a maximum of 400 points. We were able to review the scores as well and found

them reasonable, though we had small differences in scoring. Once the scores were added together the list of bids for consideration into the initial shortlist was as follows.⁴



Here we see that the **set of an original projects are still the top two projects. However, the is now much more competitive. The set of a set o**

In order to select bid options for the Initial Shortlist, PGE and the IE proceeded with the following goals in mind:

1. Selecting the bids with the greatest net benefit in terms of price and nonprice benefits,

2. A diversity of bidders and projects,

3. A mix of PPAs and BOTs,

4. A relatively clear split between the score of the last bid picked and the next bid that was not selected, and

5. The RFP goal that there be a minimum of 150% (or 150 MWa) of projects taken, not including the benchmark offer.⁵

⁴ Note that the scores in Table 5 do not reflect the additional analysis of the third-party review of project wind studies. ⁵ RFP Section 3.8.

While this did not provide for a large split between the final option taken and the next option the selection did fulfill the other criteria. It provided for six projects, more than enough to meet the supply targets, a diversity of technology and transaction types, and the top bids were selected based on the established RFP scoring system.

During the development of the RFP, we expressed some concern that the evaluation would place too much emphasis on non-price factors. We cited PacifiCorp's 2017R RFP scoring, which gave 70% weight to price factors and 30% to non-price factors. In response, PGE agreed to look at different levels of price and non-price weighting. These analyses made for slight changes in bid ranking but there were no offers which were selected in the standard 60/40 split that would not be among the top offers under a 70/30 price non-price split. Based on this we felt comfortable concluding that the scoring split had no adverse effects on bid selection.

B. INITIAL SHORTLIST

Following the evaluation explained above, PGE placed the following projects and bidders on the Initial Shortlist.



VI. BID REVIEW AND PRICE UPDATES

Best and Final Offers (BAFO) from all bidders on the Initial Shortlist were requested by August 17, 2018. In addition, PGE requested more information regarding the shortlisted offers. Most notably PGE sought information regarding financial support, interconnection status, and transmission plans. Moreover, for BOT offers, PGE had an independent third-party engineer review O&M cost projections offered by bidders to make sure they were reasonable. PGE also, per Oregon guidelines, had a third-party consultant review the bidder's wind studies.

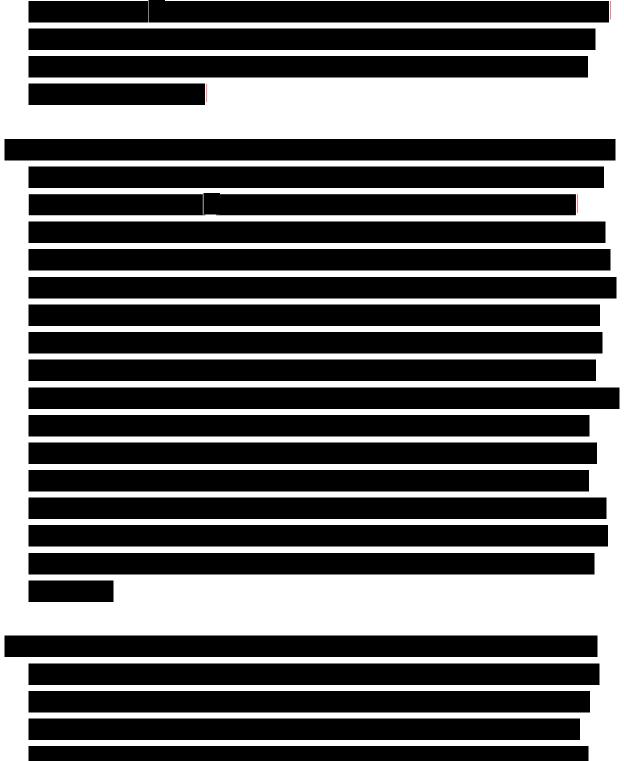
Most – but not all – bidders took advantage of the opportunity to adjust their pricing. The table below compares the costs and benefits of each bid before and after the information and price updates. Note that this uses PGE's real levelized costs, while Table 4 above uses nominal levelized costs.



With these updates complete, the Company was ready to move to final shortlist modeling. However, based on the additional information provided by the bidders, i.e., regarding financial support, interconnection status, and transmission plans, PGE determined that three more projects were not qualified to continue in the RFP. They were:



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⁶ See RFP Section 6.2.6.

⁷ See RFP Section 4.3.



As with the other disqualifications, PGE consulted with the IE prior to each decision and we agreed with the conclusions. Our one bit of concern comes with the way in which these were integrated into the process. Ideally, in our view, once a project has met the requirements for the initial shortlist they should be considered acceptable to be analyzed in the final shortlist process. Furthermore, final shortlist qualifications should only be applied to the offers which the company wishes to place on the final shortlist.

The reason for the first statement is that if a bid is accepted into the initial shortlist that does not, in the evaluators view, meet the shortlist criteria, then it might be crowding out an otherwise valid offer. For example, if a requirement for a bid being reviewed at all is that it demonstrates a reasonable transmission plan and the Company accepts the bids plan and places it on an initial shortlist, only to change that decision when more information is brought to light the offer may have taken the place of another offer which would be valid.

The reason for the second statement is that applying elimination criteria prior to analyzing bids for the final shortlist prevents evaluators from knowing how the shortlist conditions play into the evaluation. We recognize that some decisions are straightforward, but other times disqualifications can require tough judgment calls. In the latter case, it is extremely helpful to all parties to understand just what the effect of an elimination will be on the final portfolio.

We do understand the need for a quick project approval, in this case, to capture the PTC gave PGE less time to conduct all the due diligence it may have wanted prior to the Initial Shortlist. To be clear, in this particular procurement there were no offers that did not make the Initial Shortlist that would have been otherwise viable. All rejected offers would have been rejected under

the company's cost screen or suffered the same issues as other, rejected, offers. We simply offer these suggestions for future work when there is more control over the evaluation timeframe.

VII. FINAL SHORTLIST MODELING

A. METHODOLOGY

PGE subjected the remaining three projects (offering a total of six bid options) to their final shortlist modeling process. To do this, PGE created portfolios consisting of several possible combinations of bid options. From the six-bid options, PGE evaluated a total of 23 combinations of offers.

PGE then calculated the value of each offer portfolio, looking at the total costs of the portfolio in each year and comparing those costs to the value of energy, capacity and flexibility provided by the bids in each year. In this manner, they developed a net cost of each offer. PGE looked at years running from 2021 through 2051 when the longest-lived offers (the BOT offers) would reach the end of their book life. In order to evaluate all portfolios on a consistent basis PGE filled in any unmet energy and capacity needs, up to targeted levels for a given simulation with a generic resource, priced at either (a) the cost of generic wind from PGE's IRP process or (b) the average cost of the offers on the shortlist.

Each portfolio was analyzed under a number of different scenarios. Specifically, PGE looked at three levels of hydro generation, three levels of natural gas prices, and three levels of CO_2 cost. This resulted in each of the 23 portfolios being valued under a total of 27 different scenarios.

The purpose of the evaluation was to develop a ranking of the 23 portfolios, from most to least valuable to ratepayers. To do so, for each portfolio, PGE calculated several metrics in order to compare the portfolio to other offers. These metrics – listed below – were taken from the Company's IRP process. These metrics were used to score each of the 23 portfolios across each of the 27 scenarios.

• Net Cost – This was the net present value of the net portfolio cost in PGE's reference case.

- Severity This is the average net present value of the portfolio in its three most costly sensitivities.
- Variability This is the semi-variance of the net present value of the portfolio across all sensitivity cases in which the cost exceeded the reference case.
- Standard Deviation This is the standard deviation of the net cost of the portfolio over all sensitivity cases.
- Durability This is the percentage in which the portfolio is in the top third of all portfolios less the percentage in which the portfolio is in the lowest third of all portfolios.
- Cost/Risk This was the primary ranking metric per the RFP and was calculated as one-half the reference case net cost NPV plus one half the standard deviation net cost NPV across all 27 sensitivities. This was meant to strike a balance between the expected cost of the portfolio and the risk created with a given portfolio.

For each portfolio and cluster of 27 scenarios, PGE looked at three levels of QF additions; assuming 50% of the current executed contracts come on line, assuming 100% of executed contracts come on line and assuming 100% of the executed contracts *plus* an additional 50% of proposed contracts come on line. PGE also looked at varying the procurement target, choosing 75, 100, or 125 MWa to add to the portfolio. As stated above, any gaps between the target and the energy provided by the portfolio were met with generic fill beginning in 2025 and priced at IRP generic wind cost or the average shortlisted bid cost.

PGE then looked at the number of times a given portfolio was among the top five portfolios based on the cost/risk metric. Per their direction in the RFP PGE examined this metric at two points in time, 2040 and 2051. This enabled evaluators to get another sense of whether or not the costs of generic fill resources were tilting the decision in any way. PGE also evaluated each portfolio's average performance across all study assumptions.

Confidential B. MODELING RESULTS

The overall results can be seen in the table below. This table shows the number of times a given portfolio was in the top five portfolios as measured by the cost/risk metric. As noted above this incorporates (a) three levels of energy target (75, 100 and 125 MWa), (b) three levels of QF acquisition (50% executed, 100% executed and 50% proposed), and (c) two-time frames (until 2040 and until 2051). The table separates out results by which fill cost was used, PGE IRP cost or the average cost of bids.

	nal Shortlist – Frequency in the Top Five portfolios Times in '					
Portfolio	Bids in the Portfolio	Average Bid Fill				
F-1		-	2			
F-2		-	-			
F-3		4	17			
F-4		17	1			
F-5		16	1			
F-6		15	10			
F-7		-	-			
F-8		-	5			
F-9		-	-			
F-10		-	-			
F-11		-	-			
F-12		-	-			
F-13		-	7			
F-14		4	13			
F-15		-	-			
F-16		17	16			
F-17		17	18			
F-18		-	-			
F-19		-	-			
F-20		-	-			
F-21		-	-			
F-22		-	-			
F-23		-	-			

Table 8: Final Shortlist – Frequency in the Top Five portfolios

Portfolios F-16 and F-17 which contained the

projects were the most selected offers overall. These projects also were often selected on their own (Portfolios F-4 through F-6) under the average bid fill cost assumption. All projects were selected in at least some of the scenarios.

We took a closer examination of the data provided by PGE and reached a number of conclusions.

Three bids are never preferred

As can be seen from the table above, under no scenarios were portfolios with three offers ever in the top five portfolios based on the cost/risk metric. A closer look reveals that this is mainly due to the risk of the portfolio. As more bids are added, the overall potential savings increases, but so does the cost in cases in which market conditions are not favorable to the bids. For example, the table below shows the net cost, standard deviation and rankings by the cost/risk metric for each portfolio assuming a 100 MWa target, average bid cost fill, 100% executed QF additions, and a time horizon through 2051. Bear in mind that negative numbers represent a cost reduction or a net benefit.

Table 9: Net Cost and Standard Deviation With 100 MWa target, Average Bid Fill, and 100% Executed QF

Portfolio	Bids in the Portfolio	Γ	Net Cost (000s)	Standard Deviation	С	ost/Risk	Rank
F-1		\$	14,794	\$ 245,757	\$	115,088	11
F-2		\$	34,095	\$ 244,521	\$	126,437	15
F-3		\$	(55,232)	\$ 272,505	\$	100,282	7
F-4		\$	(10,790)	\$ 221,240	\$	92,022	5
F-5		\$	(11,097)	\$ 220,326	\$	89,925	4
F-6		\$	(33,885)	\$ 234,336	\$	89,021	3
F-7		\$	(44,969)	\$ 305,041	\$	119,502	10
F-8		\$	(36,126)	\$ 290,850	\$	114,738	9
F-9		\$	(159,729)	\$ 426,378	\$	129,689	12
F-10		\$	(24,058)	\$ 303,805	\$	131,499	16
F-11		\$	(15,884)	\$ 289,614	\$	126,465	14
F-12		\$	(121,746)	\$ 425,142	\$	148,548	19
F-13		\$	(109,309)	\$ 331,796	\$	106,983	8
F-14		\$	(105,144)	\$ 317,602	\$	100,337	6
F-15		\$	(179,679)	\$ 453,121	\$	134,411	13
F-16		\$	(88,801)	\$ 281,711	\$	89,690	2
F-17		\$	(77,249)	\$ 267,527	\$	86,027	1
F-18		\$	(176,756)	\$ 485,659	\$	151,301	20
F-19		\$	(189,444)	\$ 471,471	\$	137,863	17
F-20		\$	(133,826)	\$ 484,423	\$	172,148	23
F-21		\$	(146,514)	\$ 470,235	\$	158,710	22
F-22		\$	(192,120)	\$ 512,408	\$	157,844	21
F-23		\$	(204,808)	\$ 498,217	\$	144,404	18

As can be seen in this table the net cost in the reference case goes down as more bids are added to the portfolio—that is, the net benefits of the portfolio to ratepayers increase. However, adding projects to the selected portfolio also increases risk, and so as that happens the standard deviation of net costs across all 27 scenarios increases, meaning that the variability of outcomes increases. When both of these effects are accounted for via the cost/risk metric the three-bid portfolios are ranked near the bottom—in other words, the additional modeled net benefits are not worth the added risk they carry according to this metric.

We note that PGE also examined the average cost across all scenarios. Unlike the cost/risk metric, this metric generally supported taking more offers as, on average, more MW taken produced more benefit. This aligns with the observation above that reference case benefits increased with larger projects. However, this metric was not the main metric put forth in the RFP and doesn't present as specific a feel for the risk in each portfolio.

The choice between one and two bids is a close call

As can be seen from the overall results above, the top five portfolios vary between one and two bids selected. In total, using the average bid fill cost, 52 of top portfolios or 58% of all selections, had just one bid, while the remaining offers had two bids. Under the IRP bid fill cost assumptions 34% of top portfolios had just one offer.

The choice of bid fill cost assumption matters

In general, the company's IRP assumptions regarding the cost of generic wind beginning in 2025 were higher in cost than the offers received here in the RFP.⁸ Because of this difference, the assumption regarding the cost of energy needed to fill out the portfolio did make a difference in portfolio ranking. As shown above, with the lower-cost fill, the selection was slightly more biased toward single-resource portfolios. Using higher-cost IRP fill assumptions also biased the selection toward long-termed resources

was in the top five selections much more often using the IRP fill assumptions.

There was a clear preference order for bids

While all projects were ultimately among the top performing portfolios there was a clear preference exhibited in terms of which offers were selected more often.

. The table below shows the number of times a project was among the top five portfolios on the cost/risk metric.

⁸ Using a 7% discount rate, the levelized nominal cost of the energy fill was about \$82/MWh stating in 2025. The levelized nominal cost for offers on the Initial Shortlist ranged from about \$35/MWh to about \$55/MWh.

Table 10: Number of times in the Top Five portfolios

 # of Inclusion Portfe	-	% of Time	rtfolios	
Average Fill Cost	IRP Fill Cost	Average Fill Cost	IRP Fill Cost	Overall
71	61	79%	68%	73%
49	44	54%	49%	52%
 8	44	9%	49%	29%

As can be seen from the table, the

Portfolios perform poorly under low gas and zero CO₂ cost conditions

PGE looked at the net costs of the portfolios under a number of difference assumptions regarding hydro levels, natural gas prices, and carbon prices. While portfolios nearly always provided net benefits in the reference case, there were a number of sensitivities under which they actually were projected to be a net cost addition to the portfolio. The table below shows for one specific portfolio (F-23, with all three offers) the net present value of net costs under each sensitivity case. All cases assume an energy target of 100 MWa, Average Bid cost, 100% Executed QFs, and run through 2051. Sensitivities where there is a net cost to ratepayers are highlighted in red.

Table 11:Net costs under various Sensitivities

Hydro	Carbon	Natual Gas	F-23	23 Net Cost NPV		
Reference	High	High	\$	(1,079,353)		
Reference	High	Low	\$	(207,224)		
Reference	High	Reference	\$	(422,590)		
Reference	Low	High	\$	(468,409)		
Reference	Low	Low	\$	537,867		
Reference	Low	Reference	\$	315,091		
Reference	Reference	High	\$	(867,594)		
Reference	Reference	Low	\$	2,638		
Reference	Reference	Reference	\$	(204,808)		
Low	High	High	\$	(1,236,118)		
Low	High	Low	\$	(317,700)		
Low	High	Reference	\$	(545,961)		
Low	Low	High	\$	(645,717)		
Low	Low	Low	\$	451,065		
Low	Low	Reference	\$	212,914		
Low	Reference	High	\$	(1,028,190)		
Low	Reference	Low	\$	(101,132)		
Low	Reference	Reference	\$	(316,517)		
High	High	High	\$	(872,647)		
High	High	Low	\$	(81,086)		
High	High	Reference	\$	(284,044)		
High	Low	High	\$	(273,218)		
High	Low	Low	\$	627,206		
High	Low	Reference	\$	427,379		
High	Reference	High	\$	(681,416)		
High	Reference	Low	\$	110,726		
High	Reference	Reference	\$	(80,569)		

As can be seen from the table the portfolio is expected to deliver a net present value cost reduction of about \$209 million in the reference case. This metric, however, can range from a reduction of over \$1.1 billion to a cost increase of over \$600 million. Cost increases are typically associated with low carbon and low to reference case natural gas prices. This result makes some intuitive sense since market prices for energy would be lower in a low carbon cost/low natural gas cost vision of the world, reducing the benefit that these fixed-cost resources can provide. Conversely,

in a world where energy prices are high (with high carbon costs and natural gas prices) the portfolio is very valuable.

All Portfolios are affected by the same market variables

Because all three projects are fixed-cost wind resources (with additional contribution from solar and battery storage in some cases) they are all affected similarly by market forces. The table below shows the NPV of net costs under all market scenarios for portfolio F-23

and F-5

Table 12:Net costs under various Sensitivities

Hydro	Carbon	Natual Gas	F-23 Net Cost NPV	F-1	7 Net Cost NPV	F	-5 Net Cost NPV
Reference	High	High	\$ (1,079,353)\$	(546,761)	\$	(397,306)
Reference	High	Low	\$ (207,224) \$	(77,935)	\$	(4,691)
Reference	High	Reference	\$ (422,590) \$	(195,607)	\$	(107,787)
Reference	Low	High	\$ (468,409) \$	(222,191)	\$	(130,728)
Reference	Low	Low	\$ 537,867	\$	324,648	\$	322,318
Reference	Low	Reference	\$ 315,091	\$	200,314	\$	213,470
Reference	Reference	High	\$ (867,594)\$	(430,451)	\$	(300,037)
Reference	Reference	Low	\$ 2,638	\$	36,332	\$	89,556
Reference	Reference	Reference	\$ (204,808	y \$	(77,249)	\$	(11,097)
Low	High	High	\$ (1,236,118) \$	(628,807)	\$	(465,682)
Low	High	Low	\$ (317,700) \$	(135,496)	\$	(51,044)
Low	High	Reference	\$ (545,961) \$	(260,260)	\$	(161,196)
Low	Low	High	\$ (645,717)\$	(315,497)	\$	(206,627)
Low	Low	Low	\$ 451,065	\$	277,930	\$	285,792
Low	Low	Reference	\$ 212,914	\$	145,548	\$	168,846
Low	Reference	High	\$ (1,028,190)\$	(514,011)	\$	(369,126)
Low	Reference	Low	\$ (101,132)\$	(18,247)	\$	45,185
Low	Reference	Reference	\$ (316,517)\$	(136,101)	\$	(59,688)
High	High	High	\$ (872,647) \$	(439,134)	\$	(306,129)
High	High	Low	\$ (81,086)\$	(11,877)	\$	50,012
High	High	Reference	\$ (284,044) \$	(123,271)	\$	(47,004)
High	Low	High	\$ (273,218)\$	(118,949)	\$	(45,259)
High	Low	Low	\$ 627,206	\$	371,671	\$	359,403
High	Low	Reference	\$ 427,379	\$	260,106	\$	262,710
High	Reference	High	\$ (681,416)\$	(333,736)	\$	(217,760)
High	Reference	Low	\$ 110,726	\$	92,660	\$	136,187
High	Reference	Reference	\$ (80,569)\$	(12,529)	\$	43,733

As can be seen from the table, the cases in which the bids are a net cost to ratepayers are generally the same. Also, as noted earlier, as more bids are added the reference case net benefit increases, but the range of potential results (i.e., the risk of the portfolio) increases as well.

Timeframe, energy target, and QF levels do not matter as much as other variables

PGE looked at varying levels of QF additions as well as different evaluation time frames. In general, these did not make as big a difference in the selection of top portfolios as did energy fill cost.

While certain offers were preferred, all projects projected value

While there was a clear preference order for projects based on the cost/risk metric, all projects did project net cost reductions. The table below shows the NPV of net costs (assuming 100 MW energy target, 100% executed QF additions and average bid fill cost) portfolios consisting of only

Confidential *Table 13: Net costs under various Sensitivities for three projects*

Hydro	Carbon	Natual Gas	F-3 Net Cost NPV	F-5 Net Cost NPV	F-6 Net Cost NPV
Reference	High	High	\$ (528,624)	\$ (397,306)	\$ (444,810)
Reference	High	Low	\$ (51,860)	\$ (4,691)	
Reference	High	Reference	\$ (172,871)	\$ (107,787)	\$ (137,771)
Reference	Low	High	\$ (196,455)	\$ (130,728)	\$ (161,123)
Reference	Low	Low	\$ 357,994	\$ 322,318	\$ 320,323
Reference	Low	Reference	\$ 229,791	\$ 213,470	\$ 208,635
Reference	Reference	High	\$ (412,197)	\$ (300,037)	\$ (341,858)
Reference	Reference	Low	\$ 62,925	\$ 89,556	\$ 67,809
Reference	Reference	Reference	\$ (55,232)	\$ (11,097)) \$ (33,885)
Low	High	High	\$ (615,567)	\$ (465,682)	\$ (515,339)
Low	High	Low	\$ (112,538)	\$ (51,044)	\$ (82,253)
Low	High	Reference	\$ (241,468)	\$ (161,196)	\$ (193,469)
Low	Low	High	\$ (294,863)	\$ (206,627)	\$ (240,766)
Low	Low	Low	\$ 310,087	\$ 285,792	\$ 279,825
Low	Low	Reference	\$ 172,664	\$ 168,846	\$ 161,166
Low	Reference	High	\$ (499,854)	\$ (369,126)	\$ (413,054)
Low	Reference	Low	\$ 5,928	\$ 45,185	\$ 20,800
Low	Reference	Reference	\$ (117,050)	\$ (59,688)	\$ (84,637)
High	High	High	\$ (415,256)	\$ (306,129)	\$ (353,059)
High	High	Low	\$ 17,828	\$ 50,012	\$ 23,410
High	High	Reference	\$ (96,202)	\$ (47,004)	\$ (75,992)
High	Low	High	\$ (87,703)	\$ (45,259)	\$ (73,093)
High	Low	Low	\$ 406,720	\$ 359,403	\$ 360,434
High	Low	Reference	\$ 292,459	\$ 262,710	\$ 259,951
High	Reference	High	\$ (309,722)	\$ (217,760)	\$ (259,995)
High	Reference	Low	\$ 122,587	\$ 136,187	\$ 115,611
High	Reference	Reference	\$ 13,649	\$ 43,733	\$ 21,114

Again, the results play out largely by project size. The

Again, the results are mostly driven by market

conditions.