Portland General Electric Company
Legal Department
121 SW Salmon Street • 1WTC1301 • Portland, Oregon 97204
Phone 503-464-8544 • Fax 503-464-2200
portlandgeneral.com

Erin E. Apperson
Assistant General Counsel
erin.apperson@pgn.com

June 15, 2021

Via Electronic Filing

Oregon Public Utility Commission
Attn: Filing Center
201 High Street Southeast Suite 100
Post Office Box 1088
Salem, Oregon 97301

Re: **UM 2166 – In the Matter of Portland General Electric Company, Application for Approval of an Independent Evaluator for 2021 All-Source Request for Proposals**

Dear Filing Center:

Enclosed for filing in the above captioned docket is Portland General Electric Company's Request for Commission Approval to Engage Independent Evaluator and Application for Approval of Proposed 2021 All-Source RFP Scoring and Modeling Methodology. Additionally, PGE has enclosed a Certificate of Service providing notice to those on the service list for the following dockets, to PGE's above-mentioned filing: UE 335 (PGE's prior General Rate Case); LC 73 (PGE's 2019 IRP); and UM 1934 (PGE's 2018 Request for Proposals for Renewable Resources). These documents are being filed by electronic mail with the Filing Center.

Thank you for your assistance.

Sincerely,

Erin E. Apperson
Assistant General Counsel

EEA:dm
Enclosure

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 2166

In the Matter of PORTLAND GENERAL ELECTRIC COMPANY, Application for Approval of an Independent Evaluator for 2021 All-Source Request for Proposals.	**PORTLAND GENERAL ELECTRIC COMPANY'S REQUEST FOR COMMISSION APPROVAL TO ENGAGE INDEPENDENT EVALUATOR AND APPLICATION FOR APPROVAL OF PROPOSED 2021 ALL-SOURCE RFP SCORING AND MODELING METHODOLOGY**

I. INTRODUCTION

In accordance with the 2019 Integrated Resource Plan (IRP) action plan, Portland General Electric Company (PGE or Company) is issuing a 2021 All-Source Request for Proposals (RFP) for both renewable and non-emitting dispatchable capacity resources. This acquisition of 150 MWa of renewable resources is an important step towards reducing PGE's greenhouse gas emissions associated with the power served to customers by at least 80% below 2010 levels by 2030. Procurement of new dispatchable resources is increasingly important given PGE's projected load growth, increased market volatility, ongoing regional resource adequacy efforts, and reduced regional capacity availability.

PGE submits this filing to recommend the selection of an Independent Evaluator (IE) to assist PGE and Public Utility Commission of Oregon (OPUC or Commission) through the development and oversight of PGE's 2021 All-Source RFP. In accordance with OAR 860-089-0200, PGE files this request for OPUC approval to select and engage an IE. PGE has engaged with Commission Staff and Stakeholders to solicit feedback regarding the IE candidate most prepared to perform the IE's required duties at a reasonable cost. Following collaborative and productive discussions with Staff and Stakeholders, PGE recommends the OPUC approve selection of Bates White as IE for the 2021 All-Source RFP.

Separately and through Appendix A attached to this filing, PGE requests approval of the Company's RFP scoring and modeling proposal. PGE makes this filing under OAR 860-089-0250(2)(a), which contemplates review and approval of the proposed scoring and modeling methodology in the IE selection docket. PGE has prepared this application to initiate this process and looks forward to receiving feedback on PGE's scoring proposal prior to filing its draft RFP.

II. PROCEDURE

PGE's efforts to select an IE began April 28, 2021, through PGE's application to open an IE selection docket. PGE shared a draft IE RFP to interested intervenors, solicited feedback, and requested any additional recommendations for invited IE candidates. PGE issued a final IE RFP to invited IE candidates on May 5, 2021 and received responsive bids on May 17, 2021. PGE received 12 bids from interested IE

candidates. PGE held a confidential workshop with interested intervenors on June 2, 2021, to review bids and exchange recommendations on preferred IE candidates. Additional feedback was requested and received from Staff and stakeholders following the June 2nd workshop.

III. PGE'S RECOMMENDED IE CANDIDATE

PGE's IE bid evaluation process resulted in the identification of the top three IE candidates to perform the duties associated with oversight of the 2021 All-Source RFP. All bids were evaluated based upon an assessment of each IE candidate's RFP oversight experience, understanding of an IE's role and responsibilities under the OPUC's Competitive Bidding Rules, demonstrated technical and topical experience, and adherence to PGE's terms and conditions. In addition, the fixed-price bid of each proposal was considered to create a composite score for each IE candidate.

PGE shared the results from the Company's evaluation with Staff and Stakeholders at the June 2, 2021 workshop. As communicated at the workshop, PGE supports selection of any of its identified top three IE candidates and favors identifying an IE candidate supported by PGE, Staff, and Stakeholders. Bates White is the IE candidate that received the broadest support from PGE and participating Stakeholders. Bates White's direct, relevant, and recent experience as an IE acting on behalf OPUC staff sets their proposal apart from other bidders. Bates White's proposal shows a clear understanding of the IE's duties as most recently expressed in the Commission's Competitive Bidding Rules. Furthermore, as validated in PGE's direct experience working with Bates White in PGE's 2018 Renewable RFP, Bates White possesses the necessary technical and topical expertise to oversee the evaluation of bids in a Pacific Northwest competitive solicitation.

IV. CONCLUSION

PGE respectfully requests that the Commission approve selection of Bates White as the IE for PGE's 2021 All-Source RFP. Following a Commission decision, PGE will engage the Commission-approved IE and will remain responsible for all fees and expenses associated with engaging an IE. PGE also intends to file a deferral to recover these costs. Following engagement with the IE, PGE will invite feedback on the attached scoring and modeling methodology proposal and will work with the IE in preparation for PGE's draft 2021 All-Source RFP to be filed for Commission approval.

Dated the 15th day of June, 2021.

Erin E. Apperson, OSB No. 175771
Assistant General Counsel
Portland General Electric Company
121 SW Salmon Street, 1WTC1301
Portland, Oregon 97204
(503) 464-8544 phone
(503) 464-2200 fax
erin.apperson@pgn.com

APPENDIX A

PGE'S PROPOSED 2021 ALL-SOURCE RFP SCORING AND MODELING METHODOLOGY

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1. Introduction

Through this upcoming All-Source Request for Proposals (RFP) Portland General Electric Company (PGE) is taking an important step towards a reliable decarbonized future and making progress on its climate goals. These goals include reducing greenhouse gas emissions associated with the power served to customers by at least 80% below 2010 levels by 2030, plus an aspirational goal of zero greenhouse gas emissions by 2040 for the power served to customers. By procuring the best combination of low-cost renewables and non-emitting dispatchable resources, PGE will continue to provide its customers with clean, reliable, and affordable service.

PGE has prepared this RFP Scoring and Modeling Methodology proposal to describe the scoring and modeling methodologies to be used within the 2021 All-Source RFP in compliance with the Public Utility Commission of Oregon's (OPUC or Commission) Competitive Bidding Rules (CBRs). Oregon Administrative Rule (OAR) 860-089-0250(2) requires that PGE describe a proposed RFP design in its Integrated Resource Plan (IRP). If the RFP design is not adequately described in an IRP, then an electric utility must file for approval in its Independent Evaluator (IE) selection docket "a proposal for scoring and any associated modeling" to be used within the utility's upcoming RFP. While PGE's 2019 IRP included a discussion of its RFP design, the Commission requested that PGE file an updated description of its scoring and modeling methodology within the IE selection docket.[1] PGE intends to work with the selected IE on any suggested or required refinements to this proposed scoring methodology and associated modeling.

PGE's 2021 All-Source RFP is constructed to address PGE's forecasted capacity needs in 2025, and to procure renewable resources, which provide capacity, reduce long-term portfolio costs and risks, and further decarbonize PGE's customer energy deliveries. In addition to procuring renewable resources and non-emitting dispatchable capacity for all cost-of-service customers, PGE intends to procure a resource or resources for PGE's Green Future Impact (GFI) program.

2. 2021 All-Source RFP Procurement Volume

In accordance with PGE's 2019 IRP Action Plan, PGE seeks to procure resources to fill PGE's identified 2025 capacity need through the 2021 All-Source RFP. Currently, PGE's identified capacity need is approximately 500 MWs. However, PGE recently filed an application requesting a Commission waiver of the CBRs associated with its negotiations with the Confederated Tribes of The Warm Springs Reservation of Oregon (Tribes) to renew a power purchase agreement to purchase the Tribes' share of the output of the Pelton Round Butte plant and the net output of

[1] LC 73, PGE's 2019 IRP, Order No. 20-152 at 27.

the Re-regulation plant.[2] If successful, execution of a power purchase agreement with the Tribes is estimated to reduce PGE's capacity need to approximately 300 MWs.[3] To meet this remaining capacity need, PGE seeks to procure both renewable and non-emitting dispatchable resources.[4]

PGE's 2021 All-Source RFP will place limits on renewable resource procurement to ensure that PGE's long-term renewable portfolio standard (RPS) requirements are satisfied in a least-cost, least-risk manner. First, renewable resources procured to meet future cost-of-service RPS obligations must pass a cost containment screen further described below.[5] Second, consistent with the 2019 IRP Action Plan, PGE will cap its cost-of-service customer procurement of renewable resources to 150 MWa. For reference, 370 MWs of Oregon Gorge-sited wind is forecasted to generate approximately 150 MWa annually and 66 MWs of capacity to help meet PGE's 2025 capacity need.[6]

Beyond the 150 MWa renewable resource procurement, PGE requires incremental dispatchable capacity resources to meet its long-term capacity needs beginning in 2025. Given PGE's projected load growth, increased market volatility, ongoing regional resource adequacy efforts, and reduced regional capacity availability, PGE requests that bidders supply projects that can meet approximately 150 MWs of PGE's long-term forecasted capacity need from dispatchable capacity resources. For reference, 200 MWs of 4-hr standalone storage is forecasted to supply 136 MWs of capacity contribution.[7]

PGE's 2021 All-Source RFP will differentiate between renewable resources and non-emitting dispatchable resources. Renewable resources must be RPS eligible, qualify for the federal Production Tax Credit (PTC) or the federal Investment Tax Credit (ITC) and pass the cost containment screen. Non-emitting dispatchable resources must be able to be called upon by PGE to dispatch at controlled times. Non-emitting dispatchable resources include energy storage facilities such as battery storage and pumped hydro. Hybrid resources that combine storage and a renewable resource will be considered renewable resources as the available charging energy is limited to on-site generation for at least the first five years of the asset's life.[8] All resources

[2] This need was identified in the 2019 IRP and 2019 IRP Update process. It does not reflect the needs that could result from regional or state efforts around resource adequacy.

[3] For a more detailed explanation of this proposed transaction, please see PGE's application for a waiver of the competitive bidding rules in Docket No. UM 2176, available at: https://edocs.puc.state.or.us/efdocs/HAA/haa15713.pdf.

[4] If the Pelton Round Butte power purchase agreement between the Tribes and PGE is not renewed, PGE will update the total 2025 capacity need accordingly.

[5] See LC 73, PGE's 2019 IRP Final Comments at 7.

[6] For approximate ELCC see LC 73 2019 IRP Update at 62; for the NCF, see LC 73 2019 IRP External Study D at 14.

[7] For ELCC see LC 73 2019 IRP Update at 63.

[8] The investment tax credit for solar resources is vested over five years. To qualify for the full investment tax credit a facility must be charged by renewable energy for the first five years of the asset's life. Additional detail on the investment tax credit can be found at: https://www.nrel.gov/docs/fy18osti/70384.pdf.

(dispatchable or renewable) must be online by the end of 2024, with the exception of long-lead-time pumped hydro resources.

Additionally, PGE intends to procure a resource or resources for PGE's GFI program through the 2021 All-Source RFP. Consistent with Commission order approving phase two of the GFI program[9], PGE can procure up to 100 MWs of a new wind, solar, or hybrid renewable and battery storage resource to meet subscriber demand under the PGE supply option.[10] Given the level of effort from many stakeholders, the inherent costs associated with the process, and current customer demand for the GFI program, PGE has decided to consolidate solicitations. PGE will evaluate whether any of the proposed bids or a portion of a proposed bid would be suitable for development under GFI subscription(s). PGE expects that GFI resources considered in the 2021 All-Source RFP will not contribute towards the cost-of-service 150 MWa energy cap. Each bid included in the 2021 All-Source RFP will be scored based on the criteria and methodologies detailed below. However, PGE's GFI procurement will also incorporate the preferences and needs of specific subscribers. GFI subscribers might have preferences that PGE would elect to incorporate in the resource decision, not tied to the scoring described below. For example, subscribers previously indicated a preference for Oregon solar over out-of-state or wind resources and could voice a preference for a certain term of the agreement. Regardless, PGE will work with the IE to ensure that the needs of all cost-of-service customers are prioritized within this solicitation.

3. 2021 All-Source RFP Commercial Bid Structures

Through the 2021 All-Source RFP, PGE intends to acquire resources found to be least-cost and least-risk to PGE's customers. Diverse commercial structures will be encouraged to participate and will be evaluated with a consistent scoring framework. As part of the 2021 All-Source RFP, PGE will evaluate the following proposal types:

- Power Purchase Agreements (PPA) – This agreement can be used for renewable resources, dispatchable resources, and combinations of renewable and dispatchable resources. PGE will require exclusive right to all energy, capacity and environmental attributes from the facility or portions of the facility that the bidder includes in this RFP and will consider a minimum 20-year term length.
- Build Transfer Agreement (BTA) – This agreement requires that the Bidder develops the project and then transfers the asset(s) to PGE upon achieving Commercial Operation Date (COD).
- Asset Purchase Agreement (APA) – This agreement would involve PGE purchasing development rights from another entity and PGE contracting the outsourcing for

[9] See UM 1953, Order 21-091.
[10] Id. at 9.

construction of the resource. The bidder will be required to provide the following information during the RFP process to ensure that the pre-bid development and project assessment work is equivalent to PPA and BTA proposals; including, but not limited to: site control agreements, necessary site permits, original equipment manufacturer equipment quotes, engineering procurement and construction quotes, interconnection studies and agreements, an achievable plan of service for transmission, and sufficient resource generation information.

In addition to those commercial structures listed above, PGE will also consider bids with shared ownership structures that incorporate PPAs, BTAs, and APAs from a single development.

4. 2021 All-Source RFP Proposed RFP Timeline

PGE proposes the following timeline for the IE selection docket, RFP docket, and RFP process. This timeline is subject to discussions with the IE, Staff, and additional regulatory approval from the Commission. Following the adoption of the CBRs, this is the first time PGE has submitted to the Commission a Scoring and Modeling Methodology Proposal in the IE selection docket. PGE looks forward to discussing with Staff and Stakeholders the necessary time to review a Scoring and Modeling Methodology Proposal and any interactive effects on the time necessary for the Commission to approve the subsequent proposed draft RFP.

Table 1: 2021 All-Source RFP Proposed Timeline

Event	Date
PGE issued IE RFP	5/5/2021
IE RFP candidates submitted bids	5/17/2021
PGE hosted a workshop to discuss IE selection results	6/2/2021
PGE filed IE selection request for approval and scoring and modeling methodology document	6/15/2021
OPUC issues decision regarding IE selection	7/13/2021
PGE hosts stakeholder RFP introduction workshop	8/9/2021
PGE hosts bidder RFP introduction workshop	8/16/2021
OPUC IE selection docket scoring and methodology approval	8/17/2021
PGE files draft RFP with the Commission	8/25/2021
Commission public meeting to consider approval of RFP	11/15/2021

PGE issues RFP	November 2021
Bids due	January 2022
PGE requests acknowledgement of final short list and commences negotiations	Q2 2022

5. Topics from the 2019 IRP and IRP Update Process

In PGE's 2019 IRP and 2019 IRP Update proceedings the Commission requested that PGE revisit specific RFP design questions within the IE Selection docket. Those topics included the rationale for PGE's RFP structure, if PGE was to elect to move forward with separate renewable and dispatchable RFPs; the treatment of long-lead-time resources; transmission requirements; PTC treatment; and portfolio analysis.[11] PGE addresses each of these topics below.

All-Source Procurement

After the conclusion of the 2019 IRP, PGE considered how best to comply with the Commission's direction to optimize capacity and renewable procurement across one or multiple solicitations. Ultimately, PGE determined that a single solicitation would result in the best portfolio of resources for customers, while also being the most efficient.

Long-Lead-Time Resources

PGE welcomes the inclusion of long-lead-time resources that present unique customer value in this RFP and will make necessary RFP design accommodations in the 2021 All-Source RFP. PGE will make long-lead-time accommodations only for pumped storage hydropower projects whose non-emitting flexible, dispatchable capacity may well complement PGE customer needs, despite lengthy development and construction cycles associated with pumped storage facilities. PGE will accept bids for pumped hydro resources, as long as they come online prior to January 1, 2028.

Currently, PGE anticipates filing its next IRP in 2022, with the regulatory process completing in 2023. Bids for an acknowledged competitive solicitation could be received in 2024, and PGE could also engage in bilateral procurements during this same time frame. By 2024 PGE expects to have more context regarding its future role in Colstrip. If a pumped hydro resource is not able to participate in the 2021 All-Source RFP due to a required end of 2027 COD, PGE's next solicitation might also align well with the size and required lead-time of a pumped hydro resource.

[11] See LC 73, Order No. 20-152.

Should it be in the best interest of PGE customers to procure a long-lead-time resource to address a long-term capacity need beginning in 2025, PGE will need to take additional short-term and medium-term actions to address its physical capacity needs during the interim period of 2025 through 2027. PGE elects not to speculate on the general availability and costs of short-term and medium-term resource contracts and as such will not forecast those additional power costs when evaluating long-lead-time resources. However, at this time PGE remains comfortable allowing for long-lead-time procurement prior to resolving short-term capacity procurement that could be necessary, but PGE is seeing an increasingly tight capacity market. PGE reserves its right to reconsider this plan if determined that there are challenges associated with additional capacity procurement.

Long-lead-time resources will be evaluated using the same methodologies as resources delivered by the end of 2024. As discussed fully below, price scores for long-lead-time resources will be based on the levelized forecasted costs and benefits associated with the project over the contract term or resource life. Consistent with descriptions above, price scoring will not include costs associated with additional capacity purchases necessary in the immediate years beginning in 2025. The capacity contribution of long-lead-time resources will be evaluated using a 2025 test year, as will be performed for all resources. This approach will appropriately credit long-lead-time resources for their long-term capacity contribution given PGE's current assessment of long-term capacity needs. Lastly, as further discussed below, if long-lead-time resources are placed on PGE's initial short list, they would be included in portfolio analysis which must size and term normalize portfolios to allow for fair portfolio comparison. The costs associated with such size and term normalization will be related to long-term capacity resources, rather than any assumed costs of short-term contracts that would likely be necessary in the years immediately following 2025.

Transmission and Interconnection

PGE is electrically connected to both Bonneville Power Administration (BPA) and PacifiCorp West. However, at this time and for purposes of this RFP, the PacifiCorp West interface is not an acceptable Point of Delivery.[12] Bidders with projects outside of PGE's Balancing Authority Area (BAA) have a responsibility to provide, as part of the bid submittal, a reasonable and achievable plan to obtain long-term transmission service.

To qualify for this RFP as a dispatchable resource, a bidder must have Long-Term Firm transmission service for 100 percent of the facility's interconnection limit. The transmission service must originate at the resource point of receipt (POR)/point of interconnection (POI) and provide delivery to one of the acceptable Points of Delivery, defined below, prior to project COD.

[12] PGE publicly lists points of delivery that it will not accept here: https://portlandgeneral.com/energy-choices/generate-power/independent-producers

To qualify for this RFP as a renewable resource, a bidder must have eligible transmission service as described below that is equivalent to at least 80 percent of the facility's interconnection limit. The eligible transmission service must originate at the resource POR/POI and provide delivery to one of the acceptable Points of Delivery, defined below, prior to the project's COD. Bidders relying on BPA for transmission service are required to have either previously been granted eligible transmission service or have an eligible and active OASIS status Transmission Service Request (TSR) participating in the BPA TSR Study and Expansion Process[13]. Long-term rights must match the duration of the contract term or include rollover rights.

Consistent with the 2019 IRP's Interim Transmission Solution, eligible transmission service consists of the following products:

- Long-term firm transmission service – This service offers the most reliable delivery of energy from a generation facility to PGE's service territory.
- Long-term conditional firm bridge, number of hours – This service allows entities to contribute to transmission upgrade costs for their facility to eventually convert to long-term firm transmission rights, but until the upgrades are complete BPA will have the ability to curtail generation from this facility during a specified number of hours each year. This product exposes PGE customers to additional risk in curtailment situations that might require additional short-term capacity purchases in the years, months, days or hours in which the service has not been converted to long-term firm or received priority access to short-term firm.[14]
- Long-term conditional firm reassessment, number of hours – This service does not convert to long-term firm and can be curtailed for a specified number of hours each year. Additionally, BPA can reassess this contract offering every two years. The reassessment can result in a range of outcomes: 1) no change to the contract, 2) an increase in the number of hours the service is subject to curtailment, and 3) termination of the contract.

Since PGE introduced the Interim Transmission Solution, BPA has adopted several policy and practice changes impacting access to, and performance of, BPA offerings. Below is a summary of key changes:

- BPA eliminated the hourly firm transmission product in the real-time operating horizon. This change increases intra-day risk to PGE's generation portfolio, as PGE is unable to redirect existing firm transmission rights on a firm basis to deliver energy from other supply sources when renewable resources do not generate as forecasted.

[13] See BPA TSR Study and Expansion Process Business Practice, dated 4/2/2021, available at: https://www.bpa.gov/transmission/Doing%20Business/bp/tbp/TSR-Study-Expansion-Process-BP.pdf

[14] See BPA Conditional Firm Transmission Service Business Practice Manual, version 24, dated 5/1/2020, at 4, available at: https://www.bpa.gov/transmission/Doing%20Business/bp/tbp/Conditional-Firm-Transmission-Service-BP.pdf

- BPA reduced the number of paths that qualify for a conditional firm service offer.
- BPA made the change to allow transmission customers the option to choose between conditional firm bridge and conditional firm reassessment in the TSEP. Bidders participating in the 2022 TSEP process can elect their desired service. Previously, BPA only offered conditional firm reassessment when an upgrade was not identified for an impacted path. When BPA reassesses service, the reassessment results are provided to the contract holder 90 days prior to BPA implementing the terms of the reassessment, which could result in an increase to the number of curtailment hours or termination of service. This change alone could be very impactful to a resource's benefit to customers, and if supplied only 90 days prior to the change in service, there would not be adequate time for the transmission contract holder to request new rights through the TSEP process for their resource.

The increased risk and uncertainty associated with conditional firm reassessment due to these changing practices combined with tightening transmission availability across the region, both long-term and seasonal reductions, will result in PGE attributing no capacity value for resources intending to use conditional firm reassessment. However, PGE will still accept bids in this RFP that use conditional firm reassessment rights as part of their transmission plan.

PGE's evaluation process will determine if there are additional costs or risks to deliver the resource to PGE load. If a Bidder has a TSR that utilizes Newpoint as the POR, the TSR must reference the specific Generation Interconnection Request number for the resource in the comments field.

Bidders proposing to interconnect a resource within PGE's BAA will need to include all incremental costs to deliver, or sink, energy from the resource to PGE's load. Bidders can determine these costs by requesting Network Resource Interconnection Service under PGE's Open Access Transmission Tariff (OATT) from PGE's Transmission and Reliability Services Department (T&RS). This process will enable T&RS to study whether any system upgrades are necessary to accommodate transmission service for the bid. Questions concerning the various types of Interconnection and Transmission Service available under PGE's OATT should be directed to T&RS.

If, during the evaluation, PGE determines that a Bidder's proposed transmission plan cannot demonstrate an achievable plan for delivery as described above, PGE will remove that bid from consideration within the solicitation.

PGE will require all bidders interconnecting outside PGE's BAA to participate in the requisite transmission study process. For proposed projects interconnecting in BPA's BAA that have not previously been granted eligible transmission service, bidders will be required to participate in BPA's 2022 TSEP process. In prior years, BPA has invited participation in the TSEP process

following the close of the prior year study process. To be considered in the TSEP process, BPA requires the submittal of a long-term TSR by the deadline, which has historically been the end of August. PGE asks all bidders who do not already have previously granted eligible transmission service to take notice of this deadline.

Federal Tax Credits

Renewable resources offered to PGE under a BTA or constructed under an APA commercial structure will receive price scores that consider the impact of PGE's consolidated tax forecast. Resources procured in the 2021 All-Source RFP generating PTCs and owned by PGE will include assumed deferred tax asset costs within any revenue requirement modeling. Similarly, PGE will model utility owned resources generating ITCs consistent with the Internal Revenue Service guidance regarding ITC normalization. PGE anticipates further discussions with the selected IE regarding PTC and ITC value treatment within the 2021 All-Source RFP.

Portfolio Analysis

PGE will utilize portfolio analysis when determining the final short list of resources within this RFP to ensure co-optimization of energy and capacity resources and that the solicitation results in the best combination of cost and risk for PGE customers. In Staff's 2019 IRP Update comments, Staff expressed concerns over the impact of the PTC on renewable resource additions and assumed future energy value streams.[15] As part of this RFP, PGE will collaborate with Staff to determine an appropriate sensitivity to examine low wholesale market electricity prices and develop a PTC extension sensitivity for recommended inclusion in the final short list analysis in the upcoming RFP. Additionally, PGE will also look at sensitivities that contemplate changes in price and non-price score weighting as well as term and size normalization.[16]

6. Scoring Methodology

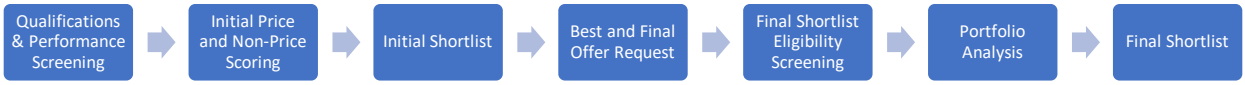
6.1 Overall Analysis Process

PGE's evaluation and scoring process is designed to account for the unique attributes of several resource types and determine the resource portfolio that offers the best combination of cost and risk for PGE customers. PGE intends to use IRP models with select modifications to evaluate proposed resources and to work closely with the IE as they validate that the evaluation criteria, methods, models, and other processes have been applied consistently and appropriately to all bids. All proposed alterations to PGE's IRP models are discussed in detail in the analysis sections below.

[15] See LC 73. PGE 2019 IRP Update Staff Report at 2.
[16] OAR 860-089-0400(5)(b)

The following diagram illustrates the anticipated key steps in the analysis process, and the discussion below provides additional detail on the required modeling and scoring within each step.

Figure 1: 2021 All-Source RFP Analysis Process



6.2 Qualifications & Performance Screen

PGE intends to employ a qualifications and performance screen as the first step in the RFP evaluation process. Resources that do not meet all of PGE's initial applicable requirements will not be considered for the initial short list and will not receive a price and non-price score. PGE will document why bids did not pass the qualifications and performance screen and will provide that highly confidential information upon request to Staff and docket participants that have signed a modified protective order. A description of the various qualifications is included in the table below.

Table 2: Qualifications & Performance Screening Requirements

Qualifications & Performance Screening Requirements	
Entity Requirement	As applicable, entities must be authorized under the law to sell power, and able to schedule power and operate under industry standards established by the Federal Energy Regulatory Commission (FERC), Western Electricity Coordinating Council (WECC), and the North American Energy Reliability Council (NERC), or other applicable regulatory body or government agency.
Financing Requirement	As applicable, bidders must provide a reasonable plan to obtain project financing. Those bidders who are unable to internally or balance sheet finance the proposed project (supported by appropriate financial statements) must provide evidence of a good faith commitment from a financial institution or lender prior to placement on PGE's final short list.
Technology Eligibility	PGE will accept bids for resource core technologies that are commercially proven and deployed at large scales within the North American utility industry. Renewable resources bid into the solicitation must be RPS eligible. Dispatchable resources must be non-emitting technologies that can generate when called upon.

New Construction	Resources must be new resources or expansions of existing facilities.[17] Bids for existing resources will not be accepted.
Resource Online Date	Resources must be online no later than the end of 2024, with the exception of pumped hydro, which must be online by the end of 2027.
Qualifying Product	PGE shall be the offtake for all output from the facility or portion of the facility bid into this RFP. Projects must include all power attributes including associated renewable energy credits, environmental attributes, energy benefits, and capacity benefits. Bidder is responsible for ensuring RECs are established in WREGIS.
Nameplate Size Requirement	Resources that are bid into this RFP must be large enough to qualify for contracting under PGE's Schedule 202 for qualifying facilities.[18] Solar resources must be larger than 3 MW and all other facilities must be larger than 10 MW. If a Bidder already has a Schedule 202 agreement with PGE, they are welcome to include such agreement in its bid.
Term Length	PGE requires a 15-year minimum term and a 30-year maximum term for those agreements.
Tax Credit Eligibility	Renewable resources must be eligible for the federal PTC or ITC and all bids must provide a narrative on how the project will obtain the tax credits.
Credit	Bidders must meet PGE's credit eligibility thresholds. For investment grade Bidders, their long-term, senior unsecured debt must be rated BBB- or higher by Standard & Poor's and Fitch, BBB (low) or higher by DBRS, or Baa3 or higher by Moody's Investor Services, Inc. For non-investment grade Bidders, they must demonstrate, prior to final short list, that a qualified institution will secure the Bidder's pre-COD performance obligations through a letter of credit or guaranty, in a form acceptable to PGE.
Site Control	Bidders must support the bid by demonstrating dependable site control, for both the location of the resource and any gen-tie path that is required. At the time of bid submission, Bidders must possess at least one of the following: • title to the site • an executed lease agreement • an executed easement • an executed option agreement applicable to a minimum of 80% of the project site

[17] Expansions on existing facilities must still meet PGE's nameplate size requirements.
[18] This requirement is consistent with OAR 860-089-0250(4).

	The site control documents should reflect the resource type bid into this RFP. Prior to placement on PGE's final short list, bidders will be required to demonstrate site control for 100% of the project site.
Permitting	Please see the chart in Exhibit A that denotes permitting requirements for the initial short list and final short list by resource type. In the event a specific permit is not required for the resources that is bid into this RFP, the Bidder may provide a narrative explanation on the bid form regarding why it is not applicable.
Acceptable Delivery Points	PGE will accept delivery within PGE's balancing authority area and at BPAT.PGE. PGE will not accept delivery at Pelton Round Butte or at PacifiCorp West. The BPAT.PGE Point of Delivery is associated with the following substations or "sinks": o PGE Contiguous o Pearl 230 kV (Sherwood) o McLoughlin 230 kV o Keeler 230 kV (St. Marys) o Rivergate 230 kV o Bethel 230 kV [19] o Troutdale 230 kV (Blue Lake)
Interconnection	For a bid to qualify for the initial short list it must have the following: • An active generation interconnection request in the transmission provider's interconnection queue • A completed system impact study • If interconnection involves a 3rd party other than the transmission provider, the bid must also include an interconnection request to the 3rd party and all associated studies. To qualify for the final short list, it must have a completed facilities study.

[19] At this time the Bethel 230 kV POD has been determined to have insufficient available capacity and is unavailable for new transmission service requests. However, Bidders that have already been granted long-term service at this POD may use this POD.

	Resources located on PGE's system must be studied as Network Resource Interconnection Service. Resources located off-system can be studied as Energy Resource Interconnection Service or Network Resource Interconnection Service.
Transmission Requirements	**Renewable Resources** Eligible transmission service products include: • long-term firm transmission service, • long-term conditional firm bridge, number of hours, or • long-term conditional firm reassessment, number of hours To qualify for this RFP, a bidder must have eligible transmission service described above that is equivalent to at least 80 percent of the facility's interconnection limit. The eligible transmission service must originate at the POR/POI and provide delivery to one of the acceptable points of delivery, defined above, prior to project COD. Bidders relying on BPA for transmission service are required to have either: 1) previously granted eligible transmission service, or 2) an eligible and active OASIS status Transmission Service Request (TSR) participating in the BPA TSR Study and Expansion Process. PGE's evaluation process will determine if there are additional costs or risks to deliver the resource to PGE load. If a Bidder has a TSR that utilizes Newpoint as the POR, the TSR must reference the specific Generation Interconnection Request number for the resource in the comments field. **Dispatchable Resources** To qualify for this RFP as a dispatchable resource, a bidder must have long term firm transmission rights for 100 percent of the facility's interconnection limit. The long-term firm transmission service must originate at the resource POR/POI and provide delivery to one of the acceptable points of delivery, defined above, prior to project COD. Bidders relying on BPA for transmission service are required to have either previously granted transmission service or an active OASIS TSR participating in the BPA TSR Study and Expansion Process.

	If a Bidder has a TSR that utilizes Newpoint as the POR, the TSR must reference the specific Generation Interconnection Request number for the resource in the comments field.
Labor Requirement	Union labor must be utilized for major construction activities related to the resource and must include a Project Labor Agreement requirement in any related executed Engineering, Procurement and Construction Agreements. PGE requires that the labor group has policies in place that are designed to limit or prevent workplace harassment and discrimination. PGE will be asking that the labor group has policies in place that are designed to promote workplace diversity, equity and inclusion of communities who have been traditionally underrepresented in the renewable energy sector including, but not limited to, women, veterans and Black, Indigenous and People of Color, with an aspirational goal of having at least 15 percent of the total work hours performed by individuals from those communities.
Accepted equipment manufacturers for BTA and APA structures	All major equipment manufacturers must be PGE preferred vendors.
Reasonable adherence to PGE technical specifications for utility ownership structures	Concurrent with supplying the best and final offer, all bids that contemplate a utility ownership structure must provide redlines to PGE's technical specifications.
Service agreement requirements for utility ownership structures	Utility-owned resources must include quoted vendor costs for long-term service agreements (LTSA) for a minimum of five years. For battery-energy storage resources, LTSAs must include commitments to maintain the capacity performance through augmentation or alternative mechanisms.

6.3 2021 All-Source RFP Scoring Methodology

Consistent with the Commission's CBRs all bids that pass PGE's qualifications and performance screen will be scored and ranked based on price and non-price factors. Price scores will be based on prices submitted by bidders, the forecasted performance of the resource, and the associated real-levelized cost and benefit of the bid. Non-price scores will focus on commercial and economic risks that a bidder elects to transfer to PGE and our customers through proposed

modifications to form contract term sheets as well as certain bid attributes further detailed in the non-price scoring section.

Price and Non-Price Weightings

Each bid will be scored based on a combination of price and non-price points. PGE will allocate 60 percent of available bid points to bids based on the price and performance considerations reflected in the price score. PGE will allocate 40 percent of the available bid points to bids based on non-price factors that cannot be readily converted into minimum bidder requirements. As is required in OAR 860-89-0400(5)(b)(A), additional sensitivities will be performed when developing the initial and final short lists that evaluate how bids perform under a 70/30 and 50/50 price and non-price weighting sensitivities. A matrix that details the allocation of price and non-price points for each resource type is included in Exhibit B.

The purpose of non-price scoring is to acknowledge the important benefits and risks associated with a proposed project that cannot be practically expressed in a bid's price. As is permitted under OAR 860-089-0400(2)(b), PGE's non-price scoring is largely based on conformance to proposed standard form contracts and term sheets. Additional non-price scoring criteria must be objective and reasonably subject to self-scoring by bidders. PGE believes the 60/40 price and non-price weighting is appropriate because it prioritizes the selection of least cost resources while providing a meaningful balance between cost and risk.

6.4 Price Scoring

PGE's price scoring will utilize models and methodologies consistent with the 2019 IRP and IRP Update process. Revenue requirement modeling will determine the bid cost, AURORA will be used to calculate energy values, Sequoia will be used to determine the capacity value, and results from ROM will provide flexibility value assessments. Some of these models required modifications for RFP evaluation purposes. Those modifications are further detailed in each section below.

Bid Cost Determination

A bid's cost reflects the total cost, fixed and variable, associated with the project's delivery of energy, capacity, and ancillaries at its forecast economic dispatch. PGE will utilize a revenue requirement model in Excel over the economic life of the asset to calculate the total offer cost, expressed on a present-value basis. A real levelized net present value is the value that when escalated at the annual inflation rate, has the same net present value as the original total offer cost. The model will consider the unique fixed and variable costs associated with each resource.

For bids that contemplate a power purchase agreement, a bid's fixed cost will include (if applicable) all forecast fixed payments, capacity charges, wheeling costs, integration costs,

ancillary services, and PGE system upgrade costs. Variable costs for power purchase agreements will include all energy payments, additional variable O&M costs, line losses, emission costs passed onto the buyer, and start-up charges, if applicable. PGE will determine the magnitude of a bid's variable costs by the bid's simulated dispatch against forecast market prices developed using the Aurora modeling, forecasting, and analysis software.

For bids that contemplate a utility ownership structure, a bid's fixed costs will include total depreciation, salvage, return, income taxes, deferred income taxes, deferred tax asset costs, property taxes, fixed operating and maintenance costs (O&M), wheeling charges, and ancillary services less any tax credit benefits. A bid's variable costs will include all fuel costs, variable O&M, emissions costs, start-up costs less any PTC benefit.

To evaluate bids containing different resource characteristics on a comparable basis, prices submitted by the Bidder may be subject to adjustments, and adjustments may also be required throughout the evaluation process. For consistency PGE intends to assess all bids the BPA reserves rate. Renewable resources will be assessed BPA's variable energy resource balancing services, and dispatchable resources will be assessed dispatchable energy resource balancing services. Examples of other adjustments include applying applicable interconnection costs captured in interconnection facilities studies, adjusting for ancillary service rate changes, altering assumed project costs based on redlines to technical specifications, and performance assurance adjustments if the Bidder takes exception to the required performance assurances for before and after the commercial operation date.

Energy Value Determination

An offer's energy value reflects the value of energy generated throughout the offer's economic life or term. To calculate the energy value, PGE will forecast resource production and utilize the reference case market price forecast from the 2019 IRP Update. The production value will be based on bidder provided generation information, and in the instance of storage resources, PGE will simulate resource dispatch using the Aurora production cost simulation tools deployed in with IRP. Energy value for the duration of the offer's term is expressed on a present-value basis, levelized using annuity methods, and included in the offer's total levelized value. To evaluate energy value risks, PGE will conduct energy value sensitivities using multiple price curves within portfolio analysis.

Capacity Value Determination

PGE is facing an upcoming capacity deficit in 2025 and requires capacity products to otherwise displace the need to contract with or construct new generating facilities. Individual resource capacity values will be calculated as the product of the bid's capacity contribution and the avoided capacity cost. PGE's avoided capacity cost will utilize the real-levelized cost, net of wholesale revenues and flexibility value, adjusted for effective load carrying capability (ELCC) of

a simple-cycle combustion turbine (SCCT) as depicted in the 2019 IRP Update. For additional perspective, PGE will also use the average cost of dispatchable capacity from bids in this RFP as a proxy for avoided capacity cost.

Individual capacity contributions will be calculated using Sequoia. Sequoia is a loss-of-load probability model that assesses both capacity need and capacity contribution of potential incremental resources. The model uses a Monte Carlo module to construct thousands of plausible weeks of load and resource conditions. It then evaluates these weeks independently in a dispatch module that optimizes the generation from dispatchable resources across all hours of the week to minimize the reliability objective function (i.e., minimize the sum of the average unserved energy across the week and the maximum unserved energy experienced in a single hour during the week).

The model has an Excel interface with a Python and GAMS back end. It also requires a license to the Gurobi solver to achieve adequate performance. Further details on Sequoia were included in Appendix K of the 2019 IRP Update.

Since the 2019 IRP Update, PGE has identified necessary modeling changes and improved Sequoia to allow for direct modeling of the diverse commercial bids expected to bid into the 2021 All-Source RFP. The Sequoia changes include the following:

- Load update – PGE updated Sequoia to include the most recent econometric load forecast which was conducted in March of 2021.
- Contracts update – PGE will update Sequoia to include the appropriate snapshot of PURPA qualifying facilities and bi-lateral contracts.
- Hybrid resource dispatch – PGE updated Sequoia to enable more accurate hybrid resource representation. The changes allow PGE to model DC-coupled storage paired with DC and/or AC generation as well as AC-coupled storage paired with DC and/or AC generation. The updated functionality replaced the earlier hybrid dispatch module, which was a simplified AC storage paired with AC generation.
- Disaggregation of hybrid resource dispatch – Sequoia now allows for hybrid resources to be treated as separate resources for dispatch. This also improves the modeling for storage resources, which were previously aggregated for the storage dispatch module.
- Storage cycling limitation – PGE introduced functionality to reflect any daily cycling limitations, if commercially applicable.
- Hourly transmission curtailments – Sequoia can include assumed hourly curtailments based on the type of transmission product the resource is planning to use.

As discussed above, PGE will evaluate multiple transmission products as part of this RFP. Depending on the product selected, PGE will adjust the capacity value of the resource to account for the product's reliability, which is described in more detail in the chart below.

Table 3: Impacts to Capacity Value Based on Transmission Products

Impacts to Capacity Value Based on Transmission Products	
Long-Term Firm	• When determining capacity contribution, the maximum facility output will be limited to the quantity of long-term firm rights (no less than 80% of interconnection limit). • No capacity value will be attributed to the portion of the resource's interconnection limit that is relying on short-term firm, if any.
Conditional Firm Bridge	• When determining capacity contribution, the maximum facility output be limited by the amount of conditional firm bridge rights (no less than 80% of interconnection limit). • For the purposes of capacity contribution calculations, generation delivered by condition firm bridge will be assumed to be curtailed. Specifically, resources on conditional firm bridge will also have their output curtailed for the maximum number of curtailed hours during the year as identified by BPA. The model will assume that these curtailments happen during PGE's approximate times of highest need. Upon the forecasted completion of transmission upgrades necessary to convert conditional firm bridge service into long term firm service, a resource's forecasted curtailment conditions will be removed.[20] If BPA's cluster study results are not available to indicate the maximum number of curtailed hours, PGE will use the average assessed hours from the previous study. • No capacity value will be attributed to the portion of the resources facility's interconnection limit that is relying on short term firm, if any.
Conditional Firm Reassessment	• Due to the unpredictable long-term nature of this product as discussed in the transmission section above, PGE will not attribute any capacity value to bids relying on conditional firm reassessment.

Flexibility Value Determination

Flexibility value was new in PGE's 2019 IRP and was included to estimate the value a resource brings to PGE's portfolio by responding to forecast errors, enabling fast ramping, and meeting reserve requirements. PGE estimated these values using PGE's Resource Optimization Model (ROM). ROM is a multi-stage optimal commitment and dispatch model that accounts for

[20] LC 73, 2019 IRP reply comments at 85, see figure 15, available at: https://edocs.puc.state.or.us/efdocs/HAC/lc73hac153345.pdf

the operational impacts of forecast errors, operating constraints based on commitment decisions with imperfect information, gas constraints, and operating reserves (load following, regulation, spinning, and non-spinning reserves). It ensures that the system can respond to short time-scale variability of load and renewables as well as contingency events and is implemented using the General Algebraic Modeling System (GAMS) programming and a Gurobi Optimizer[21].

For resource flexibility values in the 2021 All-Source RFP, PGE will rely on flexibility values from ROM as detailed in the 2019 IRP. These values will be adjusted based on the size of each resource evaluated. For combined solar and storage projects, PGE will give a battery storage project its full flexibility value if it is able to charge from the grid after it has been online for five years. Qualifications to claim the ITC, prevent solar and storage resources from relying on grid charge for the five years following the project online date. Below are the flexibility values for 100 MW resources included in the 2019 IRP.

Table 4: Flexibility Value from the 2019 IRP

Flexibility Value (2020$/kW-yr)	
2-hour Battery	$23.73
4-hour Battery	$28.10
6-hour Battery	$29.43
Pumped Storage	$25.95

Offer Price Screen

PGE will require all Renewable RFP bids to pass a cost-containment screen to be considered for the initial short list. The cost-containment screen requires bids to be cost-effective under Reference Case conditions considering only the resource's forecasted energy, capacity, and flexibility values. Offers will be considered to have passed the offer price screen if the resource's forecasted levelized benefit exceeds their forecasted levelized cost. The formula below illustrates how the cost containment screen will work for renewable bids.

Renewable Resources Passing the Cost-Containment Screen Must Satisfy the Below Condition:

$$Levelized\ Resource\ Cost < Levelized\ Energy\ Value + Levelized\ Capacity\ Value + Levelized\ Flexibility\ Value$$

The cost-containment screen will be unique for each resource evaluated by PGE and will elevate resources that provide more value to PGE customers due to the resource's generation profile. For this reason, it is possible that a lower-priced resource will not pass the economic screen while

[21] For a more detailed description of ROM, please consult Appendix I.5 in PGE's 2019 IRP at 358-359.

a higher-priced resource will pass the economic screen due to increased resource value, such as by providing higher capacity contribution or more valuable energy production.

Allocation of Price Score Points

Once the cost of each bid is determined it will be netted against the levelized energy, capacity, and flexibility value associated with the bid. This net cost will be expressed in real levelized $/MWh for renewable bids and real levelized $/kw-mo for dispatchable bids. Each bid's component cost and benefits will be converted into a cost-to-benefit price score ratio. Price scoring points will be allocated on a scaled basis, with 600 points allocated to the best price ratio. The allocation system is illustrated by the example below.

Table 5: Price Score Point Allocation Example

Price Score Point Allocation Example					
A	**B**	**C**	**D**	**E**	**F**
	Total Cost	**Total Value**	**Ratio of Cost to Benefit**	**Lowest Ratio**	**Points**
			B/C	*Min(D)*	*600*(E/D)*
Bid 1	40	50	0.8	0.73	547
Bid 2	35	48	0.73	0.73	600
Bid 3	15	20	0.75	0.73	583
Figures are fictitious and for example purposes only					

6.5 Non-Price Scoring

Non-price scoring is designed to reflect the commercial and performance risks and benefits associated with the project that is not captured in the offer's price score. Non-price scoring will be assigned 400 points. Scores for dispatchable resources will be based on commercial performance risk and COD related risks. Scores for renewable resources will be based on commercial performance risk, transmission plan attributes and level capacity ratio score (based on a ratio of a resource's capacity contribution to MWa). PGE will first calculate the non-price score for the initial short list, and then will calculate a second non-price score in the portfolio analysis stage based on the resources in each portfolio.

Commercial Performance Risks

Commercial performance risks will be assessed based on bidder proposed modifications to form agreement term sheets. This scoring criteria is important and consequential as it is the primary reflection of the quality of bidder commitment to deliver on bid specifications and limit the

transference of risk onto PGE and its customers. 270 non-price points for dispatchable and renewable resources will be based on these criteria.

Characteristics that PGE will consider in this section of non-price scoring include the following:

- Resource performance guarantees – adherence to provisions including scheduling commitments, forecasting commitments, remedies of non-performance, and output, availability factor, and/or performance guarantees will determine the allocation of 135 non-price points for dispatchable and renewable resources.
- Limitations of liability and remedies – adherence to provisions including indemnification, default and termination, security and collateral will determine the allocation of 135 non-price points for dispatchable and renewable resources.

Transmission Plan Attributes

PGE will also assess how the transmission plan for each renewable resource introduces additional risk to PGE's portfolio; 65 points will be included in this score. Bidders that propose conditional firm reassessment services for their facility and bidders whose plan for transmission service includes hourly curtailments introduce long term risks to PGE that cannot be adequately accounted for in price scoring. As enumerated in the table below, points will be awarded to offers that have a lower risk of service reassessment or service withdrawal as well as those that have more of the facility's potential output met with long-term transmission rights.

Table 6: Non-Price Score Allocation Based on Transmission Plan

	Max Score	Weight	Total Points	Point Allocation
Transmission Product Risk	4	10	40	4 – Long-term Firm 2 – Conditional Firm Bridge 0 – Conditional Firm Reassessment
Long term transmission product reservation	4	6.25	25	4 - 100% of facility's interconnection limit 3 - 95% of facility's interconnection limit 2 - 90% of facility's interconnection limit 1 - 85% of facility's interconnection limit 0 - 80% of facility's interconnection limit

Level Capacity Ratio

For renewable resources, PGE proposes to employ non-price scoring metric that favors renewable resources that offer higher capacity contributions with lower annual energy output. The level capacity ratio metric will be calculated in accordance with the formula below. This metric allocates the remaining non-price points for renewable resources to those resources that have a high capacity contribution compared to the energy that they generate as depicted below:

$$\frac{ELCC\ (Measure\ of\ Capacity\ Contribution)}{MWa\ (Measure\ of\ Energy)} \times 65\ Non-Price\ Points$$

This metric intentionally favors resources that best support reliability while recognizing PGE's portfolio energy load-resource-balance limitations.

Online Date Certainty

Given that PGE has short-term capacity needs and that the future availability of short-term and medium-term dispatchable resource contracts is challenging to forecast, PGE will attribute non-price points to dispatchable resources that have an earlier COD. Renewable resources are already incentivized to have the earliest COD possible due to the timelines associated with PTCs and ITCs. The impact of those tax credits is captured in the offer price. The table below illustrates how points will be awarded to dispatchable resources that offer earlier capacity value to PGE:

Table 7: Non-Price Score Allocation for Dispatchable Resources based on Commercial Operation Date

	Max Score	Weight	Total Points	Point Allocation
Non-Price Score Allocation based on Commercial Online Date	10	13	130	10 – COD by 12/31/2023 8 – COD by 12/31/2024 0 – COD after 12/31/2025

6.6 Best and Final Offer Request & Final Short List Eligibility Screening

Initial short list candidates will be contacted by PGE and requested to provide their best and final offer. PGE will also ask that they redline technical specifications (if they have not already done so) and provide updates on pricing, permitting processes, interconnections studies, and the cluster study process. This new information will be evaluated to ensure the bid meets the eligibility requirements for the final short list, and all relevant updates will be incorporated into the portfolio analysis.

6.7 Portfolio Analysis

Consistent with the methodology in PGE's 2019 IRP and 2019 IRP Update, PGE will utilize ROSE-E for portfolio analysis for this RFP. ROSE-E is a portfolio analysis tool that generates optimal portfolios according to a specified objective. In doing so, ROSE-E creates various cost and risk metrics that enable comparison across portfolios. For this RFP, ROSE-E will forecast the long-term economic performance of bids, both in isolation as well as when combined, allowing a comprehensive evaluation of bids that ensures the final short list is in the best long-term interests of customers. ROSE-E was extensively described and vetted in LC 73; for a full description of the model's construction and functionality please refer to PGE's 2019 IRP.[22] While the core of ROSE-E remains in this RFP, several important changes have been made to the model to answer questions relevant to this specific setting.

ROSE-E's capacity expansion ability will be frozen in this RFP. In an IRP setting, ROSE-E determines the optimal size and timing of proxy resource additions while ensuring that the system remains capacity and regulatorily adequate.[23] However, the aim of this RFP is to determine which individual bid or combination of bids is preferred. Evaluating these resources in isolation of other potential proxy resource additions produces the cleanest view of their long-term costs and benefits. Accordingly, in the RFP ROSE-E will not have the ability to add additional proxy resources during the planning horizon. There are several main repercussions of this choice affecting the energy, capacity, and RPS constraints implemented in ROSE-E.

- Energy: PGE's yearly market energy position is calculated by the difference between the forecasted load and generation of existing and contracted resources economically dispatched.[24] In an IRP setting, ROSE-E determines in each future considered whether to build resources or rely on market purchases to meet this energy position. With no additional resources available past the bid or combination of bids, ROSE-E will rely entirely on market purchases on a forward going basis.
- Capacity. Described in the 2019 IRP,[25] the Capacity Fill resource is a technology-agnostic resource that provides capacity priced just over the avoided cost resource.[26] ROSE-E is constrained to have each solution being capacity adequate (the total sum of capacity available is greater than capacity need in each year). ROSE-E ensures adequacy by

[22] See 2019 IRP, Appendix I.6 ROSE-E – PGE's Portfolio Optimization Tool at 359, available here: https://apps.puc.state.or.us/edockets/edocs.asp?FileType=HAA&FileName=lc73haa162516.pdf&DocketID=21929&numSequence=37

[23] Proxy resources used in the 2019 IRP included four wind, four natural gas, three battery storage, solar, solar plus storage, pumped storage, geothermal, and biomass resource options.

[24] The term 'economic dispatch' reflects that in PGE's zonal modeling (conducted in Aurora), generation from existing resources is estimated by summing the hours where the cost of generation falls below market prices.

[25] See 2019 IRP, Section 7.1.1.1 - Resource Adequacy at 178 for more detail.

[26] the net cost of capacity is equal to $103 and $110/kW-yr (real-levelized, 2020$), in the 2019 IRP at 166, and IRP Update at 50, respectively.

selecting resources in years with remaining capacity needs; with no other resource available, the Capacity Fill resource will always be selected to achieve adequacy.

- RPS: In the IRP setting, when the supply of renewable energy credits (RECs) generated by owned and contracted resources is less than PGE's RPS compliance obligation, ROSE-E will build RPS generating resources to ensure physical RPS adequacy. The limiting of resource additions described above would otherwise eventually lead to an RPS-noncompliant system as PGE's RPS needs continue to grow; for the RFP, the RPS constraints were removed.[27]

ROSE-E will evaluate both the costs and benefits associated with each individual bid and combination of bids considered. To do so, ROSE-E will only use the main objective function (minimizing long-term costs) for RFP analysis.[28] The benefits from each bid/combination (energy and flexibility) and costs (variable and fixed) will be direct inputs into the model, along with the key financial parameters, price forecasts, and resource generation. The capacity value brought by each bid/combination will be reflected in reductions in capacity need, calculated in PGE's capacity model Sequoia. With these, PGE will calculate the traditional scoring metrics used in the 2019 IRP and IRP Update. PGE is also committed to work with Staff to determine the most informative approach to examine a low wholesale market price sensitivity as well as a PTC extension sensitivity and will share all sensitivity analyses with the independent evaluator for their review.

Once PGE determines the portfolio values for various combinations of bids that are examined in ROSE-E, PGE will convert the traditional metrics into a price score. PGE will also generate a non-price score for each resource combination based on the latest non-price scoring information. If a portfolio consists of multiple resources, PGE will weigh the various non-price scores for each resource in a portfolio based on the lessor of the MW nameplate size or the interconnection limit for the resource. Finally, PGE will also calculate multiple portfolio scores that examine multiple price score and non-price score weighting structures.

6.8 Final Short List

Upon completion of the portfolio analysis, PGE will examine the total combined price and non-price scores to determine the best combination of cost and risk for PGE customers. These results will be used to determine PGE's final short list, which, if acknowledged, will be the group of resources that PGE will make selections from. Once the final short list is filed, PGE will

[27] Mechanically, the RPS obligation is frozen at 2020 levels over the entire horizon, which is below the forecasted REC generation from existing and contracted resources in all years. Portfolio analysis in the filed 2019 IRP, LC 73 docket, and IRP Update consistently found that relaxing RPS constraints did not have a material effect on resource additions.

[28] The other three objective functions (minimize short-term cost, minimize variability, and minimize GHG & cost) were only used for select optimized portfolios in the 2019 IRP.

engage in negotiations with those selected bidders. The selected IE will issue its closing report two weeks after PGE has filed the final short list of bids.

Exhibit A: Required Permits

Permits	Required By						
	Wind	Solar	Geothermal	Hydro / Pumped Storage	Energy Storage (Batteries)	Biomass	Hydrogen/Other
State and local siting permit (e.g., site certificate, conditional use permit)	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist
FERC License (or final EIS from FERC)	n/a	n/a	n/a	Bid	n/a	n/a	n/a
Federal siting permit (e.g., NEPA Record of Decision for construction*) *This does not include NEPA for an Eagle Take Permit	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist
Air quality permit (e.g., ACDP, etc.)	n/a	n/a	n/a	n/a	n/a	Final Shortlist	n/a
FCC permit	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist
FAA permits	CP	Final Shortlist	n/a	Final Shortlist	n/a	Final Shortlist	Final Shortlist
Airspace and Obstacle Evaluation Analysis	Bid	n/a	n/a	n/a	n/a	n/a	n/a
Water rights	n/a	n/a	Bid	Bid	n/a	Bid	Bid
Wastewater discharge permit (e.g., NPDES, WPCF, etc.)	n/a	Final Shortlist	Final Shortlist	n/a	n/a	Final Shortlist	Final Shortlist
Construction Permits (e.g., NPDES-1200C, etc.)	Construction	Construction	Construction	Construction	Construction	Construction	Construction
Removal Fill Permits (wetland and in-water work, e.g., state, Army Corps)	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist
Eagle surveys and take estimates completed using USFWS-approved protocols	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist
Federal ESA surveys completed	Bid	Bid	Bid	Bid	Bid	Bid	Bid
State/local sensitive species surveys completed	Bid	Bid	Bid	Bid	Bid	Bid	Bid
Cultural resource surveys started (at a minimum, contracted with a cultural resources consultant)	Bid	Bid	Bid	Bid	Bid	Bid	Bid
Tribal coordination initiated (started consultation with area tribes to discuss Traditional Use Studies, Traditional Cultural Properties, and other relevant studies)	Bid	Bid	Bid	Bid	Bid	Bid	Bid
Any additional licenses or permits not listed	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist	Final Shortlist
Any additional environmental assessments	Bid	Bid	Bid	Bid	Bid	Bid	Bid

Exhibit B: Point Allocation Matrix

Score Type	Component	Description	Total Dispatchable Resource Points Possible	Total Renewable Resource Points Possible
Price Score	N/A	Points are allocated based on a cost to benefit ratio	600	600
Non-Price Score	Commercial Performance Risk	Points are allocated based on adherence to commercial terms and conditions that focus on performance guarantees and limitations of liability and remedies	270	270
	Transmission Plan Attributes	Points are allocated based on the risk of service reassessment or withdrawal as well as those that have more of the facility's potential output met with long-term transmission rights	N/A	65
	Level Capacity Ratio	Points are allocated based on the ratio of the resource's capacity contribution to its expected energy production	N/A	65
	Online Date Certainty	Points are allocated based on the online date of the resource	130	N/A

CERTIFICATE OF SERVICE

I certify that I filed a true and correct copy of **Portland General Electric Company's Request for Commission Approval to Engage Independent Evaluator and Application for Approval of Proposed 2021 All-Source RFP Scoring and Modeling Methodology** on the parties listed below via electronic mail and/or overnight delivery in compliance with OAR 860-001-0180.

Service List
UE 335

ALBERTSONS	
Brian Bethke 250 Parkcenter Boulevard Boise, Idaho 83706 Brian.bethke@albertsons.com	Chris Ishizu 250 Parkcenter Boulevard Boise, Idaho 83706 chris.ishizu@albertsons.com
George Waidelich 11555 Dublin Canyon Road Pleasanton, Oregon 94588 George.waidelich@albertsons.com	
ALLIANCE OF WESTERN ENERGY CONSUMERS (AWEC)	
Bradley Mullins Mountain West Analytics Vihiluoto 15 Kepele, FI 90440 brmullins@mwanalytics.com	Tyler C. Pepple Davis Van Cleve, PC 1750 Southwest Harbor Way, Suite 450 Portland, Oregon 97201 tcp@dvclaw.com
Robert Sweetin Davis Van Cleve, PC 185 East Reno Avenue, Suite B8C Las Vegas, Nevada 89119 rds@dvclaw.com	
CALPINE SOLUTIONS	
Gregory M. Adams Richardson Adams, PLLC Post Office Box 7218 Boise, Idaho 83702 gred@richardsonadams.com	Greg Bass 401 West A Street, Suite 500 San Diego, California 92101 Greg.bass@calpinesolutions.com
Kevin Higgins Energy Strategies, LLC 215 State Street, Suite 200 Salt Lake City, Utah 84111 khiggins@energystrat.com	

FRED MEYER	
Kurt J. Boehm Boehm, Kurtz & Lowry 36 East Seventh Street, Suite 1510 Cincinnati, Ohio 45202 kboehm@bkllawfirm.com	Jody Kyler Cohn Boehm, Kurtz & Lowry 36 East Seventh Street, Suite 1510 Cincinnati, Ohio 45202 jkylercohn@bkllawfirm.com
NORTHWEST & INTERMOUNTAIN POWER PRODUCERS COALITION (NIPPC)	
Robert D. Kahn Post Office Box 504 Mercer Island, Washington 98040 rkahn@nippc.org	Spencer Gray sgray@nippc.org
Irion A. Sanger Sanger Law PC 1041 Southeast 58th Place Portland, Oregon 97215 irion@sanger-law.com	Joni L. Sliger Sanger Law PC 1041 Southeast 58th Place Portland, Oregon 97215 joni@sanger-law.com
OREGON CITIZENS UTILITY BOARD (CUB)	
Oregon Citizens' Utility Board 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 dockets@oregoncub.org	Michael Goetz 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 mike@oregoncub.org
Robert Jenks 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 bob@oregoncub.org	
PACIFICORP	
Pacificorp dba Pacific Power 825 Northeast Multnomah Street, Suite 2000 Portland, Oregon 97232 oregondockets@pacificorp.com	Matthew McVee 825 Northeast Multnomah Street Portland, Oregon 97232 Matthew.mcvee@pacificorp.com
SMALL BUSINESS UTILITY ADVOCATES	
James Birkelund 548 Market Street, Suite 11200 San Francisco, California 94104 james@utilityadvocates.org	Diane Henkels 621 Southwest Morrison Street, Suite 1025 Portland, Oregon 97205 diane@utilityadvocates.org

STAFF	
Stephanie S. Andrus PUC Staff Department of Justice Business Activities Section 1162 Court Street Northeast Salem, Oregon 97301-4096 Stephanie.andrus@state.or.us	Marianne Gardner Public Utility Commission of Oregon Post Office Box 1088 Salem, Oregon 97308 Marianne.gardner@puc.oregon.gov
Sommer Moser PUC Staff Department of Justice 1162 Court Street Northeast Salem, Oregon 97301 Sommer.moser@doj.state.or.us	
WALMART	
Vicki M. Baldwin Parsons Behle & Latimer 201 South Main Street, Suite 1800 Salt Lake City, Utah 84111 vbaldwin@parsonsbehle.com	Steve W. Chriss 2001 Southeast 10th Street Bentonville, Arkansas 72716 Stephen.chriss@wal-mart.com

Dated this 15th day of June, 2021.

Danielle McCain

Danielle McCain
Legal Assistant

CERTIFICATE OF SERVICE

I certify that I filed a true and correct copy of **Portland General Electric Company's Request for Commission Approval to Engage Independent Evaluator and Application for Approval of Proposed 2021 All-Source RFP Scoring and Modeling Methodology** on the parties listed belowvia electronic mail and/or overnight delivery in compliance with OAR 860-001-0180.

Service List
LC 73

Charlie Coggeshall EQ Research 1155 Kildaire Farm Road, Suite 202 Cary, Oregon 27511 regtrackdsire@gmail.com	Carl Fink Blue Planet Energy Law LLC 628 Southwest Chestnut Street, Suite 200 Portland, Oregon 97219 cmfink@blueplanetlaw.com
John Lowe Renewable Energy Coalition Post Office Box 25576 Portland, Oregon 97298 jravenesanmarcos@yahoo.com	Caroline Moore Public Utility Commission of Oregon Post Office Box 1088 Salem, Oregon 97308 Caroline.f.moore@puc.oregon.gov
Tyler C. Pepple Davison Van Cleve, PC 1750 Southwest Harbor Way, Suite 450 Portland, Oregon 97201 tcp@dvclaw.com	Johanna Riemenschneider PUC Staff Department of Justice Business Activities Section 1162 Court Street Northeast Salem, Oregon 97301 Johanna.riemenschneider@doj.state.or.us
Nathan Sandvig RYE Development 220 Northwest 8th Avenue Portland, Oregon 97209 nathan@ryedevelopment.com	Irion A. Sanger Sanger Law PC 1041 southeast 58th Place Portland, Oregon 97215 irion@sanger-law.com
Joni L. Sliger Sanger Law PC 1041 Southeast 58th Place Portland, Oregon 97215 joni@sanger-law.com	
OREGON CITIZENS UTILITY BOARD (CUB)	
Oregon Citizens' Utility Board 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 dockets@oregoncub.org	Michael Goetz 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 mike@oregoncub.org

Robert Jenks 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 bob@oregoncub.org	
GOLDENDALE ES	
Michael Rooney RYE Development 830 Northeast Holladay Street Portland, Oregon 97232 Michael@ryedevelopment.com	Chris Zentz Van Ness Feldman LLP cdz@vnf.com
NEWSUN ENERGY	
Brittany Andrus andruspdx@gmail.com	Marie P. Barlow Newsun Energy LLC 390 Southwest Columbia Street, Suite 120 Bend, Oregon 97702 mbarlow@newsunenergy.net
Jacob (Jake) Stephens Newsun Energy 3500 South Dupont Highway Dover, Delaware 19901 jstephens@newsunenergy.net	
NORTHWEST & INTERMOUNTAIN POWER PRODUCERS COALITION (NIPPC)	
Spencer Gray NIPPC sgray@nippc.org	
NW ENERGY COALITION	
Fred Heutte NW Energy Coalition Post Office Box 40308 Portland, Oregon 97240 fred@nwenergy.org	
RENEWABLE NORTHWEST	
Max Greene Renewable Northwest 421 Southwest 6th Avenue, Suite 975 Portland, Oregon 97204 max@renewablenw.org	Renewable Northwest 421 Southwest 6th Avenue, Suite 975 Portland, Oregon 97204 dockets@renewablenw.org

SWAN LAKE NORTH HYDRO LLC	
Erik Steimle Swan Lake North Hydro LLC 220 Northwest 8th Avenue Portland, Oregon 97209 erik@ryedevelopment.com	Sidney Villanueva Swan Lake North Hydro LLC 100 Southwest Main Street, Suite 1000 Portland, Oregon 97204 Sidney.villanueva@troutman.com

Dated this 15th day of June, 2021.

Danielle McCain

Danielle McCain
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Service List
UM 1934

Michael Lapides Goldman Sachs Michael.lapides@gs.com	Chris Bursaw Capital Power US Holdings LLC 155 Federal Street Boston, Massachusetts 02110 cbursaw@capitalpower.com
Gregory Reiss Centenus Global Management LP 437 Madison Avenue, 19th Floor New York, New York 10022 Gregory.reiss@centenuslp.com	Chrlie Coggeshall EQ Research 1155 Kildaire Farm Road, Suite 202 Cary, Oregon 27511 Regtrackdsire@gmail.com
Gregory Adams Richardson Adamas, PLLC Post Office Box 7218 Boise, Idaho 83702 greg@richardsonadams.com	Jesse O. Gorgsuch Davison Van Cleve 1750 Southwest Harbor Way, Suite 450 Portland, Oregon 97201 jog@dvclaw.com
Bradley Mullins Mountain West Analytics 1750 Southwest Harbor Way, Suite 450 Portland, Oregon 97201 brmullins@mwanalytics.com	Tyler C. Pepple Davison Van Cleve, PC 1750 Southwest Harbor Way, Suite 450 Portland, Oregon 97201 tcp@dvclaw.com
Wendy Gerlitz NW Energy Coalition 1205 Southeast Flavel Portland, Oregon 97202 wendy@nwenergy.org	Renewable NW Dockets Renewable Northwest 421 Southwest 6th Avenue, Suite 975 Portland, Oregon 97204 dockets@reneablenw.org
Michael O'Brien Renewable Northwest 421 Southwest 6th Avenue, Suite 975 Portland, Oregon 97204 micahel@renewablenw.org	Silvia Tanner Renewable Northwest 421 Southwest 6th Avenue, Suite 975 Portland, Oregon 97204 silvia@renewablenw.org

OPUC Dockets Oregon Citizens' Utility Board 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 dockets@oregonsub.org	Michael Goetz Oregon Citizens' Utility Board 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 mike@oregoncub.org
Robert Jenks Oregon Citizens' Utility Board 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 bob@oregoncub.org	William Gehrke Oregon Citizens' Utility Board 610 Southwest Broadway, Suite 400 Portland, Oregon 97205 will@oregoncub.org
Irion A. Sanger Sanger Thompson PC 1041 Southeast 58th Place Portland, Oregon 97215 irion@sanger-law.com	Mark R. Thompson Saner Thompson PC 1041 Southeast 58th Place Portland, Oregon 97215 mark@sanger-law.com
Carl Fink Blue Planet Energy Law LLC 628 Southwest Chestnut Street, Suite 200 Portland, Oregon 97219 cmfink@blueplanetlaw.com	Fred Heutte NW Energy Coalition Post Office Box 40308 Portland, Oregon 97240 fred@nwenergy.com
Johanna Reimenscheider PUC Staff – Department of Justics Business Activities Section 1162 Court Street Northeast Salem, Oregon 97301 Johanna.reimenschneider@doj.state.or.us	Seth Wiggins Public Utility Commission of Oregon Post Office Box 1088 Salem, Oregon 97301 Seth.wiggins@state.or.us

Brian Skeahan CREA Private Mail Box 409 18160 Cottonwood Road Sunriver, Oregon 97707 Brian.skeahan@yahoo.com	Robert D. Kahn Northwest & Intermountain Power Producers Coalition Post Office Box 504 Mercer Island, Washington 98040 rkahn@nippc.org
Carol Opatrny Northwest & Intermountain Power Producers Coalition 18509 Northeast Cedar Drive Battle Ground, Washington 98604 ccopat@e-z.net	

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Danielle McCain

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Legal Assistant