EXH. CPC-1HCT
DOCKETS UE-240004/UG-240005
2024 PSE GENERAL RATE CASE
WITNESS: COLIN P. CROWLEY

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-240004** **Docket UG-240005**

PREFILED DIRECT TESTIMONY (HIGHLY CONFIDENTIAL) OF

COLIN P. CROWLEY

ON BEHALF OF PUGET SOUND ENERGY

REDACTED VERSION

FEBRUARY 15, 2024

PUGET SOUND ENERGY

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I. INTRODUCTION

Q. Please state your name, business address, and position with Puget Sound Energy.

A. My name is Colin P. Crowley. My business address is 355 110th Ave NE, Bellevue, WA 98004. I am the Director of Energy Resource Development for Puget Sound Energy ("PSE" or "Company").

Q. Have you prepared an exhibit describing your education, relevant employment experience, and other professional qualifications?

A. Yes, I have. It is Exh. CPC-2.

Q. What are your duties as Director of Energy Resource Development for PSE?

A. As the Director of Energy Resource Development, I am responsible for leading the development and implementation of strategies for expanding PSE's energy supply portfolio and to maintain reliability. My responsibilities include oversight of the acquisition of electric resources for PSE and contracts for long-term electric supply.

Q. What is the purpose of this prefiled direct testimony?

A. The purpose of this prefiled direct testimony is to obtain a prudence determination for the following projects:

- **Vantage Wind Power Purchase Agreement ("PPA") project (ID#1573).** The Vantage Wind PPA project is an existing, 90 MW wind farm located in Ellensburg, Washington. Under the terms of a 15-year PPA with Invenergy's Vantage Wind Energy LLC, PSE will receive clean energy at a flat busbar price of [redacted] per MWh from the Vantage Wind Energy Center beginning in 2025.

- **Beaver Creek Wind project.** The Beaver Creek Wind project is a wind development project located in Stillwater County, Montana, with an expected nameplate capacity of 248 MW. PSE executed a Membership Interest Purchase Agreement ("MIPA") with Caithness Beaver Creek, LLC at a purchase price of approximately [redacted] million for a 100 percent ownership interest in Caithness Montana Wind, LLC. The purchase price also included real estate rights in neighboring Sweet Grass County anticipated to support an additional 100-150 MW of future development. After closing the MIPA in December 2023, PSE executed a Turbine Supply Agreement with General Electric, and a Balance of Plant Agreement. The Turbine Supply Agreement and Balance of Plant Agreement are discussed in the Prefiled Direct Testimony of James P. Hogan, Exh. JPH-1CT. The total all-in capital cost to construct the project is projected to be $550 million. The Beaver Creek Wind project has a target commercial operation date ("COD") of March 2025 and an anticipated COD of August 2025.

PSE is seeking cost recovery for the Vantage Wind PPA (ID#1573) and the Beaver Creek Wind project, which will go into service during the multiyear rate plan.

Q. What is the scope of this prefiled direct testimony?

A. To demonstrate the prudence of the above projects, my testimony describes the 2021 All-Source Request for Proposals ("RFP") ("2021 All-Source RFP") evaluation and results, and includes each of the following:

- An overview of PSE's peak capacity needs to meet the projected demands of PSE's electric customers and the renewable needs to satisfy the requirements of the Energy Independence Act[1] and the Clean Energy Transformation Act ("CETA");[2]
- A description of the process PSE used to evaluate and select resources in response to the 2021 All-Source RFP to meet the identified resource needs;
- A description of the re-evaluation analysis PSE performed during the negotiation process; and
- How each of the projects listed above meet the Commission's prudency standard.

The addition of these resources will help PSE meet the peak capacity and renewable needs identified in the 2021 Integrated Resource Plan ("IRP") and the 2023 Electric Progress Report ("2023 EPR") and is a meaningful step forward in meeting CETA's aggressive clean energy requirements. As described throughout my testimony, achieving CETA requirements will require significant investment from PSE in acquiring new clean energy resources. The projects identified above are prudent, will be in-service during the multiyear rate plan, and PSE respectfully requests cost recovery for these investments.

[1] Chapter 19.285 RCW.
[2] Chapter 19.405 RCW.

Q. Are these the only resources PSE is pursuing from the 2021 All-Source RFP?

A. No. PSE is prioritizing near-term projects with expected online dates primarily in late 2025 and 2026, with lower levelized costs of energy ("LCOE"), and higher portfolio benefits. PSE is also prioritizing projects with a lower overall risk profile that demonstrate commercial readiness and deliverability. PSE is currently negotiating with counterparties for several additional CETA-compliant clean energy and capacity resources. These include at least two additional clean generation resources (likely wind and solar) and two to three battery storage tolling agreements.

II. PSE MUST ACQUIRE SIGNIFICANT RENEWABLE RESOURCES TO COMPLY WITH CETA AND ITS OTHER CLEAN ENERGY COMMITMENTS

Q. Please describe Washington's renewable energy requirements.

A. Washington state has two renewable energy requirements. The first is the state's renewable portfolio standard ("RPS") under the Energy Independence Act, which requires PSE to meet specific percentages of its load with renewable resources or renewable energy credits ("RECs").[3] Under the statute, utilities must meet 15 percent of retail sales with renewable resources.[4] The Company's RPS obligations will be comfortably met by new and existing renewable resources required to meet the significantly higher CETA clean energy requirements.

[3] Chapter 19.285 RCW.
[4] RCW 19.285.010, .040(2)(a)(iii).

The second requirement is CETA, codified as Chapter 19.405 RCW, which requires PSE and all Washington electric utilities to eliminate coal-fired resources from their generation portfolio by December 31, 2025. Further, CETA requires PSE's sales of electricity to Washington retail electric customers to be greenhouse gas neutral by 2030. Specifically, PSE must meet the first compliance period under CETA, calendar years 2030-2033, inclusive, by supplying electricity that is at least 80 percent from renewable resources or non-emitting electric generation, covering the balance of electricity supply with alternative compliance options, which may include unbundled renewable energy credits, among other options.[5] Moreover, CETA requires electricity from renewable resources and non-emitting electric generation supply for 100 percent of PSE's electric sales to retail customers by January 1, 2045. CETA also requires utilities, among other things, to file Clean Energy Implementation Plans ("CEIP"), which are the companies' comprehensive four-year plans to implement CETA and its clean energy objectives.

Q. Does PSE have any other renewable energy obligations?

A. In 2021, the Washington State Legislature passed the Climate Commitment Act ("CCA") that established a comprehensive cap-and invest program to reduce statewide greenhouse gas ("GHG") emissions by putting a price on emissions.[6]

[5] RCW 19.405.040. Clean or non-emitting energy means energy from qualifying resources including wind, nuclear, and renewable fuels such as biodiesel and hydrogen.

[6] Chapter 70A.65 RCW.

The law directed the Washington State Department of Ecology ("Ecology") to develop rules to implement and administer the program beginning January 1, 2023.[7] Ecology developed and adopted final program rules on September 29, 2022,[8] just prior to PSE selecting its 2021 All-Source RFP short list.

The cap-and-invest program sets an overall cap on state GHG emissions, which declines over time in line with the state's statutory GHG emissions limits. Covered entities, such as PSE, must report their GHG emissions to Ecology and obtain allowances to cover them. An allowance is a mechanism created by Ecology equal to one metric ton of GHG emissions and may be directly distributed by Ecology, purchased at auction, or traded with others in the program. The program aims to establish a GHG price and create a marketplace for covered entities to find the most efficient means to reduce emissions. The CCA mandates the state to equitably invest revenues raised through state-run allowance auctions in projects that reduce emissions and address climate resiliency and environmental justice, among other priorities.[9] The CCA further heightens PSE's need to acquire renewable resources.

[7] RCW 70A.65.070(1)(a).
[8] Chapter 173-446 WAC.
[9] *See generally* Chapter 173-446 WAC.

III. PSE'S 2021 INTEGRATED RESOURCE PLAN AND 2023 ELECTRIC PROGRESS REPORT INFORMED PSE'S SPECIFIC RESOURCE NEEDS

Q. How did PSE determine its need for new capacity and renewable resources?

A. PSE determined its need for capacity and renewable resources based on PSE's integrated resource planning analysis, which evaluates and establishes PSE's capacity and clean energy resource needs consistent with WAC 480-100-620. Integrated resource planning guides PSE's efforts to acquire new resources at the lowest reasonable cost, as directed by Chapter 19.280 RCW. Each IRP provides an updated customer demand forecast and an analysis of the costs and risks involved in securing new energy supplies to meet identified shortfalls. PSE filed its most recent IRP on April 1, 2021, and on March 31, 2023, it filed its first ever Electric Progress Report.[10] As required by CETA, PSE is required to file a progress report two years after filing its IRP.[11] The 2023 EPR updates the Company's resource need projections to comply with CETA. Both documents informed PSE's resource need.

A. The 2021 IRP Identified a Need for New Resources

Q. Did the 2021 IRP identify a need for new resources?

A. Yes. To comply with CETA, the 2021 IRP identified a need for 1,669 GWh of new CETA-eligible clean energy resources by 2026[12] growing to 5,369 GWh by

[10] https://www.pse.com/en/IRP.
[11] WAC 480-100-625(4).
[12] The 2021 IRP filed need of 1,942 GWh for 2026 adjusted for new Mid-C slice contracts executed after the 2021 IRP was filed amounts to 1,669 GWh of clean energy.

2030. The 2021 IRP also identified a need for 369 MW of new electric capacity resources in 2026 that was expected to increase to 527 MW in 2027.[13]

Q. Did the 2021 IRP include a market reliance risk assessment?

A. Yes. The 2021 IRP included a market reliance risk assessment that evaluated the ongoing availability of the short-term power contracts associated with transmission rights. Market reliance represents a reliability risk to PSE from Mid-Columbia ("Mid-C") market shortages and/or counterparties replacing firm WSPP Schedule C physical energy with financial liquidated damages. Through the 2021 IRP process, PSE modeled a five- and ten-year resource adequacy assessment and presented a proposed strategy to reduce the Company's reliance on market resources. An updated assessment of need that includes market reliance in the base capacity need is included in the 2023 EPR.

Q. What were the major differences between the 2021 IRP and past IRPs?

A. The 2021 IRP marked some significant changes relative to past IRPs due in large part to the passage of CETA in 2019. As described above, CETA sets forth aggressive targets for clean and non-emitting resources. CETA requires that PSE meet 100 percent of its retail electric load with carbon-neutral electricity by 2030 and 100 percent of its retail electric load with carbon-free electricity by 2045.[14] Furthermore, CETA introduced the need to incorporate the social cost of

[13] The 2021 IRP peak capacity need after cost effective conservation from the draft 2021 IRP drops from 907 MW to 527 MW. This includes bundle ten, codes, and standards and distribution efficiency.
[14] RCW 19.405.040.

greenhouse gases and the equitable distribution of customer benefits in the resource planning process.[15] Other changes since PSE's 2019 IRP include updates to PSE's modeling processes, a new process for obtaining generic resource costs, and a change in how PSE forecasts demand.

Q. Has PSE prepared an exhibit on the 2021 IRP clean energy and capacity need forecasts?

A. Yes. Exh. CPC-3 contains an excerpt of the 2021 IRP containing PSE's need forecast at that time, including its load forecasting methodology and market risk analysis.[16]

B. PSE's Expected Resource Needs Increased During the 2021 All-Source RFP Evaluation

Q. Did PSE update its resource need assumptions during the 2021-All Source RFP evaluation?

A. Yes. During the 2021 All-Source RFP evaluation, PSE periodically reviewed its resource need assumptions and updated them to incorporate new load forecasts and other updates to reflect the best available information at the time the analysis was conducted.

[15] *See* RCW 19.405.060(1)(c)(iii), .070.
[16] The complete 2021 IRP can be found at https://www.pse.com/en/IRP/Past-IRPs/2021-IRP.

Q. Did the clean energy need forecast increase during the 2021 All-Source RFP evaluation?

A. Yes. The clean energy need forecast increased from 1,669 GWh to 2,625 GWh in year 2026. The approved 2021 All-Source RFP clean energy need shown in Table 1 was first established in the 2021 IRP[17] and is based on PSE's F2020 load forecast. Subsequent to the approval of the 2021 All-Source RFP in June 2021, PSE released its F2021 load forecast and incorporated this adjustment into its Phase 1 analysis.

Because PSE was still developing its CETA need forecast for the 2023 EPR at the time the RFP Phase 2 evaluation was conducted, PSE used the 2021 CEIP need for Phase 2. Table 1 shows how this update resulted in a need increase of nearly 57 percent from inception of the 2021 All-Source RFP through the RFP Phase 2.

Table 1: Evolution of clean energy need forecast in 2026 during the 2021 All-Source RFP.

2021 approved RFP *(F2020 load forecast)*	RFP Phase 1 *(F2021 load forecast)*	2021 filed CEIP / RFP Phase 2 *(F2021 load forecast)*[18]
1,669 GWh	2,361 GWh	2,625 GWh

[17] The 2021 RFP CETA need forecast in 2026 (1,669 GWh) reflects updates to hydro contracts completed after the 2021 IRP need was finalized.

[18] PSE's filed CEIP presented the need only through 2025. CETA need in 2025 is presented in the CEIP as 1,886 GWh.

Q. Did the capacity need forecast increase during the 2021 All-Source RFP evaluation?

A. Yes. The capacity need forecast increased from 527 MW to ~750 MW in year 2027. The approved 2021 RFP capacity need shown in Table 2 was first established in the 2021 IRP and is based on PSE's F2020 load forecast. PSE updated its capacity need in Phase 1 to reflect the new F2021 load forest.

Because PSE was still developing its capacity need forecast for the 2023 EPR at the time the RFP Phase 2 evaluation was conducted, PSE used the draft 2023 EPR capacity need. This update was based on the F2022 load forecast, which accounted for climate change, and updated planning reserve margin assumptions consistent with the draft 2023 EPR. The draft 2023 EPR need did not yet reflect increases associated with a reduction in PSE's market reliance, nor did it reflect updated conservation numbers that were still being developed. PSE calculated the Phase 2 capacity need for the RFP using 2021 IRP conservation as a proxy. Table 2 shows how PSE's capacity need forecast increased during the 2021 All-Source RFP evaluation.

Table 2: Evolution of capacity need forecast in 2027 during the 2021 All-Source RFP.

	2021 approved RFP *(F2020 load forecast)*	RFP Phase 1 *(F2021 load forecast)*	Draft 2023 EPR / RFP Phase 2 *(F2022 load forecast)*[19]
2027 – winter	527 MW	771 MW	~ 750 MW
2027 – summer	n/a	n/a	~ 1,000 MW

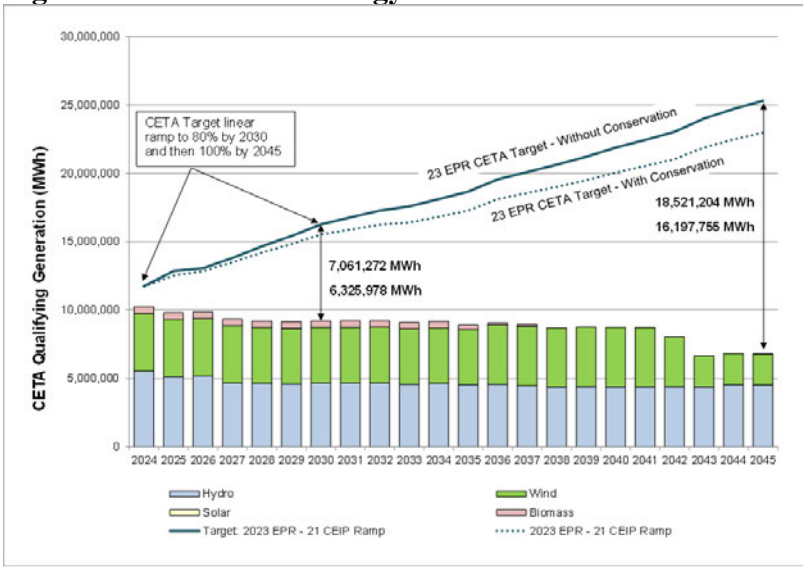
C. The 2023 EPR Updated PSE's Expected Resource Needs

Q. What renewable resource needs did the 2023 EPR identify?

A. As shown in Figure 1 below, the 2023 EPR determined that before new conservation, the clean and non-emitting energy needed to meet the CETA 80 percent clean energy standard in 2030 is forecast to be over 7 million MWh.

[19] The 2023 EPR capacity need was still being developed at the time the Phase 2 analysis was conducted. While it had been updated to reflect the 2022 load forecast (which included climate change analysis) and the updated planning reserve margin, it did not yet reflect updated conservation or market reliance reduction. PSE used 2021 IRP conservation as a proxy.

Figure 1: CETA clean energy need.[20]



Q. Did PSE take the 2023 EPR clean energy need forecast into account in its analysis of resource alternatives in Phase 2 of the 2021 All-Source RFP?

A. Yes. PSE used the 2023 EPR need for the re-evaluation analysis that took place subsequent to shortlist selection between June and November 2023. Table 3 compares the 2021 IRP clean energy need from the approved 2021 RFP, to the 2021 CEIP need used in Phase 2 to select the RFP short list and the 2023 EPR need used in the re-evaluation analysis conducted during the negotiation period. The 2023 EPR need represents an increase of nearly 79 percent since the 2021 RFP was approved.

[20] *See* Exh. CPC-4 at 14.

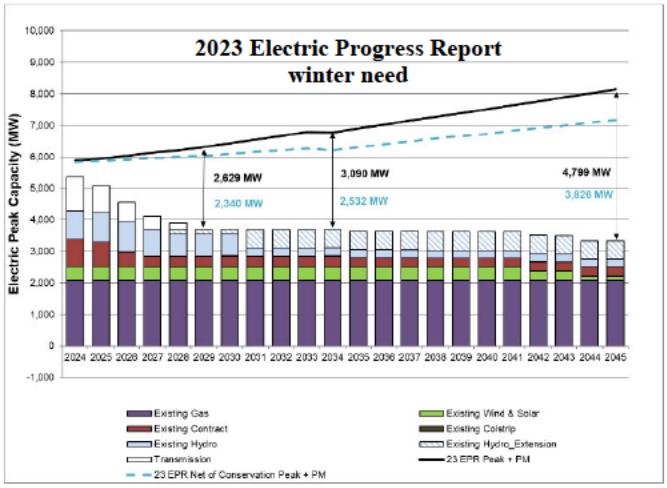
Table 3: Evolution of 2026 clean energy need from approved RFP through the post-Phase 2 re-evaluation analysis.

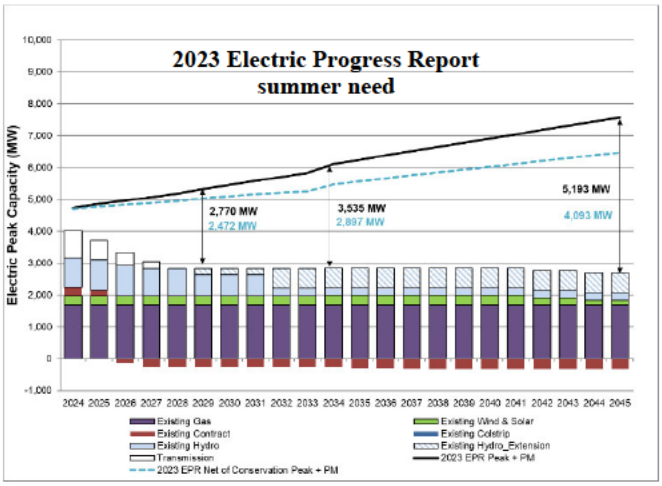
Filed 2021 RFP *April 2021 IRP* *(F2020 load forecast)*	RFP Phase 2 *December 2021 CEIP* *(F2021 load forecast)*	Re-evaluation *March 2023 EPR* *(F2022 load forecast)*
1,669 GWh	2,625 GWh	2,982 GWh

Q. Did the 2023 EPR update the capacity need identified in the 2021 IRP?

A. Yes. The 2023 EPR determined a peak hour capacity need by using a resource adequacy analysis that compared existing PSE resources to the projected peak need over the planning horizon. Due to the market reliance assumptions used in the 2023 EPR, the modeling indicates PSE could begin to experience a peak capacity shortfall starting in 2024.

Figure 2: Peak capacity need – winter and summer.





Q. Did PSE take the 2023 EPR capacity need forecast into account in its analysis of resource alternatives in its post-Phase 2 analysis of the 2021 All-Source RFP?

A. Yes. PSE selected its All-Source RFP short list in November 2022. The 2023 EPR was issued in late March 2023. PSE updated the 2023 EPR need for the re-evaluation analysis that took place subsequent to short list selection between June and November 2023. Table 4 compares PSE's forecast capacity need at each stage of the RFP through the 2023 EPR need used in the re-evaluation analysis conducted during the post-Phase 2 negotiation period. Because market reliance is no longer treated separately from the peak capacity need, PSE's 2023 EPR is forecasting a capacity need in winter 2027 that is considerably higher than the peak capacity need the RFP solved for at the end of Phase 2. The 2023 EPR need represents an increase of 250 percent for winter peak capacity since the 2021 RFP was approved.

Table 4. Evolution of 2027 peak capacity need from approved RFP through the post-Phase 2 re-evaluation of resource alternatives.

	Approved 2021 RFP *April 2021 IRP* *(F2020 load forecast)*	RFP Phase 2[21] *2022 Draft Electric Progress Report* *(F2022 load forecast)*	Post-Phase 2 *March 2023 Electric Progress Report* *(F2022 load forecast)*
2027 – winter	527 MW	~ 750 MW	1,848 MW
2027 – summer	n/a	~ 1,000 MW	1,906 MW

[21] The draft 2023 EPR need included climate change analysis in the F2022 load forecast and the 2023 EPR planning reserve margin. It did not yet reflect 2023 progress report conservation or market reliance reduction assumptions. PSE used 2021 IRP conservation as a proxy.

Q. What changes impacted the projections presented in the 2023 EPR as compared to the 2021 IRP?

A. The 2023 EPR incorporates updates resulting from new legislation and regulations that impact PSE's need projections. These updates include the CCA, updates to CETA rules, Washington State building code efficiency improvements, and portions of the Inflation Reduction Act.

Other updates included incorporating the F2022 load forecast which accounts for climate change; reflecting planned market reliance reductions in the peak capacity need forecast; updating assumptions such as PSE's effective load carrying capacity ("ELCC") for its existing and generic resources, planning reserves and conservation; and calculating season peak capacity needs for winter and summer. PSE also updated its resource stack to include new resources and contract expirations since the 2021 IRP.

See Exh. CPC-4, which is Chapter 8 of the 2023 EPR, for more information about PSE's updated clean energy and capacity needs.[22]

[22] For the complete EPR, see https://www.pse.com/en/IRP/Past-IRPs/2023-IRP.

IV. PSE ISSUED AN ALL-SOURCE RFP TO MEET ITS RESOURCE NEEDS

Q. How did PSE implement its strategy to meet its peak capacity and renewable resources needs?

A. Concurrent with the filing of its 2021 IRP, PSE filed a draft 2021 All-Source RFP with the Washington Utilities and Transportation Commission ("Commission") on April 1, 2021.[23] The Commission approved the draft 2021 All-Source RFP on June 14, 2021. PSE subsequently released the 2021 All-Source RFP on June 30, 2021.

Please see Exh. CPC-5, for a copy of the 2021 All-Source RFP.

A. Key Components and New Requirements of the 2021 All-Source RFP

Q. What types of resources were eligible to participate in the RFP?

A. The 2021 All-Source RFP requested proposals from power producers, marketers, and power-plant developers to address interim CETA targets in 2025-2026 and capacity need through 2027. The 2021 All-Source RFP sought any viable power supply offer or technology that could help meet all or part of the resource needs established in the 2021 All-Source RFP. PSE also indicated that it would consider various resource types and commercial arrangements, such as ownership of new or existing power plants, or long-term power purchase or tolling agreements.

[23] Docket UE-210220.

Q. Did PSE encourage bidders representing minority-, women-, disabled-, and veteran-owned businesses to participate?

A. Yes. PSE's All-Source RFP encouraged all bidders able to meet the requirements of the RFP to participate, including those representing minority-, women-, disabled-, and veteran-owned businesses. Further, the RFP encouraged bidders interested in partnering with PSE to support supplier diversity through inclusive, competitive procurement processes to participate.

See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix F, Customer Benefits and Equity, for details on PSE's outreach and inclusion efforts in the 2021 All-Source RFP.

Q. Is the 2021 All-Source RFP different from past RFPs?

A. Yes. The 2021 All-Source RFP is the first competitive procurement for utility-scale electric resources issued by PSE since the passage of CETA. Since then, a range of relatively recent and emerging legislation and regulations have taken shape at the state and federal levels, aimed primarily at increasing clean energy penetration and reducing GHG emissions. The need for utilities to acquire new renewable and non-emitting resources to meet CETA in Washington or other clean energy mandates in the region, combined with the extension and expansion of federal tax credits for renewable resources under the Inflation Reduction Act, has led to a sharp increase in competition for clean energy resources. Resources with transmission solutions, site control, and more mature permitting are

increasingly scarce. Meanwhile, cost inflation in supply chain and transmission have created bid price uncertainties. See the Prefiled Direct Testimony of Craig J. Pospisil, Exh. CJP-1T, for further discussion of supply chain and transmission challenges.

Additionally, as explained above, PSE's resource needs grew substantially over the course of the RFP evaluation and subsequent re-evaluation processes due to increasing loads, clean energy legislation, anticipated market reliance reductions and Mid-C energy supply risk. At the same time, eight other utilities within the Western Interconnection were conducting RFPs alongside PSE's 2021 All-Source RFP. Combined, these RFPs represented approximately 4,000 MW of renewable need and 5,000 MW of capacity need.

Q. Did any of the changes above impact the RFP process?

A. Yes. The passage of CETA initiated multiple agency rulemaking efforts to clarify and further develop aspects of CETA and how the various elements of the law should be applied, including the establishment of new integrated resource planning and purchases of resources rules, and requirements for a new CEIP.

Q. How did the CEIP impact the RFP process?

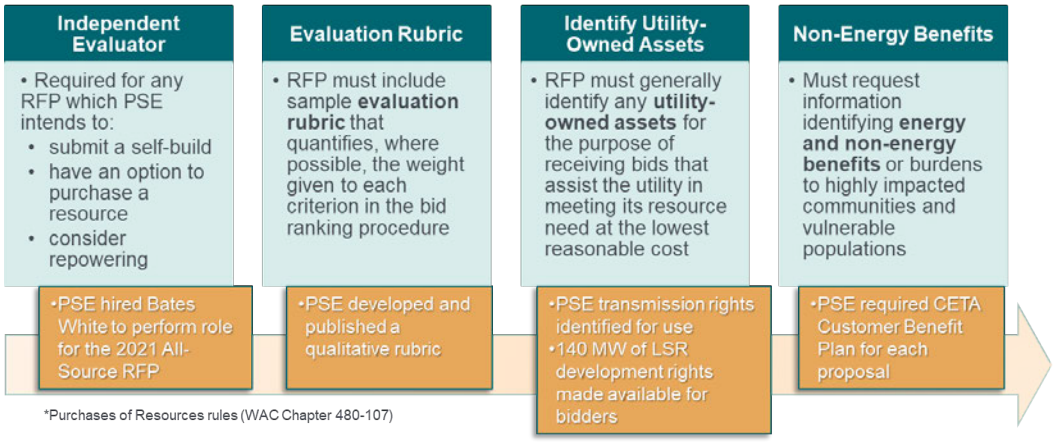
A. The CEIP is a new planning process required by CETA and further clarified in WAC 480-100-640. The CEIP defines a course of action for clean electricity programs and investments for the next four years. The CEIP also establishes the

customer benefit indicators that are used in the 2021 All-Source RFP to determine how a particular resource may help to ensure an equitable transition to clean energy for all customers, as required by CETA. PSE filed its first CEIP in December 2021, about halfway through the first phase of the 2021 All-Source RFP.

Q. What key changes were introduced in the new purchases of resources rules?

A. While the new rules established a variety of changes that govern resource purchases, there were four key changes to the purchases of resources rules that created additional requirements for RFPs, as shown in Figure 3.

Figure 3: Key changes to the purchases of resources rules.[24]



1. The Independent Evaluator.

Q. The new purchases of resources rules established a requirement for an independent evaluator. What firm did PSE select to be the independent evaluator for the 2021 All-Source RFP?

A. After conducting an RFP solicitation for an independent evaluator ("IE") and receiving Commission approval in Docket UE-210037 on January 28, 2021, PSE engaged Bates White to be the IE for the 2021 All-Source RFP.

Q. What is the IE's role during the RFP process?

A. The IE's role is to ensure a fair, transparent, and proper RFP process. The IE's duties and responsibilities ranged from participating in the design of the 2021 All-Source RFP, to verifying that PSE's inputs and assumptions were reasonable, and independently assessing whether PSE's selection of resources was reasonable.

[24] *See* Exh. CPC-6HC at 10.

PSE involved and informed the IE throughout the RFP evaluation and negotiations processes. This involvement included regular meetings, correspondence and information sharing on evaluation and negotiations progress, and results. PSE consulted with the IE on process questions, project selections and eliminations, and a variety of other key issues to ensure fairness, transparency, and alignment with RFP requirements and the purchases of resources rules.

Throughout the post-shortlist negotiation and re-evaluation period, PSE kept the IE engaged with periodic updates on PSE's progress. PSE included the IE in its negotiation meetings with counterparties, shared bid updates, provided briefings on new comparative analysis results and findings uncovered as part of PSE's ongoing commercial risk assessment, and shared PSE's thinking at decision points. PSE routinely sought feedback from the IE on its approach to the analysis and decision-making and worked with the IE to reconcile any differences.

Please see Exh. CPC-6HC, Appendix C, for more information about the IE's role and scope.

2. <u>The price and non-price evaluation and scoring rubric.</u>

Q. The new rules also established a requirement to design a price and non-price scoring rubric for the purpose of evaluating resources in the 2021 All-Source RFP. Did PSE design and use a scoring rubric consistent with this requirement?

A. Yes. In consultation with the IE, PSE designed a price and non-price scoring rubric and approach, which was approved by the Commission in June 2021 as part of its approval of the 2021 All-Source RFP in Docket UE-210220. PSE used the rubric in its Phase 1 evaluation of resources to select the candidate proposals that advanced to Phase 2 for optimization analysis and further due diligence.

3. <u>Utility-owned assets available for bidder use in developing proposals for the RFP.</u>

Q. The new rules also established a requirement to identify utility-owned assets available for bidder use in developing their All-Source RFP bids. Did PSE identify a list of such utility-owned assets?

A. Yes. PSE's 2021 All-Source RFP identified certain transmission rights that could be made available to resource proposals that help PSE to meet its resource need at the lowest reasonable cost. Exhibit H to the 2021 All-Source RFP included a list of these transmission rights and specific associated points of delivery. See Exh. CPC-5, Exhibit H, for the list of transmission rights available for bidder use in the 2021 All-Source RFP.

PSE also made approximately 140 MW of its Lower Snake River ("LSR") wind project development rights available to bidders for use in preparing their 2021 All-Source RFP bids. See Exh. CPC-5, Section 2, PSE land available for bidder use in the 2021 All-Source RFP.

4. Equity and customer benefits.

Q. The new rules also established a requirement to request information identifying energy and non-energy benefits or burdens to highly impacted communities or vulnerable populations. Did PSE request this information?

A. Yes. The 2021 All-Source RFP required bidders to provide an equity and customer benefit plan. More broadly, CETA requires that electric utilities "ensure that all customers are benefiting from the transition to clean energy: Through the equitable distribution of energy and non-energy benefits and reduction of burdens to vulnerable populations and highly impacted communities; long-term and short-term public health and environmental benefits and reduction of costs and risks; and energy security and resiliency."[25]

To meet this requirement, bidders were asked to demonstrate in the equity and customer benefit plan their proposal's alignment with goals set forth in CETA. Bidders were required to respond to a series of questions in the RFP proposal forms, which were designed to capture information about the project relevant to supporting goals set forth in RCW 19.405.040(8) related to customer benefits;

[25] RCW 19.405.040(8).

diversity, equity and inclusion; and labor.[26] Bidders were also strongly encouraged to provide a supplemental customer benefit plan further describing how the proposal would contribute to meeting CETA's equity goals, including specific commitments to support those goals and any additional detail that would help PSE assess the credibility and viability of the bidder's plan.

Q. Was equity incorporated into PSE's evaluation process?

A. Yes. PSE included consideration of equity and customer benefits in each phase of its RFP evaluation process.

For additional information about PSE's efforts to increase equity and inclusion in the 2021 All-Source RFP, PSE's approach to evaluating equity and customer benefits in each phase of the RFP, and the results of the Phase 2 equity and customer benefit sensitivity analysis, see Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix F.

B. Engagement with PSE Management and Board of Directors, Commission Staff, and Interested Parties

Q. Did PSE keep its management and Board of Directors informed during each phase of the 2021 All-Source RFP?

A. Yes. The resource acquisition team kept PSE's Energy Management Committee ("EMC") and PSE's Board of Directors informed of its progress and decisions

[26] *See* Exh. CPC-6HC, at Appendix F.

throughout the RFP evaluation process. The team presented four updates to the EMC during the RFP evaluation: (1) a summary of proposals received in September 2021; (2) a report on the Phase 1 results in March 2022; (3) an update on Phase 2 progress in September 2022; and (4) a report on the Phase 2 results in October 2022. The team also presented three formal updates to the Board of Directors during the RFP evaluation: (1) a report on the Phase 1 results in March 2022, (2) a progress update in May 2022, and (3) a report on the Phase 2 results in November 2022. In 2023, the PSE Board of Directors was kept informed of the RFP progress through presentations and reports related to specific resource decisions.

See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix G, for copies of the presentations made to the EMC and the PSE Board of Directors during each phase of the RFP evaluation. See also the following exhibits for presentations and reports to the EMC and the PSE Board of Directors related to specific resource decisions:

- Exh. CPC-7C, for the Vantage Wind materials; and
- Exh. CPC-8HC, for the Beaver Creek Wind Project materials.

Q. Did PSE keep Commission Staff apprised of the 2021 All-Source RFP process?

A. Yes. During the evaluation process, PSE presented updates to Commission Staff on two occasions: (1) a report on the Phase 1 results in May 2022; and (2) a report

on the Phase 2 results in December 2022. Copies of updates presented to Commission Staff during the RFP evaluation are attached as Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix G.

V. ALL-SOURCE RFP PROPOSAL INTAKE PROCESS AND EVALUATION PROCESS OVERVIEW

A. 2021 All-Source RFP Intake Process

Q. Please describe the bid submittal process for the 2021 All-Source RFP.

A. PSE's RFP evaluation process began in September 2021. Proposals were first tested for completeness and adherence to the minimum criteria defined in Section 4 of the RFP, Exh. CPC-5. PSE notified bidders of any identified non-conforming elements of their bids and the bidder was given three business days to remedy the proposal (the "cure period"). See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Section 6, for more information about the proposal intake process and initial minimum requirements screening.

Q. Were any bids determined to be ineligible based on non-conformity with the RFP's minimum criteria?

REDACTED VERSION

A. Yes. Deficiencies were observed in several submissions; however, almost all were considered to be minor in nature and involved either missing files or clerical errors that were remedied or clarified through data requests. Ultimately, two proposals, [redacted] (ID#5503) and [redacted] (ID#7984), were disqualified for failing to meet a minimum requirement, specifically, the

lack of an interconnection request. Both proposals were submitted by the same bidder. PSE eliminated the proposals after granting two extension requests and consulting with the IE when the bidder failed to provide a remedy or respond to PSE's follow-up reminders.

B. Summary of 2021 All-Source RFP Proposals Received

Q. How many proposals did PSE receive in response to its RFP?

A. PSE received a total of 95 proposals for 21 GW of new resources in response to the 2021 All-Source RFP. This is comparable to the 97 proposals received in response to the 2018 RFP.

Roughly 72 percent of proposed projects representing most proposed resource types were located in Washington. Resources were grouped primarily along the I-5 corridor and in central and southeast Washington. PSE also received proposals for 13 resources in Oregon and 12 resources in Montana. Oregon and Montana proposals included renewables, hybrid renewables with storage options, and pumped hydro storage. Additionally, PSE received two proposals for resources in Idaho and Wyoming.

Table 5 summarizes the resource mix and total offered capacity of the proposed resources by resource type.

Table 5: 2021 RFP proposals.[27]

Resource		2021 All Source RFP	
Category	Sub-Category	# of Poposals	Total Capacity* (MW)
Solar	Solar Only	20	4094
	Hybrid: Solar + Storage	9	1181
	Solar PV + System PPA	1	200
Wind	Wind Only	20	6986
	Hybrid: Wind + Storage	2	800
	Hybrid: Wind + Solar + Storage	2	451
Storage	Storage: Battery	29	4360
	Storage: Pumped Hydro 8hr / 9.5hr	3	800
Flexible Capacity	Natural Gas - fired Generation[1]	3	1247
	Biofuel - fired Generation[1]	4	857
Other Resources	Hydro - Run of River	1	22
	Hydrogen Fuel Cell	1	10
	System PPA / Call Option		
	Unbundled REC's		
	Demand Response		
	Wind (off shore)		
	Wind + Winter Sys PPA		
	Biomass		
	Hybrid: Biomass + Storage		
	Geothermal		
Total		**95**	**21,008**

(1) Generation may include CCCTs, SCCTs and reciprocating engines
(2) Includes PPAs, tolling and capacity agreements

*Total nameplate capacity shown in table is based on the first offer of the proposal
Offer count = 221

Proposals for standalone battery storage, wind and solar resources make up about 73 percent of the total of proposals received. Additionally, some proposals contained hybrid offers for one or more renewable generation resources paired with storage. PSE did not receive any demand response or distributed energy resource ("DER") proposals in the 2021 All-Source RFP.

While demand response and DER proposals were welcome in the 2021 All-Source RFP, this was not the only opportunity for these resources to participate in PSE's current resource acquisition cycle. PSE also filed a targeted RFP for

[27] *See* Exh. CPC-6HC at 18.

demand response and DERs ("2022 Targeted DER RFP") in February 2022. After completing the parallel 2021 All-Source RFP and 2022 Targeted DER RFP analyses, PSE performed a concurrent analysis of the resulting short lists. The results of this analysis are presented later in my testimony.

Q. Did PSE allow bidders to submit more than one offer per proposal?

A. Yes. Most of the 2021 All-Source RFP proposals included multiple offer options, in which one or more of the terms or features varied. Each proposal could contain up to three offers. For the purposes of the 2021 All-Source RFP, a proposal is defined as a bid for the same resource containing up to three total offers. Bidders were allowed to submit more than one proposal, but were advised that proposals may not be mutually exclusive. An offer is defined as an option within a single proposal for the same resource, or co-located resources. Offers could vary elements such as capacity, term, start or end dates, pricing structure, transmission delivery point, some combination of co-located resources, or other proposal elements.

Q. Has PSE prepared an exhibit that further delineates the details of the proposals received?

A. Yes. See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix A, for a copy of the proposal summary PSE filed in Docket UE-210220 pursuant to WAC 480-107-035(5).

Q. Did PSE submit any self-build proposals?

A. No. PSE did not submit a self-build proposal in the 2021 All-Source RFP. Instead, PSE used capital and operational resource costs developed for the 2021 IRP to approximate self-build costs for a variety of renewable and capacity resources.

Q. Did PSE receive proposals from any subsidiaries or affiliates?

A. Yes. Subsidiaries and affiliates of PSE were eligible to submit proposals in response to the 2021 All-Source RFP. PSE received two affiliate bids. One of these bids did not advance to Phase 2. While the second bid did advance to Phase 2, changes in PSE ownership that occurred during Phase 1 had already removed the affiliate relationship associated with the bid.

PSE treated all respondents, including affiliates and subsidiaries of PSE, in a fair and consistent manner throughout the RFP evaluation under the oversight of the IE. Consistent with the provisions in WAC 480-107-023 and -024, the RFP evaluation team did not give any preferential treatment or special consideration to any subsidiary or affiliate of PSE, nor did PSE or the IE disclose the contents of the 2021 All-Source RFP evaluation or competing proposals to subsidiaries or affiliates of PSE prior to the information becoming publicly available.

C. 2021 All-Source RFP Evaluation Process Overview

Q. Please describe at a high level the 2021 All-Source RFP evaluation process.

A. PSE followed a two-phased approach to evaluating proposals in the 2021 RFP with an overall goal of identifying a short list of proposals to best meet PSE's needs at the lowest reasonable cost. After intake, those proposals that met the RFP's minimum criteria advanced to Phase 1 of the evaluation.

In Phase 1, PSE screened and scored each proposal based on a combination of quantitative and qualitative metrics defined in a new rubric approved by the Commission as part of the 2021 RFP. The rubric was designed to identify the most promising proposals and eliminate proposals with prohibitive costs, minimal portfolio benefit, or excessive risk. Proposals were grouped by resource category and ranked. The highest ranked proposals, or Candidate List, advanced to Phase 2.

In Phase 2, PSE performed a more rigorous due diligence review and portfolio optimization analysis of the Candidate List proposals. The due diligence review took a deeper dive into proposal details based on the criteria established in the Phase 1 rubric and included an overall commercial and feasibility risk assessment.

Q. What evaluation criteria did PSE use during the evaluation process?

A. Consistent with rules set forth in WAC 480-107-035, PSE designed a scoring rubric for the RFP in consultation with its IE. The Commission approved the scoring rubric as part of the 2021 All-Source RFP in June 2021.

At a high level, PSE used the rubric to score and rank proposals based on a combination of their price (70 percent) and non-price (30 percent) scores. The price score was based on the proposal's portfolio benefit (defined below). The non-price score was based on the evaluation categories summarized in Table 6.

Table 6: Qualitative scoring criteria.

Evaluation Categories	Measures
1. Counterparty Viability	• Experience with similar projects • Financial stability
2. Project Viability	• Financing plan • Supply chain • Program design (DER and DR)
3. Site Control / Customer Acquisition	• Land agreements status • Customer acquisition plan (DR, DER)
4. Permitting and Studies	• Status of permitting and habitat studies
5. Energy Delivery	• Interconnection status • Transmission status

6. CETA Benefit Plan	• Plan to address five CBIs:
	  • Environment
	  • Economic
	  • Health
	  • Energy and non-energy benefits
	  • Energy security and resilience

See also Exh. CPC-5, the 2021 All-Source RFP, Exhibit A, Evaluation Criteria and Scoring, for the price and non-price rubric and a discussion of the scoring criteria and ranking process.

Q. What models did PSE use in the 2021 All-Source RFP quantitative analysis?

A. In its 2021 All-Source RFP analysis, PSE used modeling tools and methodologies consistent with those used in the development of PSE's 2021 IRP. PSE uses two analytical models in its quantitative evaluation of resources: Aurora and the PSM III Financial Model ("PSM").

Q. How does PSE use Aurora in its quantitative analysis?

A. PSE used the Aurora model to perform long-term capacity expansion modeling, which helped PSE select resources to meet its future clean energy and capacity needs while maximizing the value of each resource in its portfolio. Aurora includes both a financial component and an optimization component. The financial component aggregates the cost of each project and calculates its unique revenue requirement. The optimization function identifies the portfolio that meets PSE's resource needs at the lowest reasonable cost.

In Phase 1, PSE used the Aurora Long-Term Capacity Expansion ("LTCE") logic to establish a base case portfolio, which was then used to test the cost impact of each individual proposal by running the model with and without the resource in the base case portfolio. PSE used the portfolio benefit/cost to determine the price score, which when combined with the non-price score was used to rank proposals at the end of Phase 1.

In Phase 2, PSE used the Aurora LTCE logic to co-optimize all RFP resources selected in Phase 1 along with generic resources developed by the 2021 IRP to produce the lowest cost portfolio to meet PSE's clean energy and capacity needs.

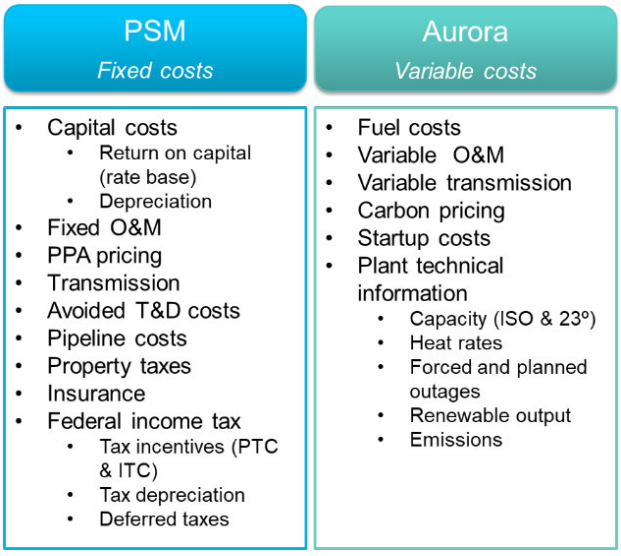
Q. How does PSE use PSM in its quantitative analysis?

A. PSM is a Microsoft Excel-based financial model developed by PSE. For the 2021 All-Source RFP, PSM is used to calculate the revenue requirements of the RFP proposals that included ownership offers or options. The annual total revenue requirements are utilized in Aurora as a fixed cost for the Aurora LTCE optimization.

Q. What cost inputs are analyzed by PSM and Aurora?

A. Figure 4 shows the cost inputs analyzed by each model, which Aurora uses to calculate an optimal portfolio.

Figure 4: Cost inputs analyzed by PSM and Aurora.



Q. What metrics does PSE calculate to assess the competitiveness of proposals?

A. PSE calculates four metrics to assess the relative competitiveness of individual proposals:

- **Portfolio benefit ($).** The difference between the net present value portfolio revenue requirement with the proposed project in the portfolio relative to the base portfolio. (Useful for comparing projects of similar size and technology type. Used to determine the least cost combination of resources that meet PSE's resource needs.)

- **Levelized portfolio benefit per offered nameplate ($PB/MW).** A project's portfolio benefit divided by the net present value of the project's offered nameplate capacity. (Useful for comparing different project sizes and technologies. Used along with qualitative metrics in establishing an initial ranking of projects for inclusion in the portfolio optimization.)

- **Levelized cost of energy ($/MWh).** The net present value of the proposed project's revenue requirement divided by the net present value of the proposed project's generation. (Useful for comparing projects that have the same or similar operating characteristics. Less useful for projects with low or no net generation.)

- **Levelized cost of peak capacity ($/kw-yr).** The net present value of the proposed project's revenue requirement divided by the net present value of the proposed project's peak capacity contribution. (Useful for comparing projects that have the same or similar operating characteristics. Less useful for projects with low or no peak capacity contribution.)

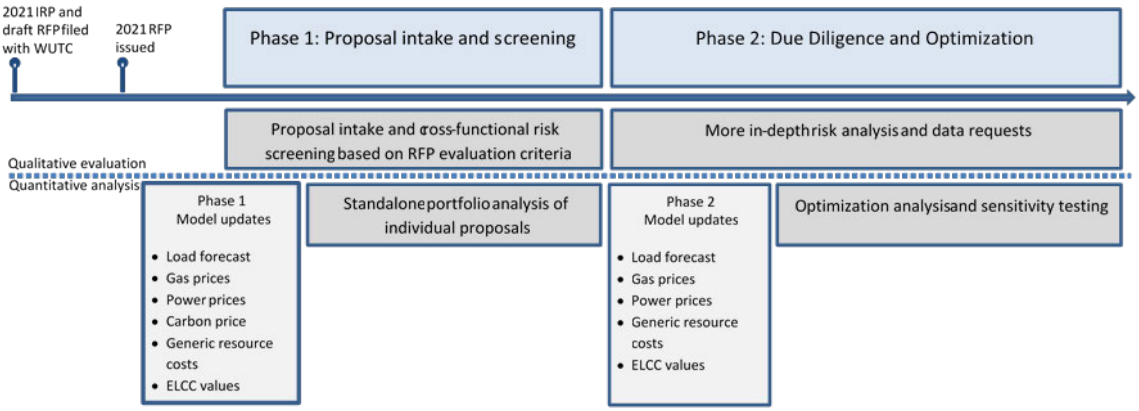
PSE's analysis relies on multiple metrics because each metric offers a slightly different perspective on the economic benefits of an individual proposal.

Q. What key assumptions did PSE use in its 2021 All-Source RFP analysis and how did they evolve during the evaluation process?

A. The RFP analysis included several key assumptions: load forecast, market power and gas prices, carbon prices, generic resource costs, and resource peak capacity

contributions. PSE issued its most recent IRP in April 2021 and performed its 2021 All-Source RFP analysis between September 2021 and October 2022. Initially, the RFP analysis drew on assumptions from the 2021 All-Source IRP, which PSE updated as the Company developed its first Electric Progress Report and new information became available.

Figure 5: Timing of key assumptions updates during the RFP evaluation process.



Q. Did PSE prepare an exhibit detailing the models, methodology and assumptions used in the Phase 1 and Phase 2 quantitative evaluations?

A. Yes. See Exh-6HC, the 2021 RFP Evaluation Process Document, Appendix E, Quantitative Evaluation Process, for a detailed description of the models, methodology and assumptions used in each phase of the RFP.

VI. 2021 ALL-SOURCE RFP PHASE 1 EVALUATION AND RESULTS

A. Phase 1 Overview

Q. Describe the Phase 1 review process.

A. The 2021 All-Source RFP evaluation considered each proposal's ability to help meet all or part of the Company's capacity need, clean energy need, or both, at the lowest reasonable cost.[28] As explained above, in Phase 1, PSE conducted a preliminary cost analysis and qualitative risk screening with a goal to eliminate resources with prohibitively high cost or risk, and produce a Candidate List for further due diligence and optimization analysis in Phase 2.

Q. When did PSE conduct the Phase 1 evaluation?

A. Phase 1 began in earnest in October 2021 upon completion of the proposal intake process, was largely completed in February 2022, and the results were presented to PSE's EMC and Board of Directors in March 2022.

[28] *See* WAC 480-100-605: "Lowest reasonable cost" means the lowest cost mix of generating resources and conservation and efficiency resources determined through a detailed and consistent analysis of a wide range of commercially available resources. At a minimum, this analysis must consider resource cost, market-volatility risks, demand-side resource uncertainties, resource dispatchability, resource effect on system operation, the risks imposed on the utility and its customers, public policies regarding resource preference adopted by Washington or the federal government, and the cost of risks associated with environmental effects, including emissions of carbon dioxide. The analysis of the lowest reasonable cost must describe the utility's combination of planned resources and related delivery system infrastructure and show consistency with chapters 19.280, 19.285, and 19.405 RCW.

Q. How did PSE evaluate and score proposals?

A. PSE evaluated and scored proposals based on a combination of quantitative and qualitative metrics, and ranked them according to the weighted average of their price (70 percent) and non-price (30 percent) scores.

Upon completing the Phase 1 evaluation, the resource acquisition team combined its quantitative (price) and qualitative (non-price) screening results to produce a Phase 1 ranking for each proposal.[29] PSE grouped proposals into categories by resource and/or technology type and stacked them within each category based on their combined price and non-price scores. Competitively ranked proposals from each resource category advanced to Phase 2.

Consistent with the approach outlined in the 2021 All-Source RFP, PSE took an inclusive approach in Phase 1, advancing proposals sufficient to meet at least 150 percent of PSE's renewable and capacity resource needs, to preserve a large and diverse pool of resource types for optimization modeling and to prevent potentially promising proposals from being left behind.

[29] See Exh. CPC-5 at Exhibit A for the ranks and weights associated with price and non-price factors considered by PSE, and a description of PSE's approach to scoring individual proposals.

B. Phase 1 Qualitative Risk Screening (the "Non-Price Score")

Q. Describe PSE's approach to designing the non-price elements of its rubric.

A. The non-price elements of PSE's scoring rubric were designed to capture and assign value to the principal qualitative risks and benefits of proposals, while also recognizing that such risks and benefits may not apply in the same manner to all types of resources. The qualitative rubric, which was weighted at 30 percent of the total score, was intended to have broad applicability to a variety of resources at various stages of development. As described earlier in my testimony, the rubric applied discrete metrics to measure resource proposals across six weighted categories: counterparty viability (3%), project viability (3%), site control (3%), permitting and studies (3%), energy delivery (7.5%) and CETA customer benefit plan (10.5%).

PSE worked in partnership with the IE to design and develop its rubric. PSE and the IE met regularly in an iterative review process that included sharing drafts, discussing the details, and PSE incorporating IE feedback. See Exh. CPC-5, the 2021 All-Source RFP Document, Exhibit A, for a detailed discussion of each rubric category.

Q. How did PSE incorporate equity into its Phase 1 evaluation?

A. The equity and customer benefit category carried the highest weight of the six categories in the qualitative evaluation. Equity and customer benefit scoring resulted in an individual proposal score between 0 and 5, based on how well the

proposal addressed one or more of five customer benefit indicator ("CBI") categories in alignment with CETA, RCW 19.405.040(8): environment, health, economic, energy and non-energy benefits, and energy security and resiliency. The evaluation team considered specific plans to address the CBI categories, as well as commitments from bidders to carry out their plans and/or track the contributions of the proposed project.

Q. What information did PSE use to evaluate bids?

A. PSE's Phase 1 evaluation and scoring primarily relied on information provided by bidders in their proposals. The resource acquisition team also performed additional due diligence to better understand the unique risks and merits of particular proposals, clarify offer details, and answer outstanding questions through data requests with bidders. Proposals that did not meet the RFP minimum requirements, or that contained potential fatal flaws and/or unacceptable risks, were given at least three business days to remedy deficiencies, as per the cure period established in the RFP. PSE was generally lenient with bidders who requested additional time.

Q. How did PSE evaluate the proposals using the qualitative rubric?

A. The resource acquisition team established leads to evaluate and score each proposal in every category of the qualitative evaluation rubric. Other internal PSE subject matter experts ("SMEs") also reviewed and scored each proposal in the category relating to their specific areas of expertise. The SMEs flagged issues and

questions requiring follow-up in data requests and served as a cross-check in the scoring process.

In Phase 1, the resource acquisition team engaged with SMEs on the Energy Delivery, Site Control, Permitting, and CETA Customer Benefit Plan rubric categories, in particular. For other categories, such as Counterparty Viability and Project Viability, the resource acquisition team consulted with SMEs on an as-needed basis.

Q. How did PSE structure its qualitative review of proposals?

A. The resource acquisition team and SMEs (collectively "the Evaluation Team") conducted their qualitative evaluation on a staggered two-week cycle. Each week, the Evaluation Team focused on a certain set of selected proposals. These sets were generally grouped based on common or similar resource types (wind, solar, hybrid, storage, thermal), or location (Lower Snake River, Montana, etc.). The Evaluation Team held weekly meetings to review approximately eight proposals per week, share observations, highlight risks, and reconcile rubric scoring.

In each subsequent week, the resource acquisition team met with the team's manager and director to discuss the proposals scored in the prior week. This group discussed the key terms of each proposal, notes, and rubric scores, and identified matters for follow up with SMEs or bidders in data requests.

Q. What was PSE's approach to engagement with bidders during Phase 1?

A. Throughout Phase 1 PSE sent data requests to bidders and responded to bidder questions on an as-needed basis. PSE generally shared communications with bidders with the IE, except for very straightforward requests for information or clarification, and incorporated the IE's feedback before sending them to bidders. PSE also regularly shared with the IE updated logs of all data requests and bidder responses. In a few instances, bidders requested a phone call with PSE to explain or clarify a point flagged in a data request, and the IE was invited to join these calls. Overall, PSE sent approximately 490 data requests during Phase 1.

Q. What was PSE's approach to engagement with the IE during Phase 1?

A. PSE met weekly and corresponded regularly with the IE throughout Phase 1 to share updates and observations; present qualitative rubric scoring, quantitative results and combined scoring results; present quantitative modeling methodology; and provide the details of key modeling assumptions and inputs for each offer.

Q. Did PSE send any data requests associated with the required customer benefit plans described earlier in your testimony?

A. Yes. In January 2022, all bidders were invited to submit updated customer benefit plans after PSE filed its CEIP on December 17, 2021. PSE did not require bidders to submit updated plans, but encouraged them to review the CEIP and consider the prioritized CBIs contained therein. Most bidders updated their plans, which

were evaluated and re-scored where appropriate. See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix F, for PSE's approach to evaluating customer benefits and equity in the RFP.

Q. What happened after PSE completed its Phase 1 review of the proposals?

A. Once the Evaluation Team reviewed and scored all proposals, the resource acquisition team paused to reconcile any inconsistencies and to calibrate scoring, while also sharing observations with the IE. Certain rubric categories are more subjective than others, such as experience level, counterparty stability, financing plan, and CETA customer benefit plan. As a quality control measure, after calibrating scoring results and incorporating feedback from the IE, the resource acquisition team conducted a second quality assurance review of all proposals, testing for consistency in scoring, and making adjustments where necessary.

C. Phase 1 Quantitative Screening Analysis (the "Price Score")

Q. Describe PSE's process for the Phase 1 quantitative analysis.

A. In Phase 1, PSE performed a standalone portfolio analysis for each individual proposal using the Aurora model and PSE's PSM financial model. The steps to perform the Phase 1 analysis are described as follows:

- Step 1: Start with the 2021 IRP preferred portfolio and update the input database with current assumptions.
- Step 2: Perform Aurora LTCE simulation on the updated database (from Step 1) to select generic resources to meet PSE's capacity and clean

energy needs. This step establishes the base case portfolio (or balanced IRP base portfolio) for evaluating individual RFP offers.

- Step 3: Add an RFP offer to the base case portfolio. Then perform Aurora Standard Zonal dispatch simulation for the updated portfolio to measure the production cost impact of the RFP resource addition to the overall RFP offer plus base case portfolio.

- Step 4: Remove the RFP offer, and then repeat Step 3 for another RFP offer until all offers are studied.

Q. What results did the model produce?

A. The analysis produced the following four screening metrics to assess the relative competitiveness of individual proposals: portfolio benefit; levelized portfolio benefit per offered nameplate; levelized cost of energy; and levelized cost of peak capacity.

Q. How did PSE use these metrics in its Phase 1 evaluation?

A. While each metric provided useful information to the resource acquisition team, the Phase 1 analysis primarily relied on the portfolio benefit metric, a holistic economic indicator that captures all of the benefits, energy/production costs, renewable credits, and emission reductions of a resource. The Phase 1 analysis also considered the levelized cost of energy,[30] a traditional metric used by the industry to compare the cost of resources with similar operating characteristics.

[30] A similar metric, levelized cost of peak capacity, is used for capacity resources such as storage and flexible capacity.

Consistent with the scoring methodology established in Exhibit A to the 2021 All-Source RFP, PSE assigned a price score to each proposal based on its relative portfolio benefit per MW of offered nameplate. PSE then produced a combined price and non-price score for each proposed resource. The price score accounted for 70 percent of the overall Phase 1 score. See Exh. CPC-5, the 2021 All-Source RFP, Exhibit A, Evaluation Criteria and Scoring.

Q. How did PSE categorize proposals for ranking?

A. PSE separated the RFP proposals into eight resource categories:

(1) Washington/Oregon Wind + Run of River Hydro,

(2) Standalone Solar,

(3) Hybrid Solar + Storage,

(4) Pumped Storage Hydro ("PSH"),

(5) Battery Storage,

(6) Flexible Capacity,

(7) Hybrid Wind + Solar + Storage, and

(8) Montana/Wyoming Standalone Wind/Wind + Storage.

Wind proposals were further subcategorized as either Washington/Oregon or Montana/Wyoming because of the different characteristics and peak capacity contributions of wind resources in those regions. The run-of-river hydro proposal was evaluated within the Washington/Oregon Wind category due to its variable

energy output and location. The flexible capacity category consists of biodiesel peakers and traditional gas generation facilities.

Q. How were proposals ranked?

A. Proposals were ranked alongside their peers within their respective categories. To ensure that a sufficient sample size of each resource type would be included in Phase 2, the resource acquisition team established cut-off points within the resource categories such that either the peak capacity or energy output of the offers selected from each category met or exceeded the total resource need, depending upon scoring gaps. The Candidate List included a generous representation from each resource category to ensure a robust pool of alternatives for analysis in Phase 2.

D. Phase 1 Results and Candidate List

Q. What result did the Phase 1 evaluation produce?

A. Phase 1 produced a Candidate List of proposal offers with the highest combined quantitative and qualitative scores in each resource category. Less competitive proposals and proposals that either did not meet minimum requirements or had fatal flaws were eliminated. At the end of the Phase 1 evaluation, 67 of the 95 RFP proposals advanced to Phase 2. Table 7 compares the proposals received and evaluated in Phase 1 to the proposals selected for consideration in Phase 2.

Table 7: Candidate List (Phase 2) vs. Proposals Received (Phase 1).[31]

Resource	Type	2021 All Source RFP - Phase 2		2021 All Source RFP - Phase 1	
		# of Proposals[1]	Total Capacity[2] (MW)	# of Proposals[1,3]	Total Capacity[2] (MW)
Solar	Solar Only	9	1,579	20	4,094
	Hybrid: Solar + Capacity/Storage	10	1,539	10	1,381
Wind	Wind Only	12	2,532	20	6,986
	Hybrid: Wind + Solar + Capacity/Storage	4	952	4	1,251
Storage	Storage: Battery	24	3,860	29	4,360
	Storage: Pumped Hydro	3	500	3	800
Flexible Capacity	Natural Gas - fired Generation[4]	1	316	3	1,247
	Biofuel - fired Generation[4]	3	643	4	857
Other Resources	Run of River Hydro	1	22	1	22
	Hydrogen Fuel Cell	0	0	1	10
Total		**67**	**11,943**	**95**	**21,008**

[1] Phase 1 count is based on resource categorizations from bidder proposals (consistent with WUTC 30-day report). Proposal count for Phase 2 reflects bidder resource categorization error corrections.
[2] Bidders were allowed to submit up to 3 offers per proposal. Total nameplate capacity shown in the table is based on the selected offer for Phase 2 and first offer for
[3] The proposal count includes four withdrawn proposals and two disqualified proposals. The four withdrawn proposals include one hydrogen, one energy storage , one wind and one solar proposal. The two disqualifed proposals include two storage proposals.
[4] Generation may include CCCTs, SCCTs, and reciprocating engines.

Q. How would you describe the resources selected?

A. Selected offers were generally those that ranked most favorably in the quantitative screening relative to one or both of the resource needs and had no known fatal flaws. When candidate proposals contained multiple offers, additional offers were included in the Phase 2 analysis, if the technology types of those offers were consistent with the selected offer. Projects that contributed to meeting both resource needs were generally selected, due to the relatively high total portfolio benefit produced by the dual value streams.

Overall, the high percentage of renewable resource projects selected for Phase 2 consideration aligned well with public and state policy preferences and,

[31] *See* Exh. CPC-6HC at 40.

specifically, CETA. In addition to the selected renewables, PSE chose to include one natural gas-fired resource and three biodiesel resources on its candidate list. This decision was made to ensure that there would be sufficient flexible capacity resources in the Phase 2 candidate pool to meet PSE's physical reliability need.

Q. How did the Candidate List compare to prior RFP cycles?

A. PSE selected a comparatively large number of proposals for Phase 2 compared to prior RFP cycles. This decision was based on four key strategic considerations:

- PSE's large resource needs combined with regional competition for resources supported a larger pool of candidate resources. Eight other utilities within the WECC had RFPs underway during PSE's 2021 RFP. The competing RFPs represented approximately 4,000 MW of renewable need and 5,000 MW of capacity need.
- More detailed benefit and cost information (especially for storage resources) would be available through the Phase 2 modeling and due diligence process.
- PSE's planned update of its assumptions related to climate change and the peak capacity contributions of resources in Phase 2 were expected to adjust the relative competitiveness of different resource categories.
- Price uncertainties due to cost inflation in supply chain and transmission upgrades would receive further scrutiny in Phase 2.

Q. Has PSE prepared an exhibit showing the proposals selected for the Candidate List and the final Phase 1 rankings?

A. Yes. See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix D, for a complete list of the Phase 1 proposal rankings and proposals selected by resource category for the Candidate List. See also Section 7 of the 2021 RFP

Evaluation Process Document for a discussion of the resource categories used in the ranking process and each category performed in Phase 1.

Q. How did PSE conclude the Phase 1 review?

A. The resource acquisition team concluded its Phase 1 evaluation with a presentation to PSE's EMC on March 31, 2022, recommending the Candidate List of resources to advance to Phase 2. This was followed by a presentation to PSE's Board of Directors on April 6, 2022. See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix G, Presentations.

VII. 2021 ALL-SOURCE RFP PHASE 2 EVALUATION AND RESULTS

A. Phase 2 Overview

Q. What was the scope and timing of the Phase 2 evaluation?

A. PSE's Phase 2 analysis took place between April and September 2022. In this phase, the Evaluation Team conducted portfolio optimization analysis and further qualitative due diligence to determine the best resource solution to meet PSE's clean energy and capacity needs at the lowest reasonable cost. At the end of this phase, PSE also conducted a concurrent optimization analysis that included resources from both the 2022 Targeted DER RFP and the 2021 All-Source RFP.

The final short list, which was presented to the EMC in October 2022 and the Board of Directors in November 2022, included both DERs and All-Source RFP resources.

Q. What approach did PSE take to evaluate the All-Source RFP and DER RFP proposals prior to the concurrent analysis at the end of Phase 2?

A. PSE evaluated the 2021 All-Source RFP and 2022 Targeted DER RFP separately through short list selection. At the end of the evaluation process, PSE performed a combined optimization analysis including the short list resources from each RFP. While PSE did not use Aurora to make DER build decisions, it did use Aurora to optimize the operation of DERs, which could impact the selection of 2021 All-Source RFP and generic resources. PSE modeled 157 MW of shortlisted DER capacity from the 2022 Targeted DER RFP as "must-take" resources in the optimization.

This approach allowed for a fair comparison of DERs in both RFPs. Because DERs and demand response had the opportunity to submit proposals in both RFPs and PSE ultimately performed a combined analysis of both short lists, DERs had an opportunity to help meet the specific requirements in both RFPs.[32]

Q. How did PSE incorporate equity into its Phase 2 evaluation?

A. In Phase 2, PSE performed a portfolio optimization sensitivity to produce a resource portfolio that would meet the capacity and renewable need identified while also maximizing CBIs for comparison with the base case portfolio. Since no project scored above a three (on a scale of 0-5) in the CETA Customer Benefit

[32] PSE did not receive any DER or demand response bids in response to its 2021 All-Source RFP.

Plan category of the Phase 1 non-price scoring rubric, projects with an equity and customer benefit score of two or higher that had no identified fatal flaws in the risk analysis were eligible for inclusion in the CBI sensitivity analysis. The results of the analysis helped inform the selection of the RFP short list and backup list.

B. Phase 2 Qualitative Due Diligence

Q. What qualitative review did PSE perform in Phase 2?

A. PSE conducted additional due diligence on the Candidate List proposals to verify information provided by the bidders in Phase 1 and dig deeper into the unique risks and merits of each proposal. The resource acquisition team worked closely with its cross-functional group of internal SMEs in the following areas: permitting/environmental, technical/engineering, operations, site control/real estate, interconnection and transmission, equity and customer benefits, regulatory and community. During Phase 2, the Evaluation Team held weekly meetings to review and discuss between two and four proposals per week. For each proposal, SMEs reviewed the bid and supplementary materials, bidder responses to data requests, and publicly available information. The resource acquisition team used feedback from the SMEs to engage with bidders though data requests or direct calls, and to spotlight particular uncertainties, risks and potential mitigations.

PSE also reviewed redlines and comments from Phase 2 bidders on the prototype term sheets provided to all bidders in the RFP. PSE looked for modifications that

proposed unacceptable terms or conditions, or that would otherwise present excessive risk to PSE and its customers.

Q. Describe generally the data requests that PSE sent to bidders in Phase 2.

A. Early in Phase 2, PSE sent a comprehensive set of data requests to all candidate list bidders, requesting updates and supporting documentation on the status of each project. Data requests included information related to permitting and studies, site control, interconnection and transmission, project design and/or performance (if operational), reliance on tax incentives, and any other relevant updates.

Q. Did bidders provide any additional information?

A. Phase 2 bidders were initially given two opportunities to refresh pricing, first in April 2022 and second to provide their best and final offers ("BAFO") at the end of July. In both instances, PSE and the IE agreed to allow bidders that increased pricing to remain in the RFP provided that increases were reasonably justified and explained by market conditions. This decision was made as a result of the broad effects of inflation, market changes and uncertainties across the sector. Common factors included supply chain constraints, uncertainties on solar tariffs and uncertainties around the fate of pending legislation and tax incentives. For discussion of supply chain and other market uncertainties please see Craig Pospisil's Prefiled Direct Testimony, Exh. CJP-1T.

Later, after the Inflation Reduction Act passed on August 16, 2022, bidders were invited to update their BAFOs to account for the effects of the new law and the expanded tax incentives it introduced. PSE received the updated BAFOs by early September 2022 and used the updated information in the portfolio optimization modeling conducted just prior to shortlisting.

Q. How did PSE use the information gathered during Phase 2?

A. PSE used information gathered in both phases of the RFP to develop an overall risk profile for each candidate proposal. The risk profile included five risk categories: counterparty/proposal, site control, permitting, energy delivery, and reputational. "Counterparty risk" incorporated technical/engineering and operations due diligence findings, and "reputational risk" captured regulatory, community, and equity/customer benefit findings. The risk profile is depicted in tables 10 and 11 of Exh. CPC-6HC, the 2021 RFP Evaluation Document.

Q. Describe PSE's approach to selecting a short list that represents the lowest reasonable cost portfolio of resources to meet PSE's resource needs.

A. PSE first identified the lowest cost combination of proposals selected in the portfolio optimization modeling results. If any of the resources selected by the model were flagged in the due diligence process for having a substantial material risk, PSE revisited those proposals with the relevant SMEs and offered the bidder an opportunity to address the risk, explain mitigation plans, and remedy any potential fatal flaws. PSE presented and reviewed each case with the IE prior to

making a decision to set any proposal aside for qualitative reasons that would otherwise be selected in the portfolio optimization. PSE then re-ran the optimization model with those proposals removed from the pool of available resources. This iterative process continued until all proposals selected by the portfolio optimization modeling presented low and/or acceptable and mitigatable risks to PSE and its customers.

Q. Did PSE identify any substantial material risks (or fatal flaws) requiring the removal of any proposals from the Candidate List?

A. Yes. As a result of the Phase 2 due diligence evaluation, ten Candidate List proposals were found to contain substantial material risks (or fatal flaws) and/or uncertainties that bidders were unable to address to PSE's satisfaction. These proposals were removed from the available pool of candidate resources in the portfolio optimization.

Table 8: Proposals set aside during Phase 2 due to substantial material or unacceptable risk or uncertainty.[33]

ID	Proposal	Substantial material/unacceptable risk or uncertainty
5088		Lack of visibility on transmission plan; no transmission service request submitted, will enter 2023 Bonneville Power Administration ("BPA") cluster study with results expected in Q3 2023. Transmission service availability, timing, and upgrade cost risks.
2889	[4]	Ten-year interconnection upgrade timeline set forth in TPC Facility Study incompatible with need.
2892		Landowner opposition to modifying existing easements that do not allow solar to flow from Dodge Junction to Central Ferry; bidder did not demonstrate ability to deliver to alternate eligible POD.

[33] *See* Exh. CPC-6HC at 45.
[34] BESS is a "battery energy storage system."

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1261	[redacted]	Landowner opposition to modifying existing easements that do not allow solar to flow from Dodge Junction to Central Ferry; bidder did not demonstrate ability to deliver to alternate eligible POD.
9136	[redacted]	Kitsap charging constraints identified in third-party power flow studies and by PSE System Planning that would require significant upgrades (~$200m+).
2608	[redacted]	Kitsap charging constraints identified in third-party power flow studies and by PSE System Planning that would require significant upgrades (~$200m+).
8179	[redacted]	Kitsap charging constraints identified in third-party power flow studies and by PSE System Planning that would require significant upgrades (~$200m+).
9788	[redacted]	TPC interconnections studies conclude that upgrade costs and timing are indeterminable.
8051	[redacted]	Lack of visibility on transmission plan. Will enter 2023 BPA cluster study with results expected in Q3 2023.
3923	[redacted]	Lack of achievable transmission plan

In addition to the proposals eliminated in Phase 2 for qualitative reasons, five proposals and/or offers were removed from consideration by the bidders.

Table 9: Proposals or offers withdrawn by the bidder during Phase 2.[35]

ID	Proposal	Reason for bidder withdrawal
2180 (all offers)	[redacted]	Lack of achievable transmission plan.
1054,1058, 9831(offers 1 only)	[redacted]	Offers with 2024 COD withdrawn (others with 2025 and 2026 CODs remain).
2807_3	[redacted]	Bidder unable to maintain wind component of hybrid due to COD delays.
7991 (all offers)	[redacted]	No longer able to market project to PSE.
9015_2	[redacted]	Offer withdrawn due to outdated labor assumptions that present a risk to COD timeline.

[35] *See* Exh. CPC-6HC at 46.

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C. Phase 2 Optimization Analysis

Q. How did PSE conduct the Phase 2 optimization analysis?

A. In Phase 2, PSE considered both the individual risks and merits of each proposal and the overall portfolio impacts of adding potential resource combinations. PSE updated its standalone portfolio analysis of individual proposals and performed an all-in optimization analysis to identify the most valuable combination of proposals to meet the company's peak capacity and clean energy needs. In addition to the base case, PSE developed four additional cases to stress test proposals in different potential pricing, customer benefit, and transmission delivery scenarios.

1. **High forecast scenario.** This scenario was designed to test portfolio selection at high forecasted load, gas prices, and market prices.

2. **Low forecast scenario.** This scenario was designed to test portfolio selection at low forecasted load, gas prices, and market prices.

3. **CBI sensitivity.** This sensitivity was designed to test a portfolio with higher overall customer benefit. To that end, PSE included in the optimization proposals with higher equity and customer benefit plan scores than alternatives (as described earlier in my testimony). PSE disabled offers with lower equity and customer benefit plan scores.

4. **Conditional firm transmission sensitivity.** Conditional Firm Service ("CFS") is a type of long-term firm point-to-point transmission service that is conditioned by a defined number of hours per year, or during defined system conditions when firm service is unavailable. As part of its 2022 Cluster Study, the BPA offered 5.9 GW of CFS.

Q. Did PSE retain any outside consultants to independently review or support PSE's Phase 2 analysis?

A. Yes, PSE hired several consultants to conduct independent studies or analyses to support PSE's Phase 2 evaluation, including:

- **PRM and ELCC analysis – Energy and Environmental Economics ("E3").** E3 performed a seasonal resource adequacy analysis and calculated separate planning reserve margin ("PRM") and ELCC values for winter and summer. The seasonal PRM sets the total amount of resources needed in that season and the seasonal ELCC corresponds to a resource's contribution towards the PRM in that season. The PRMs for winter and summer are calculated such that, if PSE adds enough resources to satisfy them, PSE will meet its annual target of five percent loss of load probability. The ELCCs for winter and summer are calculated such that they only consider how a resource contributes towards reliability in winter or summer. E3 also calculated resource-specific ELCCs for bids received in the 2021 All-Source RFP.

  See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix E, for more information about the PRM and ELCC assumptions used in PSE's RFP analysis.

- **Power flow studies for battery energy storage systems – Guidehouse.** To better understand how operational characteristics (ability to quickly change between being a load and providing generation) might impact the way PSE plans for and operates its transmission system, Guidehouse conducted a powerflow study of several 2021 RFP battery energy storage system (or "BESS") resources that interconnect to PSE's system west of the Cascades. Guidehouse studied: (1) potential risks to network upgrades that may not be identified in the interconnection process;[36] and (2) the implications of charging at peak load conditions and any network upgrades that might be required to support that operational capability. PSE's System Planning team and Guidehouse worked together on an iterative approach to this analysis, with each iteration consisting of two parts, (1) an economic study performed by PSE using a capacity expansion model to select specific battery energy storage system resources based on

[36] This is due to the study process of a LGIA being limited in scope to only a BESS acting as a generator.

their production costs, and (2) a power system study performed by Guidehouse of the resources selected by the capacity expansion model.

- **Variable energy resources assessments and stochastic analysis – DNV Energy Insight.** During Phase 2 of the 2021 RFP, PSE engaged DNV Energy Insights, Inc. ("DNV") to provide resource assessments and stochastic analysis for the variable energy resources bid into the RFP. The results of the stochastic data creation were used in resource adequacy modeling to calculate the ELCC of resources and PRM values. In addition, the data was used in PSE's stochastic portfolio model. DNV also created a top-down review of the wind and solar data that bidders provided for PSE's RFP. The analysis was meant as a baseline review to provide that projects included in the short list could meet expectations. Finally, DNV utilized the previously-created stochastic data to create sub-hourly data (five minute timeframe). The results of the sub-hourly data creation were used as inputs for PSE's flexibility analysis and needs calculations.

  Additionally, PSE requested analytical support from DNV related to energy delivery curtailments modeling. PSE used Aurora to model curtailments associated with certain wind and solar projects on the RFP short list and backup list that are subject to interconnection and transmission limits because they share capacity with existing projects. DNV utilized the stochastic dataset they generated to quantify the average amount of curtailed annual energy resulting from such limits.

D. Phase 2 Results and Short List

Q. How did PSE determine which resources should be on the short list?

A. At the end of Phase 2, PSE placed on the short list those proposals that best aligned with the Company's overall objective to select a portfolio of resources that best meet PSE's resource needs and can be delivered to its system at the lowest reasonable cost and risk, in compliance with all applicable laws and regulations, and consistent with the public interest. Table 10 presents the 2021 All-Source RFP short list by technology type. It does not show the selected DER short list resources (shown in Table 11), which would contribute an additional

peak capacity of 137 MW in August 2027 and 93 MW in December 2027 to the 2021 All-Source RFP peak capacity contributions shown in the table below.

Table 10: 2021 All-Source RFP short list by resource technology.[37]

Technology	Nameplate (MW)
Capacity resources	
Battery storage (standalone)	[redacted]
Pumped hydro storage	
Subtotal capacity	600
Clean energy	
Wind - standalone	[redacted]
Solar - standalone	
Hybrid – Solar + storage	
Hydro (run of river)	
Subtotal renewable	1,259
Total All-Source RFP resource addition	**1,859**

Peak contribution in 2027 Aug	1,204 MW
Peak contribution in 2027 Dec	657 MW
CETA contribution in 2025	1,537,681 MWh
CETA contribution in 2026	2,802,813 MWh

Q. Did PSE include resources selected in the CBI sensitivity in its short list?

A. Yes. As previously described in my testimony, prior to finalizing the short list, PSE conducted a portfolio optimization sensitivity analysis aimed at producing a resource portfolio that would meet its clean energy and capacity needs while maximizing CBIs. The aim of the CBI sensitivity analysis was to consider whether there was a reasonable tradeoff between cost and customer benefits that

[37] *See* Exh. CPC-6HC at 50.

would support an alternative portfolio selection for shortlisting compared to the base case portfolio. After consulting with the IE, PSE concluded the higher portfolio costs of the sensitivity were not offset by any clear quantifiable increase in customer benefits.

However, five of the nine proposals from the CBI sensitivity analysis were already selected in the base case for the short list, two additional proposals selected in the CBI sensitivity analysis were included in a backup list of next best resources (that PSE later considered in its post-Phase 2 re-evaluation of resources), and two were not included in either the short list or the backup list.

See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix F, for more information about PSE's evaluation of equity and customer benefits.

Q. What were the results of the concurrent analysis of the 2021 All-Source and 2022 Targeted DER RFPs?

A. All three shortlisted resources from the 2022 Targeted DER RFP were selected for the final combined All-Source RFP and DER short list. The DERs performed well in the portfolio optimization modeling when allowed to compete with the 2021 All-Source RFP candidate pool, and were subsequently treated as "must take" resources in the selection of the short list. Table 11 presents the combined short list that PSE recommended to its EMC in October 2022 and Board of Directors in November 2022.

Table 11: Combined 2021 All-Source and DER RFP short list.[38]

All-Source RFP Short List

Line	COD	Resource Type	Offer ID	Project Name	Term (Years)	Begin Year	Offer Capacity (MW)	Peak Contribution 2027_08 (MW)	Peak Contribution 2027_12 (MW)	CETA Contribution 2025 (MWh)	CETA Contribution 2026 (MWh)
1	12/1/2024	SOLAR	7621	[redacted]							
2	12/31/2024	SOLAR	8652								
3	12/31/2024	SOLAR	9015								
4	12/31/2024	SOLAR	2899								
5	3/9/2025	HYDRO	5438								
6	10/5/2025	WIND	1573								
7	10/31/2025	BESS	7418								
8	12/1/2025	WIND	2958								
9	12/1/2025	Hybrid/Solar	1627								
10	12/1/2025	Hybrid/BESS	1627								
11	12/1/2025	BESS	5684								
12	10/31/2026	BESS	9851								
13	12/31/2026	PSH	1810								
14	DER RFP Short List										
15	1/1/2023	DER	8918								
16	1/1/2023	DER	5247								
17	1/1/2023	DER	1714								
18											

Q. Did PSE prepare a backup list?

A. Yes. At the end of Phase 2, PSE also identified certain proposals that could serve as favorable alternatives to the shortlisted proposals, if needed. For example, if (a) PSE and a shortlisted counterparty were unable to agree to contract terms, (b) there were material changes to a shortlisted proposal that required PSE to re-evaluate and select the next best resource alternative, consistent with WAC 480-107-075(4), or (c) there were updates to PSE's resource need that led to additional resource acquisitions.

Due to the nature of the Aurora portfolio optimization modeling, potential replacement resources must present a good fit within the size and timing of PSE's needs and constraints, in addition to being cost-competitive. In selecting a backup list, PSE also considered the qualitative/commercial risk of potential backup list proposals, as well as the diversity of the resources represented. (PSE's short list

[38] *See* Exh. CPC-6HC at 51.

contained several solar projects, therefore, additional wind was included in the backup list.) One proposal on the backup list, [redacted] BESS (ID#7508), was selected in the portfolio optimization modeling, but set aside due to qualitative risk factors. However, because this risk involved a pending zoning decision by a local city council and the project was otherwise acceptable in principle to PSE, it was deemed prudent to place the proposal on the backup list.

Table 12: Backup list proposals.[39]

ID	Proposal Name	Highlights	Purpose
4101	[redacted]	[redacted]	Backup battery project
9696			Backup solar project
1413			Backup wind project
3971/ 4091			Backup wind project
7508			Backup battery project

[39] *See* Exh. CPC-6HC at 52.

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Q. Did PSE keep the IE informed during Phase 2?

A. Yes. Throughout Phase 2, PSE kept the IE informed of its due diligence risk assessment of proposals, updates to bidder information, modeling assumptions, methodology, and results through regular updates and written communications. At the conclusion of Phase 2, PSE shared its results with the IE and both agreed to proceed with the base case results (shown in Table 11) as the short list.

Q. Has PSE prepared an exhibit showing the Phase 2 optimization analysis base case and sensitivities results?

A. Yes. See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, Appendix E, for the results of the base case and sensitivities described in this testimony.

Q. How did PSE conclude the Phase 2 evaluation?

A. The resource acquisition team concluded its Phase 2 evaluation with a presentation to PSE's EMC on October 27, 2022, presenting the short list and backup list. This was followed by a presentation to PSE's Board of Directors on November 3, 2022. See Exh. CPC-6HC, Appendix G.

VIII. PSE RE-EVALUATED ITS 2021 ALL-SOURCE RFP RESOURCE DECISIONS DURING THE NEGOTIATION PHASE TO REFLECT MATERIAL CHANGES TO SHORTLISTED BIDS

A. 2023 EPR Substantially Increases Need Forecast

Q. What was the impact of the 2023 EPR Need Forecast Update on PSE's 2021 All-Source RFP?

A. Soon after presenting the short list to PSE's Board of Directors in November 2022, the resource acquisition team learned that the Company's then-anticipated 2023 EPR would demonstrate large increases in PSE's forecast clean energy and capacity needs.

Q. What was the magnitude of the updates and how did PSE respond?

A. PSE's clean energy need increased from 1,669 GWh in 2026 in the approved 2021 All-Source RFP to 2,982 GWh in the 2023 EPR (see Table 3 above). This is an increase of nearly 79 percent since the RFP was approved.

Similarly, PSE's capacity need has also grown substantially, largely because market reliance is no longer treated separately from peak capacity. PSE's winter peak capacity need more than tripled from 527 MW in 2027 in the approved 2021 All-Source RFP to 1,848 MW in the 2023 EPR. Meanwhile, the summer peak capacity need (which was not calculated in the 2021 RFP) nearly doubled from 1,000 MW in Phase 2 to 1,906 MW in the 2023 EPR.

As a result, in consultation with the EMC, PSE's Board of Directors, and the IE, PSE decided to pursue both the short list and backup list resources to support meaningful progress toward meeting PSE's CETA goals.

See Exh. CPC-4, Chapter 8 of the 2023 EPR.

B. Short List and Backup List Updates Drive Re-evaluation

Q. Were these the only material changes revealed to PSE after the selection of the short list?

A. No. As negotiations progressed, PSE became aware of changes to a number of shortlisted and backup listed bids, including updated pricing and terms. Due diligence conducted by PSE during this period revealed certain substantial material risks that caused PSE to pause and later stop negotiations for four projects. Additionally, three bids were withdrawn from consideration by bidders: [redacted] (ID#9015), [redacted] (ID#2899) and [redacted] (ID#2958). These changes prompted PSE to re-evaluate its resource alternatives, as required by the Purchases of Resources rules:

> WAC 480-107-075(4). If a bidder makes material changes to its bid after bid ranking, including material price changes, the utility must suspend contract finalization with that bidder, and the utility and any independent evaluator must re-rank bids according to the revised bid. If the material changes cause the revised bid to rank lower than bids the utility has not originally selected, the utility must instead pursue contract finalization with the next highest ranked bid.

Q. What was the status of the short list and backup list bids at the time the re-evaluation analysis was conducted?

A. PSE first performed an interim optimization analysis in July 2023 and later conducted an updated analysis in November 2023. The interim July analysis included 11 of the 18 resources from the RFP short list and backup list. The November 2023 updated optimization analysis included 10 of the 18 short list and backup list resources. Dark green fill indicates that a resource was included in both the July and November optimization analyses. Light green fill indicates that a resource was included only in the July analysis. See Exh. CPC-9HC at 6-7.

Tables 13 and 14 summarize the status of each short list and backup list resource from the 2021 RFP as of October 2023, just prior to PSE conducting updated optimization analysis in November. See Exh. CPC-9HC at 6-7.

Table 13: 2021 All-Source RFP short list status update (Oct. 2023).

Resource Type	Offer ID	Project Name	Developer/ Sponsor	Status as of October 2023 (green fill indicates inclusion in Nov 2023 optimization).
Solar	7621	[redacted]		
Solar	8652			
Solar	9015			
Solar	2899			
Hydro	5438			
Wind	1573	Vantage	Invenergy	PPA contract executed in June 2023.
BESS	7418	[redacted]		

Resource Type	Offer ID	Project Name	Developer/ Sponsor	Status as of October 2023 (green fill indicates inclusion in Nov 2023 optimization).
		[redacted]		
Wind	2958			
Hybrid/ Solar	1627			
BESS	5684			
BESS	9851			
PSH	1810			

Table 14: 2021 All-Source RFP backup list resources status update (Oct. 2023).

Resource Type	Offer ID	Project Name	Developer/ Sponsor	Status
BESS	4101	[redacted]		
Solar	9696			
Wind	1413			
Wind	3971/ 4091			
BESS	7508			

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[40] PSE initially made a portion of its LSR development rights available to bidders through the 2021 All-Source RFP and selected the two most favorable offers as backup list alternatives. Subsequent to selecting the short list, PSE determined that a larger LSR expansion project may offer valuable economies of scale. PSE issued an RFP for an LSR expansion project up to 640 MW in May 2023. PSE is evaluating the bids in a manner consistent with the methodology established in the 2021 All-Source RFP.

C. PSE Requests Pricing Updates from Resources Not Selected for RFP Short List or Backup List

1. Clean energy proposals (wind and solar).

Q. What driving factors led PSE to request updated pricing from clean energy resource bidders in March 2023?

A. In March 2023, PSE requested updated pricing from RFP bidders of certain wind and solar resources that were not originally selected for the short list or backup list. The following factors triggered this request:

- The increase in clean energy and capacity need identified in the 2023 EPR (see Tables 3 and 4, and Figures 1 and 2 above).
- Changes and updates to the short list and backup list (see Tables 13 and 14 above[41]), including:
  - Withdrawal from the RFP by two solar and one wind resource totaling 297 MW:
    - [redacted] (short list, ID#9015), 160 MW with 2024 COD
    - [redacted] (short list, ID#2899), 41 MW with 2024 COD
    - [redacted] (short list, ID#2958), 96 MW with 2025 COD
  - Removal of 300 MW [redacted] (short list, ID#8652) from the RFP process due to a lack of visibility and potential fatal flaw with the transmission plan.

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[41] Changes and updates in the bullet list above reflect adjustments to the short list and backup list as of March 2023. Additional resources were later either eliminated due to substantial material risks (or fatal flaws) or withdrawn from consideration by bidders. See tables 3 and 4 for the status of all short list and backup list resources just prior to the updated optimization analysis conducted by PSE in November 2023.

- A new BPA process decision (if any) to create a new scheduling point on the Northwest AC Intertie anticipated end of September 2023 at the earliest. Price increases from the following resource proposals:
  - [redacted] (short list, ID#5438)
  - [redacted] (short list, #1627)
  - [redacted] (backup list, ID#9696)
- Removal of the 140 MW LSR [redacted] wind proposals (backup list, ID#3971 and #4091) from the 2021 All-Source RFP process, and invitation to bid in a new targeted RFP for the larger LSR wind resource area issued in May 2023.

Q. How did PSE determine which clean energy resources should be invited to reprice?

A. PSE revisited all CETA-eligible clean energy generating projects from Phase 1 and Phase 2 that had not been selected for the short list or backup list, and that had not withdrawn or been disqualified due to a fatal flaw. PSE prioritized projects that presented the lowest deliverability risk and did not present any known material or substantial commercial risks. The Resource Acquisition team then worked with relevant PSE SMEs to assess these projects for potential reactivation based on two criteria:

1. **Transmission Feasibility.** PSE looked for projects that presented a clear path to deliver the resource's output to PSE's eligible points of delivery. Available transmission capacity, status of transmission service requests and study results, dependency on transmission upgrades and timelines in BPA's cluster studies, interconnection progress and timelines, and any other relevant factors were considered.

2. **Commercial Feasibility.** PSE looked for any material or substantial commercial or qualitative risks, or fatal flaws. PSE considered its risk assessments in the Phase 2 due diligence as well as the Phase 1 qualitative

evaluation, and requested updates where needed from the project bidders in key areas, including site control, permitting, project design and major equipment procurement status.

Projects with transmission plans that were assessed as "feasible today" (i.e., having available transmission capacity and/or a clear path to delivery) and that also did not present any known substantial material commercial risks or fatal flaws were asked to provide renewed pricing. See Table 7 and Exh. CPC-9HC, the 2021 RFP Post-Phase 2 Update, which summarizes the results of PSE's review.

Q. How many clean energy bidders were contacted and asked to refresh their pricing?

A. PSE contacted 10 developers and asked them to provide an update on the commercial availability of 19 proposals, any project updates since communications last occurred, and changes, if any, to their BAFO pricing.

Q. How many responses did PSE receive to its invitation to refresh pricing?

A. As shown in Table 15, PSE received responses from five solar and one wind project that were assessed as "feasible today" and also did not present any known substantial material commercial risks or fatal flaws. See Exh. CPC-9HC at 13.

Table 15: Pricing updates from clean energy developers.

ID	RFP Phase	Project	Developer /Sponsor	Location	Type	Name-plate (MW)	Transmission Assessment	Material/ Substantial Commercial Risk or Fatal Flaw?	LCOE (busbar)	LCOE (incl. TX)
3345	1	[redacted]			Solar	[redacted]	Feasible Today	No	[redacted]	
5684	1				Solar		Feasible Today	No		
2807	1				Solar + BESS		Feasible Today	No		
6518	1				Solar + BESS		Feasible Today	No		
7103	2				Wind		Feasible Today	No		
7374	1				Solar		Feasible Today	No		

Q. Did PSE include all six of these proposals in the July and November optimization analyses?

A. Yes. PSE included all six of the proposals in Table 15 in its interim updated optimization analysis conducted in July 2023 and in the updated optimization analysis conducted in November 2023.

2. <u>Battery proposals.</u>

Q. What driving factors led PSE to request updated pricing from battery energy storage bidders in March 2023?

A. In March 2023, PSE requested updated pricing from RFP bidders of battery storage resources that were not originally selected for the short list or backup list. The following factors triggered this request:

- The increase in capacity need identified in the 2023 EPR (see Table 4 and Figure 2 above).
- Changes and updates to the short list and backup list (see Tables 13 and 14 above), including:
  - Paused consideration of 200 MW [redacted] BESS (short list, ID#7418) from the RFP process due to a substantial material risk or potential fatal flaw with siting.
    - Project is located near a middle school. City of Covington council and local community representatives have expressed concern and opposition to project due to its proximity to the school.
  - Paused consideration of 250 MW [redacted] BESS (backup list, ID#7508) from the RFP process due to a substantial material risk or potential fatal flaw associated with interconnection feasibility uncertainties.
    - Renton moratorium caused the bidder to change its project site. Interconnection cost and timeline for the new Tukwila site are unknown. Project will need a new substation and POI change.
  - Price increases from the following resource proposal:
    - [redacted]

Q. How many bidders were contacted and asked to refresh their pricing?

A. PSE contacted six developers representing the first seven proposals listed in Table 16 and asked them to provide an update on the commercial availability of their

proposals, any new project updates since communications last occurred, and changes, if any, to their BAFO pricing.

Table 16: RFP battery storage bidders asked to refresh their pricing.

ID	Project name	Developer	COD	Nameplate (MW)	Capacity price ($/kW-yr)	Status and notes
3387	[redacted]	[redacted]	7/1/2026	[redacted]	[redacted]	Included in updated July and November 2023 optimization analyses
9439	[redacted]	[redacted]	7/1/2024	[redacted]	[redacted]	Included November 2023 optimization analysis
2841	[redacted]	[redacted]	12/1/2025	[redacted]	[redacted]	Included in July and November 2023 interim analyses
2889	[redacted]	[redacted]	12/1/2025	[redacted]	[redacted]	Included in November 2023 optimization analyses
5999	[redacted]	[redacted]	9/30/2025	[redacted]	[redacted]	Included in updated July and November 2023 optimization analyses
1054	[redacted]	[redacted]	12/31/2026	[redacted]	[redacted]	Included in updated July and November 2023 optimization analyses
4644	[redacted]	[redacted]	12/31/2025	[redacted]	[redacted]	Included in updated July and November 2023 optimization analyses
9788	[redacted]	[redacted]	12/31/2025	[redacted]	[redacted]	Eliminated from Phase 2 based on qualitative criteria
8179	[redacted]	[redacted]	12/31/2025	[redacted]	[redacted]	Eliminated from Phase 2 based on qualitative criteria
9136	[redacted]	[redacted]	12/31/2025	[redacted]	[redacted]	Eliminated from Phase 2 based on qualitative criteria
6465	[redacted]	[redacted]	10/31/2025	[redacted]	[redacted]	Eliminated to avoid single developer risk
5435	[redacted]	[redacted]	10/31/2025	[redacted]	[redacted]	Eliminated to avoid single developer risk

REDACTED VERSION

[42] Price shown does not reflect of two percent annual escalation factor.

Q. How many responses did PSE receive to its invitation to refresh pricing?

A. PSE received responses from the contacted developers for all seven proposals, including updates to the capacity pricing for all but one of the proposals. [redacted] [redacted] (ID#5999) held their price steady.

Table 17: Capacity pricing and COD updates from BESS developers.

ID	Project Name	COD	COD (Updated)	Namplate (MW)	Updated Capacity Price – busbar ($/kw-yr)	Updated Capacity Price –w/transmission and interconnection upgrades ($/kw-yr)
4644	[redacted]	12/31/2026		[redacted]		
2841		12/1/2026				
5999		9/30/2025	6/1/2026			
3387		7/1/2026				
9439		7/1/2024	6/30/2026			
9439		7/1/2024	6/30/2026			
1054		12/31/2025	12/31/2026			
2889		12/1/2025	12/1/2027			

Q. Did PSE include all seven of these bidders in the July and November optimization analyses?

A. No. PSE included five of the refreshed battery storage proposals in the interim optimization analysis conducted in July 2023. [redacted] (ID#9439) and [redacted] (ID# 2889) were not included in the interim analysis. [redacted] [redacted] (ID# 9439) was flagged in Phase 2 as having a potential substantial/material risk (or fatal flaw) due to its location in a residential

neighborhood in a highly impacted community. PSE did include [redacted] (ID# 9439) in its November 2023 updated optimization analysis, but ultimately eliminated the project from consideration based on the qualitative review. The [redacted] (ID# 2889) was originally eliminated from Phase 2, but was later reintroduced after the July 2023 interim optimization analysis once an interconnection timeline uncertainty was clarified. All seven projects were included in the updated optimization analysis conducted in November 2023. See Exh. CPC-9HC at 14-17.

D. PSE Also Considered Unsolicited Bilateral Offers

Q. Did PSE include bilateral offer opportunities in its re-evaluation of alternatives?

A. Yes. PSE's re-evaluation analysis considered all active resources in its "deal pipeline." The deal pipeline is a dynamic inventory of RFP and bilateral offer opportunities available to PSE that is updated on a real time basis. Offers that PSE is currently exploring, evaluating, or negotiating are considered to be "active" in the deal pipeline.

Table 18 is a list of non-RFP-affiliated bilateral offer opportunities that were in the deal pipeline during the RFP negotiations and re-evaluation stage. The status column indicates whether the offer was considered to be active or inactive at the

time the updated optimization analysis was performed in November 2023. See Exh. CPC-9HC at 18.

Table 18: Bilateral offer opportunities considered during RFP re-evaluation.

Project	Counterparty	Resource Type	Location	COD/ Term start	Name-plate Capacity (MW)	Status (Active projects included in updated optimization)
Beaver Creek Battery	Caithness	Battery (4hr)	MT	8/15/25	100	Active – Included in Nov. 2023 update
Beaver Creek Wind	Caithness	Wind	MT	3/31/25	248	Active – Included in July and Nov. 2023 updates
[redacted]		Solar	MT	1/1/26	[redacted]	Inactive - Withdrawn by bidder
		Solar	MT	1/1/26		Inactive - Withdrawn by bidder
		Wind	MT	1/1/26		Inactive - Withdrawn by bidder
		Wind	MT	1/1/26		Inactive - Withdrawn by bidder
		Solar	MT	1/1/28		Inactive - Withdrawn by bidder
		Solar	MT	1/1/28		Inactive - Withdrawn by bidder
		Wind	MT	1/1/28		Inactive - Withdrawn by bidder
		Wind	MT	1/1/28		Inactive - Withdrawn by bidder
		Solar	WA	12/31/26		Active – Included in July and Nov. 2023 updates
		Nuclear (small mod reactor)	TBD	12/31/32		Inactive - Conceptual project; insufficient commercial or operational detail to model
		Natural Gas	WA	12/31/29		Inactive – Ownership offer withdrawn by counterparty
		Solar	MT	6/30/26		Active – Included in July and Nov. 2023 updates
		Wind	MT	6/30/26		Active – Included in July and Nov. 2023 updates
		Wind	OR	1/1/27		Inactive - Complicated transmission solution difficult to execute in current procurement cycle

REDACTED VERSION

Q. How does PSE evaluate unsolicited bilateral resource offers in its re-evaluation of alternatives?

A. PSE uses the same models and methodology to fairly and consistently compare RFP resources and bilateral opportunities. PSE's process is described in the 2021 All-Source RFP, which was approved by the WUTC in Docket UE-210220 in June 2021. See Exh. CPC-5, the 2021 All-Source RFP.

E. Post-Phase 2 Re-evaluation of Resource Alternatives and Execution Decisions

1. Post-Phase 2 updated portfolio optimization analysis and results.

Q. Briefly describe the updated portfolio optimization analysis completed in November 2023.

A. PSE updated its Aurora portfolio model to incorporate assumptions generally consistent with the 2023 EPR, including the clean energy and capacity need forecasts as described earlier in my testimony. PSE also updated the Aurora model to reflect the most current individual offer pricing and terms available to PSE at the time the analysis was conducted.

At a high level, PSE created a reference portfolio and tested the robustness of the resource selection decisions in a series of sensitivities. PSE used the Aurora portfolio model to first identify the least-cost set of resource alternatives from the list of resources under consideration. This initial reference case was then used as the starting point for a series of sensitivities to estimate the portfolio benefit of

several, potentially high-priority resource alternatives. The portfolio benefits were estimated by removing each such resource as an alternative and then running the Aurora model without that alternative.

This approach allowed PSE to estimate the value of each individual resource over a variety of time horizons, to better understand how valuable individual resources would be to the PSE portfolio. This is important for several reasons, including understanding whether resources have significant value relative to each other. Additionally, this approach identifies the next-best alternative, should the specific resource studied end up being unavailable. The same approach was also used for some resources that did not appear in the Aurora-generated reference portfolio to demonstrate how far out of the money a particular resource might be, as some resources not selected in the reference case may have been within rounding error.

Q. What resources were included in the November 2023 update?

A. PSE conducted updated portfolio optimization modeling of all active resources in its deal pipeline, including both RFP and non-RFP resources, in November 2023. Table 19 is the list of proposals included in the updated analysis.

Table 19: Resource alternatives included in November 2023 updated optimization analysis.[43]

Type	ResourceName	Nameplate	COD
BESS	[redacted]		12/31/2026
BESS			12/1/2025
BESS			12/1/2026
BESS			12/1/2026
BESS			12/1/2027
BESS			7/1/2026
BESS			12/31/2025
BESS			12/31/2026
BESS			12/1/2026
BESS			6/1/2026
BESS	Beaver Creek Battery	100	8/15/2025
BESS	[redacted]		6/30/2026
BESS			6/30/2026
BESS			10/31/2026
Solar			6/30/2026
Solar			6/30/2026
Solar			12/31/2026
Solar			12/1/2026
Solar			12/1/2027
Solar			12/31/2027
Solar			12/31/2025
Solar			12/31/2026
Solar			6/30/2026
Solar			12/31/2026
Wind			12/31/2027
Wind			12/31/2027
Wind			12/31/2028
Wind	Vantage Wind	90	10/5/2025
Wind	[redacted]		12/31/2027
Wind	Beaver Creek Wind	248	3/31/2025
Wind	[redacted]		6/30/2028
Wind			6/30/2026
Wind			1/1/2027

Type	ResourceName	Nameplate	COD
Hybrid/BESS	[redacted]		12/31/2027
Hybrid/BESS			6/30/2026
Hybrid/BESS			6/1/2027
Hybrid/BESS			12/1/2027
Hybrid/Solar			12/31/2027
Hybrid/Solar			6/30/2026
Hybrid/Solar			6/1/2027
Hybrid/Solar			12/1/2027
Hydro			3/9/2025
Pumped storage			12/31/2030
Pumped storage			12/31/2030
Biodiesel			10/31/2025
Biodiesel			10/31/2026
Biodiesel			10/31/2026
DER			2023
DER			2023
DER			2023

Q. What were the results of the November optimization analysis update?

A. Given the magnitude of PSE's need, the Aurora model is selecting most of the available resources in PSE's alternatives pipeline. See Exh. CPC-9HC at 21. However, it would be infeasible for PSE to execute all of the resources selected by the Aurora model in this RFP cycle largely because of the constraints for interconnection, transmission, and supply chain that make it difficult to execute contracts with binding CODs and prices. Simply put, the limit on how quickly PSE can acquire resources has been constrained by market bottlenecks that are being resolved slower than PSE's need is growing.

[43] *See* Exh. CPC-9HC at 20.

Table 20: Updated Optimization Results Summary in November 2023.[44]

Resource Type	Name	Nameplate Capacity (MW)	Reference	# Times selected (out of 28)	COD	Total Portfolio Costs WITH RFP Offer ($Billions)	Total Portfolio Costs WITHOUT RFP Offer ($Billions)	Cost/ (Benefit) ($Billions)	Cost/ (Benefit) per Nameplate $Millions/MW	% Change	Location
BESS	Beaver Creek Battery	100	Y	26	8/15/2025						STILLWATER, MT
BESS			Y	27	12/31/2025						
BESS			Y	27	12/31/2026						
BESS			Y	27	10/31/2026						
BESS			Y	27	12/1/2027						
BESS			Y	24	12/1/2026						
BESS			Y	27	7/1/2026						
BESS			Y	27	12/1/2026						
BESS			Y	26	12/31/2026						
BESS			Y	27	6/1/2026						
Solar			Y	27	12/31/2025						
Solar			Y	19	6/30/2026						
Solar			Y	16	6/30/2026						
Solar			N	6	12/31/2026						
Solar			N	6	6/30/2026						
Wind	Beaver Creek Wind	248	Y	27	3/31/2025						STILLWATER, MT
Wind			Y	24	12/31/2027						
Wind			Y	27	6/30/2026						
Wind			Y	20	6/30/2028						
Hybrid/ BESS			N	1	6/1/2027						
Hybrid/ BESS			Y	24	12/31/2027						
Hybrid/ BESS			Y	23	12/1/2027						
Hydro			Y	27	3/9/2025						
Biodiesel			Y	27	10/31/2025						

To address this incongruity, PSE developed a recommended approach to prioritize and pursue the most attractive, commercially-ready projects and focus on those that appeared to be executable between the end of 2023 and the end of Q1 2024.

[44] *See* Exh. CPC-9HC at 21.

Q. Please describe PSE's prioritization approach.

A. PSE's prioritization approach began with the pool of resources selected in the Aurora model. PSE then considered five key factors (shown in Table 21) to determine which resources would be prioritized for negotiation this RFP cycle.

Table 21: Key factors used to prioritize model-selected resources for negotiation.

Factors	Considerations
COD LCOE Portfolio Benefit	• Prioritize nearest term (COD) and most beneficial projects (LCOE, Portfolio Benefit) • Preserve ability to evaluate later COD projects through next RFP while minimizing impact to projects schedules and achievement of CETA and capacity targets
Commercial Readiness Qualitative Risk	• Minimize project risks associated with timing, costs and project feasibility to support lowest reasonable cost portfolio decisions

2. <u>Additional post-Phase 2 analysis.</u>

Q. Did PSE conduct any additional post-Phase 2 analysis?

A. Yes. During the post-Phase 2 period of the 2021 All Source RFP, PSE also conducted an ownership versus PPA analysis of seven projects with both a PPA and an ownership option. PSE used the PPA Ownership Evaluation Model, developed by consultant Thorndike Landing to perform this analysis. The model calculates the following relative costs and benefits to PSE customers over a defined timeframe under each commercial structure.

Figure 6. Costs and benefits calculated by the PPA Ownership Evaluation Model.

For owned assets	For PPAs
• Expected capital costs • Operating costs including property tax and insurance • Tax incentives • Financing costs • Integration and Transmission upgrade costs • Expected residual value	• Expected cost of power purchased under proposed PPAs • Impact of debt imputed under long-term contracts • Replacement resource costs of post PPA period (if applicable)

This allowed PSE to compare the levelized cost of each structure for each of the seven projects. See Exh. CPC-9HC, Attachment C, Financial Analysis: Own vs. PPA, which describes the PPA Ownership Evaluation Model and modeling approach in greater detail, and provides a table showing the results of the analysis.

4. Resource selection and execution decisions.

Q. What resource contracts has PSE executed as a result of the 2021 All-Source RFP and post-Phase 2 re-evaluation?

A. To date, PSE has executed contracts for the following two resources:

- **Vantage Wind Project Power Purchase Agreement ("PPA") (ID#1573).** Vantage is an existing, 90 MW wind farm located in Ellensburg, Washington. Under the terms of the 15-year PPA with Invenergy's Vantage Wind Energy LLC, PSE will receive clean energy at a flat busbar price of [redacted] per MWh from the Vantage Wind Energy Center beginning on October 4, 2025.

- **Beaver Creek Wind project.** Beaver Creek is a wind development project located in Stillwater County, Montana with an expected nameplate capacity of 248 MW. PSE executed a MIPA with Caithness Beaver Creek, LLC at a purchase price of approximately [redacted] million for a 100 percent ownership interest in Caithness Montana Wind, LLC. The purchase price also included real estate rights in neighboring Sweet Grass County anticipated to support an additional 100-150 MW of future development. After Closing the MIPA in December 2023, PSE executed a Turbine Supply Agreement with GE and a Balance of Plant Agreement. The total all-in capital cost to construct the project are projected to be $550 million.

Beaver Creek has a target COD of March 2025 and an anticipated COD of August 2025.

Q. How and when did PSE select and execute the Vantage Wind PPA (ID#1573)?

A. Vantage was selected in the 2021 All-Source RFP Phase 2 portfolio optimization analysis for the short list as part of an optimal portfolio solution to help meet PSE's resource needs at the lowest reasonable cost. As an operating project with transmission to an eligible POD,[45] Vantage offered very low risk at a competitive price, and Vantage would contribute to PSE's 2025 interim CETA target. PSE subsequently signed a 15-year PPA with Invenergy's Vantage Wind Energy LLC for the energy and environmental attributes generated by the facility.

Negotiations for the Vantage Wind PPA substantially concluded relatively soon after the 2021 RFP short list was selected. PSE presented Vantage to the EMC in March 2023 and the PSE Board of Directors in May 2023 and received approval from the Board to execute the PPA at that time.

See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document. See also Exh. CPC-7C, the Vantage EMC presentation dated March 30, 2023 and the Board of Directors presentation dated May 11, 2023.

[45] Vantage (ID#1573) has transmission to POD MIDCREMOTE. From there, PSE will use transmission right made available to bidders in the RFP to bring the generation to PSE's load.

Q. How and when did PSE select and execute contracts for the Beaver Creek Wind project?

A. Beaver Creek was selected in the July and November 2023 portfolio optimization analyses as part of an optimal portfolio solution to help meet PSE's resource needs at the lowest reasonable cost. Beaver Creek was initially selected in the interim analysis conducted in July 2023. PSE's analysis compared Beaver Creek to active RFP and bilateral opportunities in PSE's deal pipeline at the time the analysis was conducted. PSE presented Beaver Creek to the EMC and Board of Directors in August 2023 and received approval to execute the MIPA at that time.

PSE later sought approval from the EMC and the Board of Directors in November 2023 to execute the Turbine Supply Agreement and Balance of Plant Agreement at or soon after the MIPA closing in December 2023. Prior to closing and executing the Turbine Supply Agreement and Balance of Plant Agreement, PSE updated its optimization analysis in November, which reaffirmed the selection of Beaver Creek as part of a lowest reasonable cost portfolio solution to meet the Company's growing clean energy and capacity needs. The Turbine Supply Agreement and Balance of Plant Agreement are discussed in the Prefiled Direct Testimony of James P. Hogan, Exh. JPH-1CT.

See Exh. CPC-8HC, the Beaver Creek Presentations and Reports to PSE management and the PSE Board of Directors, for more information about the deal terms, supporting analysis, risks, and benefits of the Beaver Creek Wind project.

See also Exh. CPC-9HC, the 2021 RFP Post-Phase 2 Update, Attachments A (July interim analysis report) and B (November update report).

Q. Has PSE identified additional resources for prioritized negotiation?

A. Yes. PSE has identified several renewable energy and storage resources for prioritized negotiation, which align well with the factors shown in Table 21 (above), present opportunities of unique value to PSE, and have a relatively high likelihood of contract execution in Q1 2024. PSE is still evaluating and negotiating with counterparties for these resources and will more fully describe the rationale for individual resource selections in reports to the EMC and/or PSE Board of Directors prior to executing contracts. See Exh. CPC-9HC, the 2021 RFP Post-Phase 2 Update, Attachment B, for a detailed report describing the November 2023 updated optimization analysis and results.

F. Post-Short List Engagement with the Independent Evaluator

Q. How did PSE engage with the IE during the negotiation and post-shortlist re-evaluation period?

A. Throughout the negotiation and post-shortlist re-evaluation period, PSE kept the IE engaged with periodic updates on progress. PSE included IE in its negotiation meetings with counterparties, shared bid updates, provided briefings on new comparative analysis results and findings uncovered as part of PSE's ongoing commercial risk assessment, and shared PSE's thinking at decision points

including the prioritization process. PSE routinely sought feedback from the IE on its approach to the analysis and decision-making and worked with the IE to reconcile any differences.

IX. PSE'S DECISION TO ACQUIRE THE RESOURCES PRESENTED WAS PRUDENT

A. The Commission Prudency Standard

Q. What is PSE's understanding of the Commission's prudence standard?

A. In PSE's 2003 Power Cost Only Rate Case proceeding, Docket UE-031725, the Commission reaffirmed the standard it applies in reviewing the prudence of power generation asset acquisitions:

> The test the Commission applies to measure prudence is what a reasonable board of directors and company management would have decided given what they knew or reasonably should have known to be true at the time they made a decision. This test applies both to the question of need and the appropriateness of the expenditures. The company must establish that it adequately studied the question of whether to purchase these resources and made a reasonable decision, using the data and methods that a reasonable management would have used at the time the decisions were made.[46]

In addition to this reasonableness standard, the Commission has cited several specific factors that inform the question of whether a utility's decision to acquire a new resource was prudent. These factors include the following:

[46] *WUTC v. Puget Sound Energy*, Docket UE-031725, Order 12 ¶ 19 (Apr. 7, 2004).

- First, the utility must determine whether new resources are necessary.[47]

- Once a need has been identified, the utility must determine how to fill that need in a cost-effective manner. When a utility is considering the purchase of a resource, it must evaluate that resource against the standards of what other purchases are available, and against the standard of what it would cost to build the resource itself.[48]

- The utility must analyze the resource alternatives using current information that adjusts for such factors as end effects, capital costs, impact on the utility's credit quality, dispatchability, transmission costs, and whatever other factors need specific analysis at the time of a purchase decision.[49]

- The utility should inform its board of directors and/or management about the purchase decision and its costs. The utility should also involve the board of directors and/or management in the decision process.[50]

- The utility must keep adequate contemporaneous records that will allow the Commission to evaluate its actions with respect to the decision process. The Commission should be able to follow the utility's decision process; understand the elements that the utility used; and determine the manner in which the utility valued these elements.[51]

Q. Is PSE seeking a prudency determination for any resources in this case?

A. Yes. As explained above, PSE is seeking a prudency determination for the Vantage Wind PPA (ID#1573) and the Beaver Creek Wind project.

[47] *See e.g.*, *WUTC v. Puget Sound Power & Light Co.*, Docket UE-921262, *et al*., Nineteenth Supplemental Order at 11 (Sept. 27, 1994).
[48] *Id*. at 11.
[49] *Id*. at 2, 33-37, 46-47.
[50] *Id*. at 37, 46.
[51] *Id*. at 2, 37, 46.

Q. Do these resources meet the Commission's prudency standard?

A. Yes. As I explain below, all of the resources identified will help PSE meet is capacity and renewable resource needs; in selecting these resources, PSE performed the analyses and decision-making processes expected by the Commission; PSE's management and the PSE Board of Directors were involved in the decision to acquire the resources; and PSE's decision-making process throughout the RFP was thoroughly documented.

B. The Vantage Wind PPA (ID#1573) Is Prudent

1. Project overview.

Q. Please describe the Vantage Wind PPA (ID#1573) project?

A. The Vantage Wind PPA (ID#1573) is a 15-year PPA with Vantage Wind Energy LLC (Invenergy Renewables ("Invenergy")). The Vantage wind project is a 90 MW nameplate wind farm located in Ellensburg, Washington. With a net capacity factor of 33.5 percent, the facility is expected to generate approximately [redacted] MWh of energy per year. Vantage is operational and permitted with site control under long-term leases.

Vantage is interconnected on PSE's system at Wind Ridge and delivers to the Mid-C hub, from where PSE will use existing transmission rights on BPA's system to deliver the project's output to PSE's system.

Q. Was the Vantage Wind PPA (ID#1573) a resource considered in the 2021 All-Source RFP?

A. Yes. The Vantage Wind PPA was evaluated as part of the 2021 All-Source RFP. In Phase 1, the Vantage Wind PPA received favorable quantitative and qualitative rubric scores, resulting in the highest combined score in its resource category (WA/OR wind + run-of-river hydro) and advancing to Phase 2 for further due diligence and portfolio optimization analysis. In Phase 2, the Vantage Wind PPA was selected to the short list as part of a lowest reasonable cost portfolio in the optimization analysis. The Vantage Wind PPA contributes to meeting both peak capacity and renewable needs and, as an operating project with transmission to PSE's load center, offered a very low overall risk profile at a competitive price.

Q. Who is Invenergy?

A. Invenergy is a privately-held developer, builder, owner, and operator of renewable energy projects. As of the time of contracting, Invenergy had 130 contracted, constructed, and operational projects totaling 30 GW, including 17 GW of wind from 109 projects.

Invenergy has 15 years of experience operating energy plants and, as of the time of contracting, had roughly 12.56 GW of assets under management, of which 5.5 GW were wind generation projects. The American Wind Energy Association recognized Invenergy with its Excellence in Operations Award in 2019.

Q. Describe the transmission arrangements associated with the Vantage Wind PPA (ID#1573).

A. The point of interconnection is PSE's Wind Ridge substation connecting through Poison Spring, similar to Wild Horse. The Vantage wind project holds long-term firm transmission rights on PSEI for point-to-point service from point of interconnection Wind Ridge to the Wanapum switchyard. Vantage also has a transfer service agreement with Grant PUD to enable delivery of the output across Wanapum to BPA's 230 kV Vantage substation, a MIDCREMOTE scheduling point. From MIDCREMOTE, the project will flow to PSE's system (BPAT.PSEI) on PSE's existing Mid-C transmission rights on BPA's main network, which were made available to bidders in the RFP.

Q. What is the estimated cost of the Vantage Wind PPA (ID#1573)?

A. The annual expected PPA payments are approximately [redacted] million, which is approximately 10 percent lower than alternative market, and adding in incremental transmission costs would represent a less than 0.5 percent increase in total power costs.

Q. What are the key terms of the Vantage Wind PPA (ID#1573)?

A. Under the terms of the PPA, PSE will purchase all of Vantage's as-generated wind energy and environmental attributes for a 15-year term beginning on October 4, 2025, at a flat busbar price of [redacted] per MWh at the Wind Ridge

Delivery Point. Vantage as seller is responsible for interconnection requirements and transmission up to the Delivery Point and PSE as purchaser is responsible for transmission service after the Delivery Point.

See Exh.CPC-10C for a complete copy of the Vantage Wind PPA.

Q. What is PSE's request for the Vantage Wind PPA (ID#1573) in this case?

A. PSE requests that the Commission determine that PSE's decision to enter into the Vantage Wind PPA (ID#1573) was prudent and allow PSE to recover the costs of the PPA in customer rates. Projected rate period PPA costs and energy volumes are included in the power cost forecast presented in the Prefiled Direct Testimony of Brennan D. Mueller, Exh. BDM-1CT. Inclusion of the Vantage Wind PPA reduces forecasted power costs by approximately $1.6 million in 2025 and $3.3 million in 2026.

2. <u>Demonstration of need.</u>

Q. What is PSE's need for the Vantage Wind PPA (ID#1573)?

A. As described above, PSE's 2023 EPR projects that PSE will need approximately 2,982,000 MWh of new clean energy in 2026. PSE will also need 1,848 MW of new winter peak capacity and 1,906 MW of new summer peak capacity in 2027. See Figure 1 (CETA clean energy need) and Figure 2 (peak capacity need) of my testimony.

Q. How will the Vantage Wind PPA (ID#1573) contribute to meeting PSE's clean energy and capacity needs under CETA?

A. The Vantage Wind PPA (ID#1573) project will contribute approximately [redacted] MWh/year of clean, CETA-compliant energy to PSE's customers starting on October 4, 2025, for a 15-year term.

Based on an October 4, 2025 offtake start date and the associated partial year of generation, Vantage is expected to contribute approximately [redacted] MWh, which will provide approximately 2.5 percent of the 2025 forecast need for clean energy resources. No other shortlisted RFP resource was identified that could contribute to the CEIP's 2025 target. Additionally, Vantage is expected to provide approximately 3.2 percent of PSE's forecast clean energy need for its 2030 80 percent CETA compliance target by generating approximately [redacted] MWh of energy per year at a net capacity factor of approximately [redacted] percent.

The project's estimated peak capacity contribution based on Vantage's nameplate of 90 MW and generic ELCC values for Washington wind resources calculated by the consulting firm Energy and Environmental Economics, Inc. ("E3"), would be [redacted] MW of peak capacity credit in the winter and [redacted] MW of peak capacity credit in the summer. Vantage is expected to address 0.5 percent of the forecast 2029 winter peak capacity need net of conservation, and 0.2 percent of the forecast 2029 summer peak capacity need net of conservation.

3. Evaluation of alternatives.

Q. How did PSE select Vantage Wind PPA (ID#1573) compared to the other alternatives considered in the 2021 All-Source RFP?

A. The Vantage Wind PPA was selected from the Phase 2 portfolio optimization analysis for the short list as part of an optimal portfolio solution to help meet PSE's resource needs at the lowest reasonable cost. As an operating project with transmission to PSE's load center, the Vantage Wind PPA presented very low risk at a competitive price. It was also the only shortlisted resource capable of contributing to PSE's 2025 interim CETA target.

4. PSE Board of Director and management involvement.

Q. Describe how PSE's management and the PSE Board of Directors were involved in the decision to enter into the Vantage Wind PPA (ID#1573).

A. During the 2021 RFP, PSE kept the EMC and the PSE Board of Directors apprised of its progress and decisions throughout the RFP evaluation process. The PSE team presented four updates to the EMC during the RFP evaluation: (1) a summary of proposals received in September 2021; (2) a report on the Phase 1 results in March 2022; (3) an update on Phase 2 progress in September 2022; and (4) a report on the Phase 2 results in October 2022. The team also presented three formal updates to the Board of Directors during the RFP evaluation: (1) a report on the Phase 1 results in March 2022; (2) a progress update in May 2022; and (3) a report on the Phase 2 results in November 2022.

Subsequent to selecting the RFP short list, PSE also kept its management team and the PSE Board of Directors engaged with numerous formal and informal informational updates detailing the status of ongoing due diligence evaluation and negotiations with all projects under consideration in its resource pipeline, including Vantage. PSE formally presented Vantage to the EMC in March 2023 and the PSE Board of Directors in May 2023.

Q. Did PSE seek management approval to enter into the Vantage Wind PPA (ID#1573)?

A. Yes. The PSE Board of Directors authorized PSE to execute the Vantage Wind PPA on May 11, 2023. PSE subsequently executed the agreement in June 2023.

5. <u>Contemporaneous documentation.</u>

Q. Did PSE prepare an exhibit with its management and board of director presentations and reports for the Vantage Wind PPA (ID#1573)?

A. Yes. See Exh. CPC-6HC, the 2021 RFP Evaluation Process Document, which includes presentations to the EMC and PSE's Board of Directors during the Phase 1 and Phase 2 evaluation. See Exh. CPC-7C, the Vantage EMC presentation dated March 30, 2023, and the Board presentation dated May 11, 2023.

6. Project benefits.

Q. Please summarize the benefits that PSE's customers will receive from the Vantage Wind PPA (ID#1573).

A. The Vantage Wind PPA (i) provides a meaningful contribution toward meeting PSE's significant peak capacity and clean energy needs by 2026, (ii) is part of a lowest reasonable cost portfolio solution based on alternatives analysis performed throughout the 2021 All-Source RFP evaluation and negotiation period, (iii) allows for the efficient utilization of existing PSE transmission rights, and (iv) is a valuable Washington resource that is of strategic importance to PSE in meeting the ambitious targets of CETA at a reasonable cost for customers.

Q. How did PSE assess equity and customer benefits of the Vantage Wind PPA (ID#1573)?

A. As an existing Washington facility, the Vantage Wind PPA has no new land/community impact while bringing new clean power to PSE's customers. The Vantage project also helps PSE to avoid the need to secure additional transmission by bringing existing long-term rights to PSE's transmission system and using PSE-held transmission rights from Mid-C.

7. Determination of prudency.

Q. Was the Vantage Wind PPA (ID#1573) a prudent investment?

A. Yes. PSE's acquisition of the Vantage Wind PPA (ID#1573) will help meet the expected clean energy and peak capacity needs of PSE's customers for years to come. Based on the resource needs described herein, the robust analysis performed during the 2021 All-Source RFP evaluation and subsequent negotiation, and the benefits to PSE's customers described in my testimony, PSE is seeking a determination of prudence and cost recovery for the Vantage Wind PPA.

C. The Beaver Creek Project Is Prudent

1. Project overview.

Q. Please describe the Beaver Creek project.

A. Beaver Creek is a utility-scale wind project located in Stillwater, Montana, with an expected nameplate capacity of 248 MW. Beaver Creek is located on approximately 11,000 acres of leased property on the high plains in Stillwater County, Montana. The primary use of the land is for cattle grazing and hay production. Project elements include wind turbine generators erected on tubular steel towers with foundations and individual turbine step-up transformers. Supporting infrastructure will include access roads, underground electric collection system lines, a step-up substation, a four-to-five-mile 230 kV transmission line to tie the site to a NorthWestern Energy switching station,

microwave communications, permanent meteorological towers, an operations and maintenance building, and temporary construction access and staging areas (as needed). The project will be interconnected to a new 230 kV substation on NorthWestern's system between the Wilsall and Columbus Rapelje 230kV substations. The existing 230 kV line will be rerouted into the new switching station. NorthWestern Energy will maintain ownership of the 230 kV lines that enter and exit the substation.

Q. Was Beaver Creek a resource considered in the 2021 All-Source RFP?

A. No. Beaver Creek was not one of the resources considered in the 2021 All-Source RFP. Rather, in late Q1 2023, Beaver Creek was identified as a time-sensitive project of unique value for three main reasons:

- Beaver Creek is the only new-build renewable resource that PSE has identified that can reach commercial operation and provide clean energy in 2025.
- Generation from Beaver Creek will help PSE meet its CETA compliance targets for 2025 and 2030 at the lowest reasonable cost compared to other reviewed alternatives in the 2021 All-Source RFP.
- The acquired development assets include real estate rights that support additional renewable resource development, an attractive BPA transmission queue position, and permitting for an optional battery energy storage system.

Q. What is the status of Beaver Creek?

A. In December 2023, PSE executed a MIPA with Caithness Beaver Creek, LLC, for a 100 percent ownership interest in Caithness Beaver Creek, LLC. The project is

in a construction ready state and is slated to achieve commercial operation in 2025.

See Exh. CPC-12C, for a copy of the Beaver Creek MIPA.

Q. What is the background of the Beaver Creek Wind project prior to PSE involvement?

A. Beaver Creek was originally planned as four hybrid Qualified Facilities ("QFs") in Montana consisting of wind turbines and lithium-ion batteries stretching over Sweet Grass and Stillwater counties with the intent to sell power directly to NorthWestern Energy under a PPA.

Q. Who is Caithness Beaver Creek, LLC?

A. Caithness Beaver Creek, LLC is a wholly owned subsidiary of Caithness Energy, LLC ("Caithness Energy"). Caithness Energy is a privately held independent power producer specializing in the development, acquisition, operation, and management of power generation assets in North America. Caithness Energy has a portfolio consisting of 3,595 MW of renewable and fossil-fueled energy projects in the United States. This will be PSE's first transaction with Caithness Energy. Caithness Energy developed the 845 MW Shepherds Flat wind project in eastern Oregon and achieved COD in 2012.

Q. How did PSE identify the project as a time sensitive opportunity with unique value?

A. PSE discovered the opportunity after contacting Caithness Energy to inquire about their high queue position in BPA's Montana to Washington capacity expansion queue. PSE was interested in discussing how Caithness Energy was planning to utilize the 100 MW transmission service. Through this outreach PSE learned that both the project and the transmission queue position were potentially available.

Q. What is the estimated cost of Beaver Creek?

A. The estimated all-in project cost, including construction is approximately $550 million, which includes the [redacted] million MIPA purchase price and allowance of funds used during construction.

Q. How does the Beaver Creek acquisition facilitate additional resource development?

A. Real estate rights in Sweet Grass County, Montana, can support an estimated 100-150 MW additional wind generation, and the Stillwater conditional use permit supports the addition of a battery energy storage system. Wind development is currently subject to the 315 MW LGIA limit at the point of interconnection. Overbuilding wind and adding batteries to shape the wind is an approach that will be evaluated by PSE in the future. As part of the transaction, PSE will step into

the high queue position for 100 MW in BPA's Montana to Washington project. This can potentially provide Montana transmission capacity to support additional Montana renewable development that PSE can deliver to our customers.

The project assets PSE has acquired includes:

- Real estate rights in neighboring Sweet Grass County anticipated to support 100-150 MW of future development and expansion.
- A 100 MW transmission service request high in the BPA queue and within the scope of its Montana to Washington ("M2W") project for service from Montana at Garrison to Portland, Oregon, which can be redirected to Mid-C and paired with PSE's existing ~1,500 MW of Mid-C rights to PSE's system.
- Permitting to support the addition of an optional lithium-ion battery energy storage system in Stillwater County.

Q. What is project development schedule for Beaver Creek?

A. Beaver Creek has a target COD of March 2025. However, given the dynamic environment for new project development, PSE believes that it is prudent to anticipate a COD of August 2025, which aligns with the anticipated online date in the LGIA.

Q. Please explain the factors that could impact the COD for Beaver Creek?

A. Transmission is a factor that could impact COD. There are transmission-related tasks that need to be accomplished to achieve COD. NorthWestern Energy will need to complete transmission studies to award transmission service to PSE, and PSE will need to request Dynamic Transfer Capacity (DTC) from BPA. PSE also

will establish a pseudo-tie to balance the Beaver Creek project. The number of transmission studies and tasks necessary to achieve firm transmission support planning for the original COD timeline of August 2025 rather than the target COD of March 2025.

Additionally, to achieve COD, the Balance of Plant contractor will need to procure long lead equipment which is already under way through a Limited Notice to Proceed (LNTP). The Balance of Plant contractor has found it challenging to procure equipment to support an early 2025 COD. This further supports the reasonableness of PSE aligning to the COD milestone listed in the LGIA of August 2025.

As noted in testimony, PSE tested the impact of a year delay through the Aurora portfolio optimization runs and Beaver Creek was selected.

Q. What aspects of the Beaver Creek project uniquely position the resource for a 2025 Commercial Operation Date?

A. Project development in the areas of site control, permitting, and interconnection were well advanced to support the QF project plan. PSE was able to work with the counterparty to modify real estate rights and the Stillwater conditional use permit to collapse the QF project plan into a 248 MW wind project so that a commercial operations date in 2025 was achievable. In addition, the project had the necessary FAA Determination of No Hazard, environmental and microwave beam path studies to proceed with construction.

Q. Why is the location of Beaver Creek a good site to construct a wind project?

A. In addition to the project footprint providing a good wind resource area, which has been established through a multi-year wind data acquisition campaign, there is also an operational wind farm adjacent to Beaver Creek operated by Pattern Energy named Stillwater wind. Because Beaver Creek will not be the first wind farm built in the area, Stillwater wind has helped pave the way for the Beaver Creek project for things such as road use during construction. The location of Beaver Creek just west of Billings will help to support a strong labor pool compared with other Montana projects that are in more remote locations, and Stillwater County and the local residents have been supportive of the project.

See the Prefiled Direct Testimony of James P. Hogan, Exh. JPH-1CT, for more construction details.

Q. How will PSE deliver energy from Beaver Creek to PSE's customers?

A. PSE plans to repurpose transmission currently being used to deliver coal energy from Colstrip Units 3 & 4 to deliver wind energy from Montana to Washington for our customers. Beaver Creek interconnects on NorthWestern's system, so PSE is securing a new transmission wheel from the project's point of interconnection to the Colstrip Transmission System where it will connect with existing transmission rights.

Q. What is PSE's request for Beaver Creek in this case?

A. PSE requests that the Commission determine PSE's decision to acquire Beaver Creek was prudent and allow PSE to recover all costs to develop, construct, operate, and deliver the power associated with the project. Rate period fixed production costs for rate base and O&M result in a revenue requirement of $71.7 million in 2025 and $90.1 million in 2026, for incremental deficiency of $18.4 million in 2026. Please see the Prefiled Direct Testimony of Susan E. Free, Exh. SEF-1T. Projected energy volumes from Beaver Creek are included in the power cost forecast presented in the Prefiled Direct Testimony of Brennan D. Mueller, Exh. BDM-1CT. Inclusion of the Beaver Creek project reduces forecasted power costs by approximately $30.8 million in 2025 and $53.7 million in 2026.

2. <u>Demonstration of need.</u>

Q. What is PSE's need for the Beaver Creek Wind project?

A. As described in my testimony, PSE's 2023 EPR projects that PSE will need approximately 2,982,000 MWh of new clean energy in 2026. PSE will also need 1,848 MW of new winter peak capacity and 1,906 MW of new summer peak capacity in 2027. See Figure 1 (CETA clean energy need) and Figure 2 (peak capacity need) of my testimony.

Q. How will the Beaver Creek Wind project contribute to meeting PSE's clean energy and capacity needs under CETA?

A. Based on an August 2025 COD and the associated partial year of operations, Beaver Creek is expected to contribute [redacted] MWh, which addresses approximately 19 percent of the 2025 forecast need for additional clean energy resources. A combination of Beaver Creek and the recently executed Vantage Wind PPA would bring the total percentage of the 2025 forecast delivered load served by non-emitting and renewable resources to an estimated 53 percent. The shortfall between an anticipated 53 percent and the 60 percent Biennial CEIP target is expected to be covered through short- to intermediate-term off-take agreements from operational sources. No other new-build resources have been identified that could contribute to the CEIP's 2025 target.

More broadly, Beaver Creek is expected to provide approximately 10 percent of PSE's forecast clean energy need for its 2030 80 percent CETA compliance target by generating approximately [redacted] MWh of energy per year at a net capacity factor of approximately 38.2 percent.

The project's estimated contribution based on Beaver Creek's initial phase nameplate of 248 MW and generic ELCC values for Montana Central wind resources calculated by E3, would be [redacted] MW of peak capacity credit in the winter and [redacted] MW of peak capacity credit in the summer. Beaver Creek is expected to address four percent of the forecast 2029 winter peak capacity need

net of conservation, and 2.9 percent of the forecast 2029 summer peak capacity need net of conservation.

Q. Why is the acquisition of Beaver Creek necessary to help address the need for clean energy resources?

A. The need for PSE to acquire additional clean energy resources was well established with the passage of CETA in 2019 and the approval of PSE's CEIP in 2023. More specifically, the replacement of Colstrip Units 3 & 4 capacity and energy with CETA compliant resources is a near term need to maintain reliability and make progress towards interim CEIP targets and the 2030 80 percent requirement.

3. <u>Evaluation of alternatives.</u>

Q. If Beaver Creek was not one of the projects identified as part of the 2021 All-Source RFP, how did PSE evaluate the project as opposed to other opportunities?

A. While Beaver Creek was not submitted through the 2021 All-Source RFP, because the 2021 All-Source RFP proposal data is still current, along with additional bilateral wind opportunities, Beaver Creek can be evaluated against current alternatives. In comparison to the alternatives, the earlier COD and reasonable cost makes the combination of avoided market purchases, contribution to CETA and peak capacity needs particularly attractive for Beaver Creek. Beaver

Creek compares favorably to other current proposals in scope and timing, and is competitively priced.

Q. What quantitative analysis contributed to PSE's determination that Beaver Creek meets the lowest reasonable cost standard?

A. In July and November 2023, PSE conducted updated Aurora portfolio optimization analyses, in which it compared Beaver Creek to other alternatives available during the post-shortlist negotiation and re-evaluation period of the 2021 All-Source RFP. Beaver Creek was selected in both the July and November re-evaluation analyses as part of an optimal portfolio solution to help meet PSE's resource needs at the lowest reasonable cost. Beaver Creek was originally selected in the interim analysis conducted in July 2023 prior to PSE executing the MIPA with Caithness Energy. The analysis compared Beaver Creek to active RFP and bilateral opportunities in PSE's deal pipeline at the time the analysis was conducted. Prior to closing the MIPA and executing the Turbine Supply Agreement and Balance of Plant Agreement, PSE updated its optimization analysis in November, which reaffirmed the selection of Beaver Creek as part of a lowest reasonable cost portfolio solution to meet the Company's growing clean energy and capacity needs.

Moreover, in both the July and November analyses, PSE ran a reference case similar to the 2023 EPR Preferred Portfolio as a starting point and then conducted sensitivity risk analysis to better understand how specific assumptions might

change the mix of resources in the portfolio and affect portfolio costs. Examples of sensitivities include delaying the COD of a resource, increasing the nameplate limit for Montana resources, or excluding a specific resource from the new resource selection options in a particular run to test the impact of individual resource selections on the portfolio. In both the July and November optimization analyses, Beaver Creek was selected in all of the runs tested except one, the sensitivity in which Beaver Creek was specifically excluded to determine its relative value to the portfolio.

Ultimately, the Aurora model results show that Beaver Creek produces the highest portfolio benefit of all renewable resources included in the analysis and reduces the overall portfolio cost by about $1 billion (see Table 20).

For a detailed discussion of the analytical assumptions, approach, and results for each of these analyses, see Exh. CPC-9HC, the 2021 RFP Post-Phase 2 Update, Attachments A and B, the July interim optimization update and November optimization update reports.

Q. How did PSE determine the relative portfolio benefit using the Aurora portfolio model?

A. PSE first ran the model with a pool of RFP and non-RFP resources to establish a reference case of selected resources to meet the capacity and clean energy needs identified in the 2023 EPR. PSE then reran the model taking out the selected resources and measuring the change in total portfolio cost with and without the

resource. This difference in cost reflects the portfolio benefit. See Exh. CPC-4, the 2023 EPR excerpt.

Q. What updates did PSE include in the re-evaluation analyses including Beaver Creek?

A. As described in my testimony, the modeling incorporates assumptions generally consistent with the 2023 EPR including the increased updated need forecasts, as well as pricing, COD and other updates received from developers for projects in the deal pipeline.

Q. How did PSE's analysis test the impact of different Montana transmission capacity limits?

A. In the July analysis, PSE conducted two study cases with Montana nameplate capacity limits of 950 MW and 1,550 MW for resources behind PSE's 713 MW of Montana transmission capacity rights. The low limit of 950 MW is consistent with PSE's published 2023 EPR preferred portfolio assumption. The high limit of 1,550 MW is a result of screening analysis conducted by E3 and the PSE IRP team, which covers the top resource combinations that show a balance between the transmission utilization during system peak and renewable curtailment. The two study cases confirm that Beaver Creek was selected as part of the lowest cost resource portfolio solution.

Q. Did PSE account for both the target COD of March 2025 and the anticipated COD of August 2025 in its analysis?

A. Yes. As noted previously, while Beaver Creek has a target COD of March 2025, PSE believes that it is prudent to anticipate a COD of August 2025, which aligns with the anticipated online date in the LGIA. PSE assumed the August 2025 COD in its July 2023 interim optimization analysis and March 2025 in its November 2023 updated optimization analysis. In both cases, Beaver Creek presented a compelling opportunity as part of a lowest reasonable cost portfolio.

See Exh. CPC-9HC, the 2021 RFP Post-Phase 2 Update, Attachment A, for optimization analysis based on an August 2025 COD, and Attachment B for optimization analysis based on a March 2025 COD. See also Exh. CPC-8HC, Beaver Creek Presentations and Reports to PSE's Energy Management Committee and Board of Directors: August 3, 2023 Report to the Board of Directors for financial analysis based on an August 2025 COD; and November 2, 2023 Board of Directors Update, Attachment H for financial analysis based on a March 2025 COD.

Q. Did PSE run any additional sensitivities for Beaver Creek to understand the impact of delays?

A. Yes. With limited resources available in the near future, Beaver Creek stands out as a resource option with a comparatively advanced timeline. Therefore, PSE also tested delay risk in the start date of Beaver Creek. In the July optimization

analysis, PSE shifted the COD by one year from 2025 to 2026 and observed that Beaver Creek was still selected by the Aurora model.

Q. What qualitative analysis contributed to PSE's determination that Beaver Creek meets the lowest reasonable cost standard?

A. Beaver Creek was identified as a unique, time-sensitive opportunity because of its relatively advanced stage of development at the time PSE engaged Caithness Energy, and the low-risk deal structure agreed to between the parties. PSE was able to structure the transaction to de-risk the project to achieve a ready for construction, notice to proceed state prior to PSE's Board of Directors making a final investment decision when significant capital dollars would be required to purchase project assets and execute the Turbine Supply Agreement and Balance of Plant Agreement.

Q. How did PSE evaluate Beaver Creek against other resource alternatives?

A. In addition to the portfolio analysis conducted through the Aurora modeling that consistently selected Beaver Creek as part of a combination of resources that achieves the objective of minimizing portfolio costs, PSE also compared Beaver Creek with other projects on a standalone basis. PSE evaluated resources based on the LCOE and any COD uncertainty that would result in market risks imposed on PSE and its customers. A summary of qualitative considerations was provided to PSE's management and Board of Directors in updates presented between July

and November 2023. See Exh. CPC-8HC, Beaver Creek Presentations and Reports to PSE's EMC and Board of Directors.

Q. What was PSE's approach to due diligence for the Beaver Creek project?

A. PSE's Evaluation Team performed a cross-functional due diligence review of the project details, including an analysis of the costs, risks, and benefits of the project. PSE utilized internal subject matter experts with different areas of expertise across the Company, including equity and customer benefits, real estate, transmission and interconnection, permitting and environmental, avian, cultural resources, community, project management, technical and engineering, operations, regulatory, and tax matters.

PSE supplemented its internal analysis with expert consultant analysis including but not limited to legal, interconnection and transmission, FAA Determination of No Hazard, wind resource assessments, wetlands studies, cultural resources, local land use, tax, and real estate.

See Exh. CPC-11, for the list of Beaver Creek external consultants and their areas of expertise.

Q. How did PSE analyze the Beaver Creek wind production forecast?

A. Caithness Energy had a long campaign of wind data acquisition for the Beaver Creek site. Twelve Met towers were set up throughout the site to collect wind data

over multiple years. Caithness Energy provided an independent resource assessment from a third-party consultant that Caithness Energy had retained. PSE reviewed the Caithness Energy-provided wind assessment and performed further due diligence by retaining DNV to perform a bankable full resource assessment. DNV results were consistent with the results provided by the third party hired by Caithness and resulted in a final forecast P50 NCF of [redacted] percent.

Q. Did PSE analyze curtailment with the anticipated combination of Montana wind resources?

A. Yes. PSE analyzed curtailment with the anticipated combination of Montana wind resources including the existing Clearwater wind project, the new Beaver Creek Wind project, and an additional Montana wind project PSE is evaluating. With the forecast complimentary shapes of generation, the three resources are expected to result in minimal curtailment.

Q. Did PSE evaluate different commercial structures for Beaver Creek?

A. Yes. Caithness Energy presented both ownership and PPA offers for the Project. Ownership provides a more favorable economic profile, even with less-favorable assumptions. For the 232 MW configuration, the LCOE for the PPA offered by Caithness Energy at the busbar was [redacted]/MWh, while the ownership offer was

REDACTED VERSION

modeled as [redacted]/MWh or [redacted]/MWh less than the PPA cost.[52] The Ownership versus PPA analysis is based on the PPA Ownership Evaluation Model described earlier in my testimony. As shown in Figure 6, the model determines a series of relative costs and benefits to PSE customers over a defined timeframe under the different commercial structures.

In addition to the economic benefits of PSE ownership of Beaver Creek, PSE owning the project has the qualitative benefit of ensuring thoughtful consideration for avian, cultural, and tribal interests during the construction and operation of the project.

Q. Did PSE compare the benefits of claiming production tax credits and investment tax credits?

A. PSE has evaluated both the Production Tax Credits ("PTC") and Investment Tax Credits and determined that claiming the PTC will result in a lower cost for our customers. See the Prefiled Direct Testimony of Matthew R. Marcelia, Exh. MRM-1T, for more information about the tax incentives in the Inflation Reduction Act and the specific tax incentives associated with Beaver Creek.

REDACTED VERSION

[52] The PPA offer dated April 17, 2023, was based on a higher estimated NCF ([redacted]%) and the assumption that the Project will qualify for both the domestic content and energy community PTC bonuses; however, the ownership levelized cost analysis only assumed the domestic content bonus and is based on a lower [redacted]% NCF.

Q. What types of tax benefits does PSE intend to seek for Beaver Creek?

A. PSE plans to take full advantage of all tax incentives available to Beaver Creek under the Inflation Reduction Act. In addition to achieving the stepped-up 100 percent PTC by adhering to prevailing wage and apprenticeship requirements, PSE will seek the 10 percent domestic content adder. Caithness Energy transitioned key draft project agreements that support achieving favorable tax incentive outcomes, and PSE was able to progress these agreements forward to execution with requirements for the turbine manufacturer and balance of plant contractor to cooperate in qualifying the project for the full PTC based on prevailing wage and apprenticeship requirements and the domestic content PTC bonus adder. However, this is new territory for the energy industry and the Internal Revenue Service rules are complicated and require a level of specificity and coordination with suppliers for project components that has never been seen before.

Caithness Energy also had an agreement with Stillwater County for tax abatement that enabled PSE to work collaboratively with the County to make necessary modifications in order for PSE to inherit this economic benefit.

Table 22 below shows the anticipated PTCs of the project and the anticipated pass back to customers that would reduce customer bills.

Table 22: Anticipated Beaver Creek project PTCs and pass back to customers.[53]

	2025	2026	2027	2028	2029	2030
Generation MWh	350,644	829,905	829,905	832,178	829,905	829,905
Assumed PTC Rate @ 100% PTC	$30.44	$31.08	$31.71	$32.39	$33.09	$33.80
PTC Generated	$10,674,050	$25,789,434	$26,317,555	$26,956,862	$27,458,988	$28,046,632
PTC Transferred at 95% value		$10,140,348	$24,499,963	$25,001,677	$25,609,019	$26,086,039
PTC passback to customer (grossed-up for taxes)		$12,835,883	$31,012,611	$31,647,693	$32,416,480	$33,020,303

	2031	2032	2033	2034	2035	2036
Generation MWh	829,905	832,178	829,905	829,905	479,261	
Assumed PTC Rate @ 100% PTC	$34 51	$35.24	$36.00	$36.81	$37.65	
PTC Generated	$28,641,177	$29,327,773	$29,878,613	$30,547,649	$18,045,866	
PTC Transferred at 95% value	$26,644,300	$27,209,118	$27,861,385	$28,384,682	$29,020,267	$17,143,573
PTC passback to customer (grossed-up for taxes)	$33,726,963	$34,441,921	$35,267,576	$35,929,977	$36,734,515	$21,700,725

Total Customer Savings from 2025-2036 **$338,734,646**

Q. Did PSE include the domestic content adder in the economic analysis that resulted in the Beaver Creek selection?

A. Yes. Based on the commitments by the turbine manufacturer and balance of plant contractor, PSE assumed that the project would qualify for the domestic content adder.

Q. Did PSE learn more about the domestic content adder after the Beaver Creek decision?

A. Yes. Since the United States Treasury released guidance in May 2023, tax experts have been reviewing and interpreting the guidance over the ensuing months. PSE has recently concluded, along with the collective developer community, that the current guidance is not straightforward and results in uncertainty for project

[53] The PTC rate is calculated based on forecast inflation rate for illustration purpose. Actual PTC rate will be published by the IRS.

qualification. Therefore, PSE believes it is not reasonable to assume Beaver Creek will qualify.

Q. Is the assumption of qualifying for the domestic content adder key to the resource selection?

A. No. The Beaver Creek project has the highest portfolio benefit of approximately $1 billion. The NPV cost of removing the domestic content adder is approximately $16 million.

Q. Do PSE's customers receive the benefit of the domestic content adder if Beaver Creek does qualify?

A. Yes. The PTCs including the domestic content bonus PTC benefits will be handled through the 95-A tracker and all received PTC benefits net of transfer discounts and transaction fees will be returned to customers.

4. <u>Independent evaluator involvement and consistency with the RFP process.</u>

Q. Did PSE engage the services of its IE for Beaver Creek?

A. Yes. While Beaver Creek was not an RFP resource, PSE did engage the services of its IE to ensure that a fair, consistent, and proper process was conducted without regard for the method by which PSE received the proposal. As previously described, PSE evaluated the Beaver Creek project with the same rigor it applied to the evaluation of 2021 All-Source RFP resources. Beaver Creek was evaluated

alongside the most favorable 2021 All-Source RFP resources and other deal pipeline alternatives evaluated during the RFP negotiation period, using the same evaluation team, approach, and tools used to evaluate 2021 All-Source RFP resources. PSE also used criteria, metrics, and assumptions consistent with those used in the 2021 All-Source RFP.

5. <u>PSE Board of Director and management involvement.</u>

Q. Did PSE seek management approval to acquire the Beaver Creek project?

A. Yes, below are the key events:

- On July 28, 2023, PSE's EMC was briefed and approved a recommendation to present to the PSE Board of Directors for approval of the Beaver Creek resource selection.
- On August 3, 2023, the PSE Board of Directors authorized PSE to execute the MIPA.
- PSE signed the MIPA on September 14, 2023, subject to condition precedents designed to get the project to a ready for construction state that would allow PSE to step in as owner of the de-risked project.
- On November 2, 2023, management presented to the PSE Board of Directors certain key project updates.
- On November 29, 2023, management reported to the PSE Board of Directors that conditions precedent to closing had either been met or were on track to be met or mitigated for a MIPA closing on or before December 1, 2023.
- The PSE Board of Directors authorized PSE to proceed to closing, which PSE did on December 1, 2023.

6. Contemporaneous documentation.

Q. Did PSE prepare an exhibit to include in its management and Board of Director presentations and reports?

A. Yes. See Exh. CPC-8HC, Beaver Creek Presentations and Reports to PSE's Energy Management Committee and Board of Directors.

7. Project benefits.

Q. Please summarize the benefits that PSE's customers will receive from the Beaver Creek project.

A. The Beaver Creek Wind project (i) provides a meaningful contribution toward meeting PSE's significant peak capacity and clean energy needs, (ii) is part of a lowest reasonable cost portfolio solution based on alternatives analysis performed throughout the 2021 All-Source RFP evaluation and negotiation period, (iii) allows for the efficient utilization of current tax incentives and existing PSE transmission rights, and (iv) is a valuable Montana resource that is of strategic importance to PSE in meeting the ambitious targets of CETA at a reasonable cost for customers; and (v) reduces forecasted power costs by approximately $30.8 million in 2025 and $53.7 million in 2026.

Q. How did PSE assess equity and customer benefits?

A. PSE identified three of the CETA Customer Benefit Indicators that Beaver Creek would positively impact.

Energy security and resiliency. For energy security and resiliency, the central Montana Beaver Creek project, increases the diversity of renewable energy resources in PSE's portfolio with a profile that fits well with PSE's winter peak and provides locational diversity within Montana. The ELCC for Beaver Creek is [redacted] percent in the winter.

Energy and non-energy benefits. For energy and non-energy benefits, Beaver Creek creates employment opportunities during the year-long construction phase and an ongoing need for permanent, on-sites workers after COD. PSE plans to use a project labor agreement or community workforce agreement and has committed to using local and diverse suppliers when available.

Environmental and public health benefits. PSE quantified environmental and public health benefits by the quantity of carbon dioxide Beaver Creek could potentially displace. In the first full year of operations, if the same quantity of electricity were generated with natural gas, the carbon produced would amount to [redacted] metric tons of (CO2).

REDACTED VERSION

8. <u>Determination of prudency.</u>

Q. Was the Beaver Creek Wind project a prudent investment?

A. Yes. PSE's acquisition of the Beaver Creek Wind project will help meet the expected clean energy and peak capacity needs of PSE's customers for years to come. Based on the resource needs described herein, the robust analysis performed during the 2021 All-Source RFP post-shortlist re-evaluation and

negotiation, and the benefits to PSE's customers described in my testimony, PSE is seeking a determination of prudence and cost recovery for the Beaver Creek Wind project.

X. EMERGING PROJECTS LIKELY TO BE EXECUTED DURING THE MULTIYEAR RATE PLAN

Q. Does PSE expect to execute any other contracts for new resources from the 2021 All-Source RFP?

A. Yes. PSE is actively engaged in evaluating and negotiating with several clean energy (solar and wind) and battery storage counterparties for resources that were selected in the November 2023 updated optimization analysis. If successful, PSE anticipates executing additional new resource contracts in roughly late Q1 to early Q2 2024.

XI. CONCLUSION

Q. Does that conclude your prefiled direct testimony?

A. Yes, it does.