EXH. ZCY-1CT DOCKET UE-23____ 2022 PCA COMPLIANCE FILING WITNESS: ZACARIAS C. YANEZ

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Petition of

PUGET SOUND ENERGY

For Approval of its 2022 Power Cost Adjustment Mechanism Report DOCKET UE-23____

PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF

ZACARIAS C. YANEZ

ON BEHALF OF PUGET SOUND ENERGY

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WAC 480-07-160

APRIL 28, 2023

PUGET SOUND ENERGY

PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF ZACARIAS C. YANEZ

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PUGET SOUND ENERGY

PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF ZACARIAS C. YANEZ

LIST OF EXHIBITS

1.	Exh. ZCY-2	Professional Qualifications of Zacarias C. Yanez
2.	Exh. ZCY-3HC	Presentations and Materials for PSE's Board of Directors and Energy Management Committee
3.	Exh. ZCY-4C	Chelan Purchase and Sale Agreement
4.	Exh. ZCY-5	2023 Draft Energy Progress Report and Related Presentation Materials

7	A.	My name is Zacarias C. Yanez. My business address is 355 110th Avenue NE			
8		Bellevue, Washington, 98004. I am a Consulting Energy Trader in the Energy			
9		Supply team for Puget Sound Energy ("PSE").			
10	Q.	Have you prepared an exhibit describing your education, relevant			
11		employment experience, and other professional qualifications?			
12	A.	Yes, I have. Please see the first exhibit to the Prefiled Direct Testimony of			
13		Zacarias C. Yanez, Exh. ZCY-2 for my professional qualifications.			
14	Q.	What are your duties as Consulting Energy Trader?			
15	A.	As a Consulting Energy Trader, my responsibilities include the following:			
16 17 18		 leading the evaluation and negotiation of mid-term (i.e., three- to five-year) power contracts and acquisitions; and 			
19 20 21		2. assisting the acquisition of electric resources and long-term (i.e., greater than five years) power contracts originated within PSE's energy supply group.			

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Q. Please summarize the contents of your testimony.

A. This prefiled direct testimony seeks a finding of prudence for a 20-year Power Sales Agreement ("PSA") with Public Utility District No. 1 of Chelan County ("Chelan PUD") for a 25 percent share of the output of the Rocky Reach and the Rock Island Hydroelectric Projects ("Chelan PSA"). The Chelan PSA effectively renews and extends the 2006 power sales agreement with Chelan PUD that expires in October 2031.

II. ACQUISITION OF THE CHELAN POWER SALES AGREEMENT IS PRUDENT

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.1

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

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:

- First, the utility must determine whether new resources are necessary.²
- 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.³
- 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.⁴
- 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.⁵
- 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.⁶

² See e.g., WUTC v. Puget Sound Power & Light Co., Docket UE-921262, et al., Nineteenth Supplemental Order at 11 (Sept. 27, 1994).

³ *Id*. at 11.

⁴ *Id.* at 2, 33-37, 46-47.

Id. at 37, 46.

⁶ *Id.* at 2, 37, 46.

Q. Did PSE's decision to enter into the Chelan PSA meet this prudence standard?

A. Yes. PSE has a clear, documented need for capacity. Additionally clean energy to meet the Clean Energy Transformation Act ("CETA") ⁷ requirements. PSE also performed the analyses, decision-making and documentation processes expected by the Commission, as summarized in this prefiled direct testimony.

A. <u>Background and Key Terms of the Chelan PSA</u>

Q. Please describe the Rocky Reach and Rock Island Hydroelectric projects.

A. The Rocky Reach and Rock Island Projects are currently used to serve local load of Chelan PUD in Chelan County, and Chelan PUD sells surplus energy to third parties under existing power purchase agreements. PSE has a long history with both projects, dating back to the construction of the Rock Island Project. PSE purchases a 25 percent share (approximately 480 MW of capacity) of the output of both the Rocky Reach and Rock Island Projects. PSE's 2006 power sales agreement with Chelan PUD expires in accordance with its terms in 2031.

The Rocky Reach Hydroelectric Project ("Rocky Reach Project") is an 11-unit, 1,300 megawatt ("MW") hydroelectric facility owned and operated by Chelan PUD and located on the Columbia River. The Rocky Reach Project began commercial operation in 1961, and its operating license expires in the year 2052.

⁷ Chapter 19.405 RCW.

The Rock Island Hydroelectric Project ("Rock Island Project") is an 11-unit, 624 MW hydroelectric facility also owned and operated by Chelan PUD and located on the Columbia River. The Rock Island Project began commercial operation in 1932, and its operating license expires in the year 2028.

Q. Please describe the key terms of the Chelan PSA.

A. The Chelan PSA's term begins on November 1, 2031, and expires on October 31, 2051 and Agreement entitles PSE to receive a twenty-five percent (25%) share of the output of the Rocky Reach and Rock Island Projects. When paired with PSE's existing transmission rights, the Chelan PSA provides approximately (i) 444 MW of dispatchable and flexible capacity, (ii) 1075 MWh of storage, and (iii) 2,166 GWh of clean, zero-emission power to contribute toward PSE's CETA requirements. The second exhibit to this prefiled testimony, Exh. ZCY-3HC, includes summary terms and the full contract is included as the third exhibit, Exh. ZCY-4C.

Similar to the existing 2006 power sales agreement, PSE negotiated a contract price based on a proportional share, 25 percent, of the costs to operate the Projects. The Chelan PSA also includes an annual fixed cost premium. Based on assumptions at the time of execution, contract costs over the 20-year life, are expected to have a present value of \$\frac{1}{2}\$ per MWh.

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Q. Please summarize the timing and nature of PSE's negotiations with Chelan PUD.

A. Chelan PUD and PSE began meeting and discussing a possible renewal or extension of PSE's offtake agreements in early 2021. By the end of the first quarter of 2021 PSE and Chelan PUD were engaging regularly in contract discussions. PSE also engaged internal subject matter experts to begin the due diligence process. By the third quarter of 2021 Chelan PUD provided the first draft of the new contract language, including pricing components. Negotiations continued through the fourth quarter of 2022, before settling on the final terms. PSE was able to secure some concessions to the operational and contractual terms with no material price change to what was first offered in 2021. This was achieved in an environment with increasing market prices, increased competition for resources, and increased inflation pressures.

Need for the Chelan Slice Agreement В.

- Please describe how PSE identified the need for the Chelan PSA. Q.
- PSE relied on its integrated resource planning analysis, which evaluates and A. establishes capacity and renewable resource needs on a biennial basis, to guide the electric resource need.

PSE's 2021 Integrated Resource Plan ("2021 IRP") and the 2021 Clean Energy Implementation Plan ("2021 CEIP") address the changes necessary to achieve the goals of CETA and reflect the following:

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- Significant investments in renewable resources (hydro being a qualifying resource);
- Accelerated acquisition of energy conservation;
- Increased use of demand response;
- Integration of distributed energy resources like residential solar and battery energy storage;
- Reduced reliance on short-term market purchases in response to the changing western energy market;
- Inclusion of alternative fuels to operate new generating plants, and
- An assumption that PSE will continue to rely on its existing portfolio of hydroelectric generation.

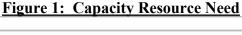
Figures 1 and 2 below depict the resource needs identified in the 2021 IRP. The resource need was updated as part of the 2021 CEIP and the 2021 Request for Proposal ("2021 RFP") processes and continued the assumption that existing hydroelectric resources would be extended. Those processes focused primarily on needs in the first CEIP compliance window (2022-2025) and in the 2021 RFP window (through 2027).8

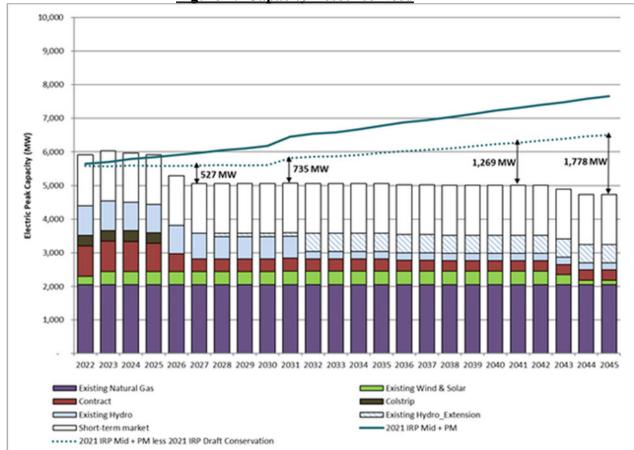
Q. Please describe how the Chelan PSA helps meet PSE's Capacity Need.

A. As illustrated in Figure 1 below, PSE expects to have a significant capacity need in 2031 and beyond. Notably, this significant capacity need assumes that PSE would continue to purchase 25 percent of the output of the Rocky Reach and Rock Island Projects. Failure to acquire 25 percent of the output of the Projects

⁸ For more information on PSE's RFP process, see Docket UE-210220 and https://www.PSE.com/en/energy-supply/acquirig-energy.com. For more information on PSE's 2021 IRP, see Docket UE-200304. For more information on PSE's 2021 CEIP, see Docket UE-200795.

would effectively increase PSE's capacity need from 735 MW to about 1,179 MW (735 MW + 444 MW to reflect the expiration of the current Chelan contract) in 2031. Preliminary results of the 2023 Draft Energy Progress Report ("Draft EPR"), Exh. ZCY-5, indicate that PSE's capacity need is increasing, highlighting the continued importance of the Chelan PSA.





Please describe how the Chelan PSA helps meet PSE's CETA energy need. Q.

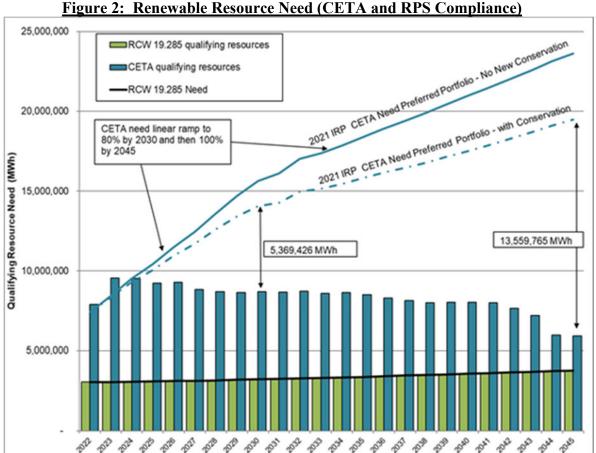
Figure 2 below shows the forecasted 2021 PSE IRP need for renewable or non-A. emitting resources. Similar to the capacity need in Figure 1, the renewable or nonemitting resources need in Figure 2 assumes that PSE will continue to acquire a

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25 percent share of the output of the Projects. Failure to continue to acquire a 25 percent share of the output of the Projects would effectively increase PSE's capacity need on expiration of the existing agreement in 2031. This would result in an increase in CETA need of about 2,166 GWhs starting in 2031.





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A. Chelan PUD approached PSE in the first quarter of 2021 for the purpose of renewing the existing power sales agreement that is scheduled to expire in October 2031. PSE's decision to negotiate and enter into the Chelan PSA about

Why did PSE choose to execute the Chelan PSA almost eight years before the

existing agreement expires?

eight years ahead of the expiration of the existing agreement is driven by the importance of the Projects to PSE's portfolio. Output from the Projects has for decades been the backbone of PSE's existing resource base, providing seasonal and daily load shaping energy and capacity benefits in addition to necessary ancillary services. This output helps to ensure PSE's ability to meet clean energy needs, daily and seasonal peaking requirements, integrate existing and incremental wind or other variable production resources into the Company's supply portfolio, and provides increased certainty related to modeling and determination of PSE's future resource needs and supply alternatives.

Given these important attributes and PSE's extensive electric supply resource needs, PSE has understood for some time that continued access to the Projects' output would be a critical component of PSE's long-term electric portfolio management strategy. However, PSE's existing long-term contract with Chelan PUD does not contain provisions for any right of first refusal, right of first offer, or extension beyond its current terms. When Chelan PUD informed PSE of its desire to reach an agreement in principle by the end of 2022, PSE saw an opportunity to undertake negotiations with Chelan PUD and secure access to the Projects output through November 2051. Securing the capacity, clean energy, and ancillary benefits through the 2045 transition to 100 percent clean energy Washington targets.

⁹ RCW 19.405.050(1)

If PSE had not engaged in negotiations and successfully executed the Chelan PSA renewal, PSE would have risked losing the opportunity to acquire a valuable, non-emitting, flexible capacity resource to another off-taker through the Chelan PUD's competitive auction process. In late 2020, Chelan PUD notified PSE that it would be conducting an auction to sell a share, or "slice", of the Rocky Reach and Rock Island Projects. Chelan PUD was, and continues to be, actively engaged in marketing portions of the generation portfolio. During the negotiation period Chelan announced a long-term power sales agreement with Avista Utilities ("Avista"). Under the terms of that new agreement, Avista's share of the Projects' output grows from five percent to ten percent. ¹⁰ It is highly likely that Chelan PUD would have marketed some or all of PSE's share to a third party if PSE had not engaged when it did.

- Q. Why is PSE seeking a prudence determination for the Chelan Slice

 Agreement now when it does not start until 2031?
- A. As explained earlier in my testimony, 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. Therefore, the prudence standard applies to PSE's decision to enter the Chelan Slice Agreement at the time it made that decision, not the delivery start date. While the Chelan Slice Agreement does not

¹⁰ Please see https://www.chelanpud.org/about-us/news/2021/12/30/chelan-pud-and-avista-announce-long-term-clean-energy-contract.

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start until 2031, the decision to enter into the agreement was considered and made in this PCA 2022 period. Accordingly, it is both appropriate and sensible to determine prudency of the Chelan Slice Agreement now.

C. Comparison of the Chelan Slice Agreement to Alternatives

- Q. What alternatives did PSE consider in its analysis of the Chelan Slice

 Agreement?
- A. PSE's analysis of alternatives reflects both the quantitative financial and qualitative operational implications and benefits to its customers. PSE used two quantitative methodologies to evaluate the value of the Chelan PSA relative to replacing the contract in 2031.
 - a. The first methodology, the "Optimization Analysis", is a comparison of the costs associated with replacing the Chelan PSA with an alternate set of resources. To create the portfolio that replaces Chelan PSA, PSE used a portfolio optimization analysis consistent with PSE's resource acquisition modeling processes. The analysis was conducted over the course of the negotiations and reflects assumptions from both the 2021 All Source RFP and the draft 2023 Draft EPR.
 - b. The second alternative methodology is a "bottoms up" approach that sums the estimated market value streams associated with the Chelan PSA. This methodology compares the forecasted costs of the Chelan PSA to three scenarios based on known market conditions.

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Financial modeling leading up to the current 2006 power sales agreement reflected the renewal of the Rocky Reach license, which FERC issued in 2008, as well as the impending Rock Island FERC license (2025). Chelan PUD has informed PSE that the Chelan PSA's cost projections include continued Rocky Reach license implementation costs and Rock Island license processing and implementation costs, which are subject to final terms and conditions as determined by the FERC and other regulatory agencies. Please see Exhibit ZCY-3HC, for a discussion on licensing process and cost estimates.

- Q. Describe PSE's Optimization Analysis approach to analyzing the value of the Chelan PSA.
- A. PSE relied upon its experience as a resource owner and evaluator, its familiarity with the region's energy market, and analytical tools developed and applied throughout multiple IRP and RFP cycles to perform the Optimization Analysis.

 PSE relied on the following two valuation methods:

1. Portfolio Optimization – PSE's resource acquisition team used the same AURORA XMP model used in the 2021 RFP to understand the costs to replace the contract with "generic" resources. Since the 2021 RFP resources latest start date is 2026, they are not direct comparisons to the Chelan PSA, which starts in 2031. Instead, the analysis was conducted by "fixing" the 2021 RFP selected shortlist, removing the Projects' energy and capacity contributions, and allowing the model to select generic resources to fill the capacity and clean energy needs. This created a "No Chelan" portfolio. PSE compared this "No Chelan" portfolio to the base portfolio, which includes the capacity and energy associated with the 25 percent share of the Projects' output under the Chelan PSA. This analysis used assumptions consistent with the 2021 RFP. The resources selected by AURORA to replace the PSA were:

- a. 237 MW of peakers,
- b. 50 MW of lithium ion four-hour battery energy storage,
- c. 300 MW of Eastern Washington solar, and
- d. 400 MW of Wyoming wind.
- 2. Revenue Requirement Model PSE also conducted an analysis of value using a Microsoft Excel-based revenue requirement model similar to the model used in the 2006 evaluation. This analysis allowed PSE to compare the forecasted costs of the PSA to the update generic resource costs used

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in the 2023 IRP study. This Excel-based model allows PSE to compare cost impacts of two different replacement scenarios:

- a. Wind and Peaker Scenario In the wind and peaker scenario, PSE compared the revenue requirement of replacing the output from the Projects with 634 MW of wind resources and 358 MW of peaking resources. Together, this represents a portfolio of resources necessary to replace the 25 percent share of the energy and capacity output of the Projects.
- b. Optimized Portfolio Scenario In the optimized portfolio scenario, PSE compared the revenue requirement of replacing the 25 percent share of the energy and capacity output of the Projects with the resource mix selected by AURORA as described in item one, above. This analysis supplements the AURORA-based optimization analysis by updating generic costs and focusing on revenue requirements, as opposed to total portfolio costs reported by AURORA.
- Q. Please describe the AURORA model PSE used to perform the analysis.
- A. AURORA is a production cost model, run hourly, that provides the dispatch of a given resource with the variable cost and market value of energy. PSE relied on the AURORA XMP model with the same assumptions that were used for the Phase 2 optimization of PSE RFP analysis. As stated above, PSE used

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PSE portfolio are between \$173 million to \$969 million or about \$14 to \$82 per MWh.

Table 1: Summary of Quantitative Cost Comparisons

Resource Alternatives	NPV Costs (2022 \$000)	Levelized \$/MWh
Chelan PSA	\$	\$ /MWh
2021 RFP Phase 2 AURORA Model	\$	\$ MWh
Revenue Requirement Model - AURORA replacement scenario	\$	\$ <mark>/</mark> MWh
Revenue Requirement Model – wind and peaker scenario	\$	\$ <mark>/</mark> MWh

- Q. Describe PSE's "Bottoms Up" approach to analyzing the value of the Chelan PSA.
- A. PSE estimated the value of the Chelan PSA by adding three individual value streams from the "bottoms up". This methodology is similar to the valuation of the Colville 5 percent Renewal and the Chelan Slice that was recently approved for cost recovery in PSE's recent multi-year rate plan, Docket UE-220066/UG-220067. PSE identified three value streams specifically called out in the Chelan

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¹¹ See Wash. Utils. & Transp. Comm'n v. Puget Sound Energy, Dockets UE-220066/UG-220067 (consolidated), Final Order 24 at ¶ 256 (Dec. 22, 2022). See also, Dockets UE-220066/UG-220067, Yanez, Exh. ZCY-1CT (Jan. 31, 2022).

PSA: 1) energy value, 2) capacity value, and 3) environmental attribute value.

PSE relied on three scenarios described below to estimate the value streams.

Scenario One – Scenario One uses a forecast of 2032 forward market prices from August 2022, and as described in the Collateral Annex to the Chelan PSA. 12

Scenario Two – Scenario Two uses the "Mid" energy price forecast of the 2023

Electric Progress Report, a capacity value based on a \$20/MWh adder (which is equal to about \$93 per MW-year), and an environmental adder based on the Washington Department of Ecology's Climate Commitment Act "floor" forecasts.

Scenario Three – Scenario Three calculates the average energy and capacity values from the 2021 All Source RFP short-list presented to PSE's Energy Management Committee in November of 2022¹³. Please note that this scenario may not reflect a direct comparison due to difference in timing of resources. Additionally, it is important to note that PSE selected these resources for the short list to meet the needs of the 2021 All Source RFP. Meaning that these resources, if acquired by PSE, would not be available to replace the 25 percent share of the output of the Projects. Given these limitations, the analysis allows a comparison of the value of the 25 percent share of the output of the Projects relative to known market options at the time of the decision. A final note regarding Scenario Three, all of the energy resources included in RFP shortlist are renewable resources, and

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¹² See Exh. ZCY-4C.

¹³ See Exh. ZCY-3HC.

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As reflected in Table 2 below, the sum of the value streams of the Chelan PSA is higher than the projected levelized costs of about \$69 per MWh in each scenario.

Table 2: 2032 "Bottoms Up" Valuation Under Three Scenarios

Scenario	Energy (\$/MWh)	Capacity (\$/MWh)	Environmental Attributes (\$MWh)	Total (\$/MWh)
Scenario One	\$ 56	\$	\$	\$
Scenario Two	\$ 43	\$ 20	\$ 14	\$ 77
Scenario Three	\$ 54	\$ 23	\$ 0	\$ 77

D. <u>Involvement of PSE Management</u>

- Q. Did PSE keep the Energy Management Committee and board of directors informed of the Chelan PSA?
- A. Yes. PSE's Energy Management Committee was informed about negotiation status and approved final contract terms prior to presenting the decision to PSE's Board of Directors. The Board of Directors reviewed the material terms of the Chelan PSA and related materials and approved the execution of the Chelan PSA on January 19, 2023. Please see the Second Exhibit to the Prefiled Direct Testimony of Zacarias C. Yanez, Exh. ZCY-3HC, for the presentations to the Energy Management Committee and the Board of Directors.

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E. Benefits of the Chelan PSA.

Q. Please summarize the benefits for the Chelan PSA.

A. After analyzing the benefits of the Chelan PSA in light of alternatives, PSE agreed to terms with Chelan PUD. The Chelan PSA will secure the output of the Projects for PSE's customers through October of 2051. The clean energy resource will continue to form one of the central pillars of PSE's electric portfolio and provide CETA compliant energy, flexibility, and capacity. As Washington state transitions away from fossil fuel resources, PSE's analysis of existing large scale hydroelectric continues to show value to its portfolio. The flexibility provided by the Chelan PSA will help the integration of future renewable resources. Beyond these qualitative benefits, Table 1 and Table 2 above show significant cost savings relative to currently known alternatives.

III. CONCLUSION

Q. Please summarize your prefiled direct testimony.

A. PSE's 2021 IRP, CEIP, and the 2023 Electric Progress Report all assume that PSE's existing share of the Rocky Reach and Rock Island Projects will continue to be part of PSE's energy portfolio. The Chelan PSA renewal secures this assumption, protecting an integral piece of PSE's electric generating portfolio. The Projects provide a known source of CETA-qualifying energy, flexibility, and capacity at a substantial cost savings for PSE's customers. PSE seeks a determination of prudence for the Chelan PSA.