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October 22, 2021

Mark Johnson
Executive Director and Secretary
Washington Utilities and Transportation Commission
621 Woodland Square Loop SE
Lacey, WA 98504-7250

RE: Comments of Renewable Northwest, NW Energy Coalition and Rye Development, Docket UE-210220

Puget Sound Energy's Effective Load Carrying Capability Estimates and Use in the Company's All-Source Request For Proposals.

I. INTRODUCTION

Renewable Northwest, NW Energy Coalition and Rye Development ("Joint Parties") thank the Washington Utilities and Transportation Commission ("the Commission") for this opportunity to comment in response to the Commission's August 31, 2021, Notice of Opportunity ("Notice") to File Written Comments related to Puget Sound Energy's Effective Load Carrying Capability Estimates and Use in the Company's All-Source Request For Proposals Pursuant to WAC 480-107, which Puget Sound Energy ("PSE" or "the Company") originally filed on April 1, 2021, and updated on May 10, 2021.¹

While we still have lingering concerns about PSE's methodology to calculate ELCC values for both short- and long-duration storage resources, we appreciate PSE's willingness to consult with E3 to provide an unbiased review of PSE's methodology and present their findings and recommendations before the Commission and stakeholders. Our comments below reflect discussions during the ELCC workshop including E3's presentation and report as well as previous discussions and comments that we submitted before the Commission. We hope to discuss this further going forward.

¹ Unless otherwise noted, all references in these comments will be to the May 10, 2021, updated RFP.

II. COMMENTS

1. E3's Report highlights the inherent deficiencies existent in treatment of market availability in PSE's ELCC modeling methodology

Puget Sound Energy hired Energy and Environmental Economics ("E3") to review the ELCC methodology emanating from the Integrated Resource Plan which flowed through to the Request for Proposal filed on Apr. 1, 2021. In their review, E3 looked at the model input, outputs and assumptions which were key to inform PSE's ELCC values. Based on their review, E3 pointed out several methodological concerns or flaws that were apparent based on prudent utility practices in the region and across the United States. E3 found that PSE's treatment of the Mid-Columbia ("Mid-C") market's capacity undervalues both short- and long-duration storage resources because it underestimates the capacity available and being procured in the region. This underestimation inaccurately reflects a market that is short on energy during particular hours of the day when, in reality, recent analysis from the Northwest Power and Conservation Council ("NWPPCC") for their 2021 Northwest Power Plan shows that the region has enough capacity to ensure a reliable and adequate supply for the year 2025. In our previous comments and related technical memo, we highlighted a similar issue in which PSE's treatment of Mid-C's availability is artificially constraining the system and causing an energy shortfall, consequently preventing battery and pumped hydro storage facilities from being able to charge prior to peak load hours. This is causing the extremely low ELCC values coming out of PSE's RAM modeling which, in turn, would have negative consequences for the Company's resource acquisition, leading to neither a cost-effective nor a reliable supply for PSE's customers.

In our previous comments, we pointed out that the reduction in availability of market purchases in PSE's IRP may be artificially constraining the ability of storage resources (including battery and pumped hydro storage) to meet PSE's capacity needs. By revising assumptions to reduce the availability of market purchases across the board, the GENESYS model artificially imposes a significant market import limitation across the full 24-hour window on all days in January and February instead of only during "super-peak" and "heavy-load" hours.² As a result, PSE's modeling suggests there may be insufficient energy to charge storage resources even though PSE has not presented analysis to support this lack of available energy in low loss-of-load hours. In other words, the IRP's modeling assumption does not appear to reflect expected system conditions. Rather, it creates artificial conditions where storage resources do not have enough

² Final PSE IRP at 7-36 to 7-43.

energy to charge during off-peak hours, thereby reducing their capacity contribution and availability to dispatch when PSE's needs are the highest.

In their recommendations, E3 note that “[t]o assess the impact of changes in PSE’s approach to Mid-C on ELCC values, E3 recommends an additional GENESYS model run assuming regional capacity additions such that the region meets a 5% LOLP standard before recalculating ELCC.” E3 points out that “adding capacity to the region would increase the reliability of the Mid-C resource but would also reduce the need for reliability-driven capacity additions to PSE’s system.”

E3 in their review of PSE’s ELCC modeling methodology also point out that “[f]ailure to consider the availability of surplus energy in the regional market would result in over-procurement and higher costs for PSE ratepayers. It is reasonable for PSE to assume that some amount of energy would be available in the market due to the nature of the region’s hydroelectric resource base, which produces surplus energy during most years. PSE must therefore strike a careful balance between the potential reliability implications and cost savings associated with reliance on the regional market.”³

The concerning aspect of PSE’s treatment of Mid-C availability lies in the fact that PSE does not model the assumption that reliability-driven capacity additions are made to the broader Pacific Northwest region to achieve a reliability standard. Instead, it relies on outdated model (NPCC’s GENESYS) cases which portray that regional system’s reliability degrades below accepted resource adequacy thresholds as load continues to grow and plants retire. This is not a prudent observation because NPCC’s recent adequacy analysis, as well as active large-scale procurement of capacity resources,⁴ shows that the region is procuring enough capacity resources to stay below the Council’s 5% LOLP threshold even under an early coal retirement scenario.⁵

In their review of market access assumptions, E3 shows an illustrative example for which “increasing the Mid-C market availability by an additional 500 MW would *reduce outage durations substantially* by effectively segmenting the long duration outage shown above into multiple smaller-duration outages” (emphasis added). This suggests that shorter duration resources would have greater value if PSE were to fully account for their capabilities under an

³ Page 20, E3’s Review of Puget Sound Energy Effective Load Carrying Capability Methodology. October 2021.

⁴ PacifiCorp submits final shortlist as key part of company’s largest ever renewables solicitation.

<https://www.pacificorp.com/about/newsroom/news-releases/shortlist-submitted-as-part-of-largest-ever-renewables-solicitation.html>

PSE 2021 RFP: <https://www.pse.com/press-release/details/puget-sound-energy-seeks-bids-for-new-energy-resources>

⁵ RAAC-SAAC Steering Committee Meeting. July 9th, 2021.

<https://nwcouncil.app.box.com/s/k12r8hry1ofogeqxgiw8spgnv2n55lvm>

assumption of regional adequacy, which underscores the importance of the Company following E3's suggestion to re-run their ELCC calculations with the region in a resource adequate position.

We also note that there are some inconsistencies in E3's report related to their review of the impact of potential additions to the regional capacity by replacing 500 MW of perfect capacity with 500 MW of Mid-C capacity. A close review of Figures 2 and 3 reveal inconsistencies in the reported unserved energy in the plots and inconsistencies between the data in the plots and their textual interpretation. Without additional clarification, it is difficult to discern whether E3's analysis adequately investigates the potential sensitivity of PSE's modeling to Mid-C availability and reiterates the importance of PSE conducting additional analysis on this topic.

2. Additional Comments and Clarifications

While not addressed in the report, PSE's presentation on the calculation of energy storage ELCCs raised an additional question regarding their methodology. PSE claims that they are calculating a last-in ELCC for energy storage by adding energy storage after perfect capacity. However, PSE has not clarified whether the energy storage dispatch algorithm is able to see and access energy from the added perfect capacity resource for the purposes of storage charging. If energy storage resources *do not* have access to the energy delivered by the perfect capacity resource for charging, then the perfect capacity added has no effect on the storage ELCCs which causes further degradation to their value, which should be remedied. We request that PSE clarify this point with regard to the IRP modeling and ensure in the RFP modeling that the energy storage dispatch algorithm is able to rely upon other added resources, including any added perfect capacity, to charge.

In the report, E3 also points out that there are artificial limits placed on the State of Charge (SoC) of battery storage resources, contrary to their own consultant's report on standard utility practices. Folding in a Minimum SoC requirement has a rollover effect on battery storage ELCC values because of a limitation in their charge and discharge, causing inefficiencies for the PSE system. We agree with E3's recommendation that PSE should restate its ELCC values for battery storage in a manner more aligned with industry standards and align the presentation of ELCC values with the characterization of minimum, maximum, and nameplate MW values in its RFP documentation. We hope that PSE will change these artificial limits based on technical characteristics of the bids they receive for the RFP.

In addition to these two critical issues, there are several other deficiencies pointed out by E3 that warrant the Commission's attention. PSE's use of outdated weather and temperature datasets in

light of severe climate change is concerning because it relies on data going back to 1929 to inform its resource planning and procurement in 2021. This is leading to a situation in which the outage events in PSE's modeling are not evenly distributed across temperature input years -- 33% and 35% of simulated draws with loss-of-load events in January 2027 and January 2031, respectively, occur with load data prior to 1948. Further, 94% of simulated draws with loss-of-load events in January 2027 and January 2031 occur with load data prior to 1972, the midpoint of the temperature year data. Using outdated weather and temperature datasets in light of climate change runs the risk of skewing the Company's analysis and leading to imprudent procurement decisions. We recommend PSE run additional ELCC and loss-of-load studies based on datasets from 1980 onwards to ensure that the effects of climate change on load and temperatures are clearly analyzed and evaluated.

3. RFP Process

PSE has stated that they intend to make ELCC methodological updates in Phase 2 of the RFP, but that they will continue to rely on generic ELCC assumptions from the IRP to screen resources in Phase 1 of the RFP. This approach could lead to poor procurement decisions if resources are screened out in Phase 1 that would otherwise have contributed to stronger portfolio performance in Phase 2. PSE has asserted that the ELCC methodology does not need to be updated in Phase 1 because resource comparisons in Phase 1 are only made between technologically similar resources. However the validity of this assertion cannot be confirmed without additional transparency into how methodological updates affect storage ELCCs and whether the generic storage ELCCs from the IRP represent reasonable proxy values for a wide range of potential storage configurations with different round-trip losses, minimum and maximum storage levels, and other key parameters. In addition to the methodological updates that we recommend in these comments, we also recommend that PSE be required to demonstrate that screening decisions made in Phase 1 are robust to any implemented ELCC methodological updates in Phase 2. In the event that the ELCC methodological updates materially affect the performance of any storage resource that was screened out in Phase 1 such that it could reasonably compete with resources (of any technological type) that were taken to Phase 2, that storage resource should be advanced to Phase 2 for full evaluation.

III. CONCLUSION

Renewable Northwest, NW Energy Coalition and Rye Development thank PSE and the Commission for their consideration of this feedback. In conclusion, we recommend that:

- PSE conducts additional GENESYS model runs assuming a regionally adequate system and folds in that analysis to recalculate the ELCC values of short and long-duration storage resources.
- PSE consults with E3, to clarify and correct the errors mentioned in our comments relating to E3's review of PSE's treatment of Mid-C output.
- PSE demonstrates that screening decisions made in Phase 1 are robust to any implemented methodological updates in Phase 2 to avoid exclusion of cost-effective capacity resources in Phase 1 of the RFP.

We are optimistic that the changes and additional analysis that have been recommended by E3 and stakeholders will help PSE to identify a least-cost portfolio that also puts the Company on a path to achieving CETA's clean energy standards and the Company's own emission reduction goals. We look forward to continued engagement as stakeholders in the 2021 AS-RFP process to ensure that PSE's resource acquisitions are prudent and based on fair and accurate valuation of all technologies.

Sincerely,

/s/ Michael Rooney
Vice President
Rye Development



Katie Ware
Washington Policy Manager
Renewable Northwest

/s/ Sashwat Roy
Technology & Policy Analyst
Renewable Northwest

A handwritten signature in black ink, appearing to read "Fred Heutte". The signature is written in a cursive, slightly slanted style.

Fred Heutte
Senior Policy Associate
NW Energy Coalition