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Via E-filing

Mark L. Johnson
Executive Director Secretary
Washington Utilities and Transportation Commission
621 Woodland Square Loop S.E.
Lacey, WA 98504

Re: Puget Sound Energy Request for Proposals; 2021 All-Source RFP for Renewable and Peak Capacity Resources
Docket No. UE-210220

To Mr. Johnson,

Please see the enclosed comments from Plus Power, LLC, regarding Docket No. UE-210220. Plus Power is a US based developer of stand-alone energy storage projects (energy storage **not** specifically co-located with renewable generation sources). Energy storage enables a more renewable and flexible transmission grid by providing capacity, energy, and ancillary services at key intersections of the grid, and by balancing the increasing amounts of renewable generation available on the wholesale energy markets with firm capacity.

Plus Power is pleased to engage with Puget Sound Energy's efforts to meet the peak capacity needs of the Pacific Northwest region. Please feel free to reach out to me with any questions.

Sincerely,

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Molly Emerson
Plus Power, LLC

BEFORE THE WASHINGTON UTILITIES

AND TRANSPORTATION COMMISSION

In the Matter of PUGET SOUND ENERGY COMPANY, 2021 All-Source Request for Proposals for Renewable and Peak Capacity Resources	**DOCKET UE-210220** COMMENTS OF PLUS POWER, LLC

I. INTRODUCTION:

Pursuant to WAC 480-107, Plus Power, LLC ("Plus Power" or "Plus") submits these comments to the Washington Utilities and Transportation Commission (the "Commission") regarding the draft of the 2021 All-Source RFP for Renewable and Peak Capacity Resources (the "Draft RFP") filed by Puget Sound Energy ("PSE") on April 1, 2021.

Plus Power is an independent developer of utility-scale stand-alone energy storage projects with sites currently under development across the Pacific Northwest and more broadly in the Western Electricity Coordinating Council ("WECC") territory.

After reviewing the Draft RFP that was made public this April, Plus Power noted the range of Effective Load Carrying Capability ("ELCC") values assigned to various resources (Section 1, Resource Need). ELCC is a key evaluation metric in the economic and reliability modeling of resource portfolios. The ELCC of a specific resource is known to be highly variable based on the assumed location of generator, anticipated load patterns and transmission constraint assumptions. As such, Plus Power encourages the Commission and PSE to closely evaluate and apply an appropriate ELCC for each specific resource bidding into the future All-Source RFP.

II. COMMENTS:

In "Section 1: Resource Need – Evaluating the capacity contribution of resources" of the Draft RFP, PSE states that their internal analysis expresses a resource's contribution to capacity in terms of it's effective load carrying capability ("ELCC"). ELCC is commonly and broadly defined as a resource's contribution to meeting a utility's coincident peak capacity demand. PSE's Draft RFP recognizes that ELCC values are "highly dependent on the load characteristics and mix of resources owed by a utility, and that they are unique to each utility" and that "an individual project's ELCC will vary based on a variety of factors, such as exact location, generation shape, characteristics of the resource (ability to dispatch, duration of output, etc.) and the availability of firm delivery to PSE's load center." Plus Power agrees and applauds PSE's statements and intention to evaluate how each proposed resource individually aligns with PSE's capacity need.

However, Plus Power calls into question the summary results given in PSE's example calculations of ELCC values for Batteries (2-hr and 4-hr), given in "Figure 4. Generic ELCC Values by Resource Type and Location." Plus Power posits these values are overly conservative and implores the Commission and

PSE to levy additional scrutiny on the ELCC metric during the RFP evaluation process. It is understood that PSE's unique seasonal (with a winter peak expected to span from November through March) and double-daily peak load profile will result in different resource-specific ELCCs than other balancing authorities dealing with large influxes of renewable intermittent power (i.e. the Southwest).

i. ELCC of Batteries (Energy Storage)

In contrast to the general agreement with PSE's ELCCs presented for the other resources, Plus Power believes that the ELCCs assigned for "Li-ion – 2-hour" (12.4% ELCC) and "Li-ion – 4-hour" (24.8% ELCC) are overly conservative if it was assumed that the resources are "stand-alone" and charging and discharging schedules will not be constrained by a co-located renewable generation resource. In comparison to the 2020 assumptions utilized by PSE, these values are lower by 6.6% and 13.2%, respectively. It would be prudent to understand what specifically changed between the cases utilized in 2020 and amended in 2021 that resulted in this dramatic decrease in the assessed ELCC of energy storage.

In addition, both the 2020 and current assumptions are drastically different than the ELCC values, or "Peak Capacity Credit Based on Expected Unserved Energy (EUE) @5% LOLP", that were calculated in PSE's 2017 IRP, which assigned a "Li-ion – 4-hour" an ELCC of 88%[1]. Plus Power is curious as to the main drivers that must have changed, resulting in the change in assessed value from 2017 to 2021.

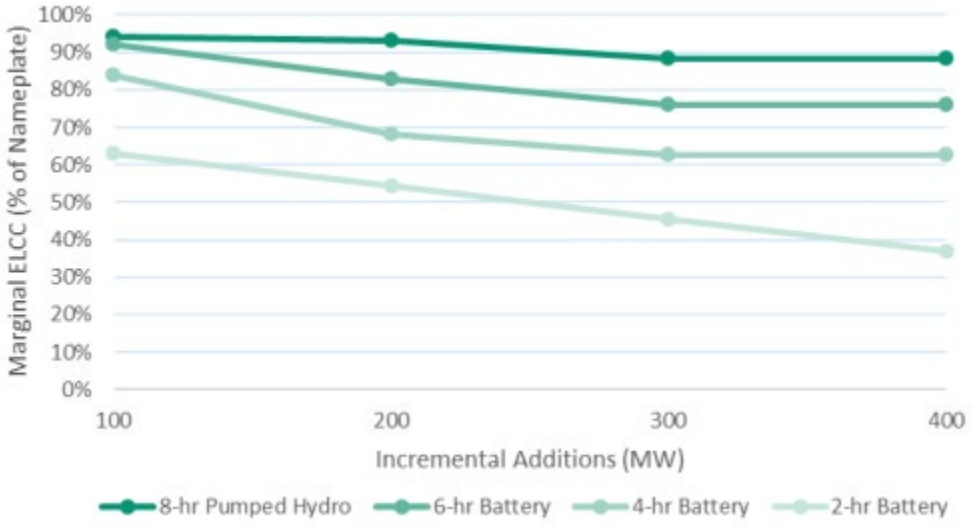
Figure 6-4: ELCC Estimates

Resource	Nameplate (MW)	Peak Capacity Credit Based on 5% LOLP
Generic gas-fired generation	239 MW	100%
Existing Wind	823	11%
Skookumchuck (DNV GL data[4])	131	40%
Generic Montana Wind (DNV-GL data)	100	49%
Generic Washington Wind (DNV-GL data)	100	16%
Generic Offshore Washington Wind (DNV-GL data)	100	51%
Market Reliance	1,580	99%
Generic Washington Solar	50	0%

Resource	Nameplate (MW)	Peak Capacity Credit Based on EUE at 5% LOLP [1]
Batteries		
Lithium-ion, 2hr, 25 MW max per hour	25	60%
Lithium-ion, 4hr, 25 MW max per hour	25	88%
Flow Battery, 4hr, 25 MW max per hour	25	76%
Demand Response		
3hr duration, called every other 6 hours[2]	100	77%

[1]PSE 2017 IRP. Chapter 6, Page 9. https://pse-irp.participate.online/past-IRPs/2017

It was also noticed that PSE's current assessment of the ELCC value of energy storage also stands in stark contrast to PSE's neighboring utility, Portland General Electric ("PGE"), also a winter, seasonal peaking system. As noted in PGE's 2019 IRP Update[2] issued January 29, 2021 on Page 49, Figure 17 "Marginal ELCC for Storage Resources" presents a significantly different picture of storage ELCC, whereby PGE assigns ELCC values >60% for incremental additions of energy storage on the system, as seen in the figure below:



Although Plus Power recognizes that the ELCC of a particular resource is unique to each utility and it would be impossible to directly compare PGE and PSE's results, it is curious how two utilities with similar seasonal load profiles would end up assessing standalone energy storage resources so differently. The commenter would appreciate greater transparency into the main drivers and assumptions for PSE's 24.8% ELCC valuation of 4hr storage, and to better understand where the model diverges from PGE's result of 60.0 - 85.0% ELCC for the same 4hr duration asset class.

ii. Understanding the full capability and value of stand-alone storage

Stand-alone batteries are charged directly from the transmission grid and are **not** co-located with renewable generators. Therefore, they can charge and discharge fully unconstrained. Their charging schedules are not limited by the same restrictions levied against storage co-located with solar or wind generators, tied to the investment tax credit (ITC) for solar and the production tax credit (PTC) for wind. Dispatch can be driven directly from utility needs and scheduled to optimize utility benefits from the resource, including meeting peak demand hours.

Constraints on the charging and discharging limitations of a stand-alone energy storage resource should be considered purely from a system perspective, and not based on limitations of charging and discharging to meet minimum ITC / PTC thresholds. These

[2]https://assets.ctfassets.net/416ywc1laqmd/1PO8IYJsHee3RCPYsjbuaL/b80c9d6277e678a845451eb89f4ade2e/2019-IRP-update.pdf

constraints will be chiefly determined by the location of the point of interconnection on PSE's transmission system and should not result in a generic de-rate of ELCC across the board, particularly when located at a preferred substation noted in PSE's Exhibit I of the aforementioned draft RFP.

With this in mind, Plus Power believes PSE demonstrates a potential lack of understanding of the full capability and value stand-alone storage provides to Balancing Authority such as PSE as shown in the use cases on Section 2, Page 15, of the draft RFP. Two "Base Configuration" use cases are contemplated: Full Cycle, which consists of a complete charge and discharge, and Ancillary Cycles, which consists of a less than 100% discharge. The issue herein lies in the fact that PSE notes under Ancillary Cycles "….do not count toward annual or daily limits.". In Plus Power's experience, this is incorrect, and in direct conflict with warranties provided by OEM battery manufacturers. A stand-alone storage project's life or warranty is in fact measured by the total MWh discharged or "cycled" through the storage system, and most often considers what the "total throughput" or gross "mileage" through the battery is on a cumulative basis. Hence, the energy storage asset actually unlikely to be fully charged or discharged completely on a regular basis but rather utilized incrementally as needed by the system for services beyond energy like ancillary services. Under scenarios where there is not a full cycle incurred, mileage is still accruing on the storage system and should be assessed as such.

iii. Storage's ability to address PNW Winter Peaking Load

There have been several independent studies assessing the ELCC of stand-alone energy storage systems on regional systems that have come up with a higher ELCC for 4-hr batteries than the 24.8% cited in PSE's Draft RFP[3]. A key study performed by the National Renewable Energy Laboratory (NREL) in June of 2019 evaluated the potential market for stationary storage for the provision of peak capacity across eighteen several discrete regional markets, including the winter-peaking system of the Pacific Northwest. The study calculated a "peak demand reduction credit (PDRC)" for storage by running simulations to identify how much 4-hr storage capacity could be added to the regional transmission grid before additions would "no longer reduce the net peak demand of the system by the equivalent power capacity of the storage plant"[4]. Storage added to the regional system up to this threshold value would be considered to have a PDRC of 100%, and everything above it de-rated accordingly. The study found that the threshold value for the PNW was over 3,000MW of regional storage capacity[5].

The results support a large potential for 4-hour battery storage to address the PNW's winter peaks. If up to 3GW of 4-hr stand-alone energy storage can be added to the PNW's regional grid with an effective 100% capacity credit, this calls into question the assignment of 24.8% ELCC for these same assumed batteries.

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[3] Schlag, Nick. *Moving beyond 'rules of thumb' for smart, cost effective storage deployment.* https://www.utilitydive.com/news/moving-beyond-rules-of-thumb-for-smart-cost-effective-storage-deployment/553674/

[4] Denholm, Paul, Jacob Nunemaker, Pieter Gagnon, and Wesley Cole. 2019. *The Potential for Battery Energy Storage to Provide Peaking Capacity in the United States*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-74184.

[5] Denholm, Paul, et. al.

III. CONCLUSION:

In conclusion, Plus Power appreciates the opportunity to be a part of the public comment process made possible by the Washington Utilities and Transportation Commission. Plus urges the Commission and PSE to closely examine the ELCC metric(s) utilized in the portfolio modeling and resource assessment in the upcoming All-Source RFP, to ensure that the benefits of all, especially new, technologies such as stand-alone energy storage are accurately understood and valued properly.