Docket UE-190698

Submitted by Swan Lake North Hydro, LLC, PUD #1 of Klickitat County, and Renewable Hydrogen Alliance

December 20, 2019

In the Matter of Amending, Adopting, and Repealing WAC 480-100-238, Relating to Integrated Resource Planning

Swan Lake North Hydro, LLC, PUD #1 of Klickitat County, and Renewable Hydrogen Alliance, (the "Commenting Parties") submit these comments to the Utilities and Transportation Commission (the "Commission") responding to the Notice of Opportunity to File Written Comments issued November 7, 2019 in the above-referenced docket. The Commenting Parties request the Commission include in the "robust discussion" anticipated in this docket the long-term need for new renewable capacity. The Commission should establish rules that create regulatory incentives and metrics for replacing retiring thermal capacity with capacity that can dispatch and generate electricity utilizing renewable resources, i.e. renewable capacity before a capacity shortage is imminent. This will inevitably include the need to identify, plan for, analyze and value new renewable capacity, as well as how to best determine the timing of need considering unique acquisition lead times. These comments provide an overview of current storage opportunities and regulatory hurdles relevant to the consideration of renewable capacity.

Statutory Requirement to Consider Storage and Renewable Capacity

The 2019 Washington Legislature enacted RCW 19.405 ("CETA")and changes to RCW 19.280, which both directly and indirectly require addressing resource adequacy, reliability, integration of renewables, and addressing of overgeneration events and metrics for this transition to clean energy. As the region plans to retire more and more thermal resources, regulatory incentives (and disincentives) may ultimately determine whether enough renewable capacity is available.

In light of, and coincident with this required retirement of thermal capacity will be the deployment and use of variable renewable resources to meet the clean energy goals of CETA. In addition, CETA requires utilities to consider storage, both battery and pumped, in their resource planning. Storage, though not specifically called out as capacity, is the mechanism whereby variable renewable energy is converted to dispatchable renewable capacity. Inherent in this conversion using conventional storage is the use of and loss of electricity in the cycling of energy through the storage process of pumping, charging or otherwise converting the electricity to capacity and thus dispatchability.

In addition, storage operations and technologies, and other methods of providing clean capacity, currently on the margins, on the horizon, or as yet unknown and/or developed by market forces should be expected to emerge over the ten (10) year planning horizon of the typical IRP and certainly over the twenty five (25) year horizon of CETA.

The majority of current and future renewable resources, typically wind and solar, will generate variable energy. While we have existing and developing regulatory and market mechanisms, such as Renewable Energy Credits ("RECs"), the developing Energy Imbalance Market ("EIM") and the Extended Day Ahead Market ("EDAM") to address the variability of renewable ***energy***, we do not have similar mechanisms for planning for, providing value to, developing, or providing compliance mechanisms to credit investments in renewable ***capacity*** and associated dispatchable energy.

In Washington State, we have no renewable *capacity* credit and no organized capacity market, yet the need for additional capacity has been identified andwhich must come from renewable and non-emitting resources.[1] That need is at least implicit in CETA, which requires retirement of thermal capacity and in the amendments to RCW 19.280 in enacting the Clean Energy Action Plan ("CEAP") and Clean Energy Implementation Plan ("CEIP").

To plan for and maintain reliability,[2] resource adequacy,[3] integration, flexibility, and operational integrity, the Commenting Parties submit that the Integrated Resource Planning rules developed in this docket must recognize and address this coming capacity deficit.

Conventional Storage and Lack of Market and Regulatory Valuations and Metrics

Conventional storage can be thought of as a process or facility that is "charged" through the input of energy, then "discharged" when that stored energy is needed. Examples include pumped storage and battery storage. That charging and discharging cycling comes at a net loss of energy in the conversion to capacity. The current regulatory regime does not account for these losses, but it should, and in a manner that provides value to that conversion.

For example, in a hypothetical pumped storage project with an 80% efficiency cycling rate, 100 megawatt-hours of variable renewable energy is used to pump a certain amount of water uphill, making that water available and dispatchable for generating renewable electricity. With 80% efficiency, 80 MWhs are available as dispatchable energy in this example. The 20% loss of

---

1 *See, e.g.*, Capacity Needs in the Pacific Northwest and California, ENERGY+ENVIRONMENTAL ECONOMICS (Dec. 2019) (Attachment A to email); Western Flexibility Assessment, ENERGY STRATEGIES (Dec. 11, 2019) Attachment B to email).

2 RCW 19.280, 19.405.

3 RCW 19.405; Draft WAC 480-100-610, WAC 480-100-615, 480-100-620.

energy is a cost (and benefit) of converting variable energy to available dispatchable energy. The recovery of that 20 MWh requires adding 25% back[4], which is the equivalent of adding 25% to the cost of that MWh when competing in the market for that energy at that time. Looked at another way, 1.25 MWhs generated by a variable renewable resource would yield 1 MWh of dispatchable renewable energy. These same assumptions and calculations for cycling efficiency would be relevant for battery storage.

The Commission should take action now, before a capacity shortage is imminent, because storage presents unique regulatory modeling concerns that warrant careful consideration. For example, unlike traditional generation, storage can exist either behind the meter or in front of it, and behind the utility or in front of it, which may make it difficult to establish a value for renewable capacity, especially long term. Thoughtful consideration of how CETA's cost cap calculations will be needed with respect to storage, and how the losses described above are ultimately valued. For example, storage facilities may be taking very low cost, or even zero cost, renewable oversupply and providing a much higher value clean electricity to compete with thermal electricity at peak times.

Non-Conventional Storage

Another method of storage, i.e. energy converted to renewable capacity that should enter into the "robust discussion" is the storing of fuel for later use in generating renewable electricity from existing thermal generators. Carbon neutral fuels such as renewable natural gas and renewable hydrogen can be produced and stored in underground storage facilities, such as Jackson Prairie, then pulled for later use in thermal generators for peaking or intermediate generation needs.

Renewable hydrogen can also be produced in one location, then shipped by truck to another location and used in a fuel cell *effectively a battery* to generate electricity remotely from where the electric energy was *stored* in the hydrogen.

Rather than treat the conversion of variable renewable energy to renewable capacity as a loss of energy (thus a loss of value), we are requesting that the "robust dialogue" in this docket consider how these various storage opportunities and renewable capacity should be valued as they bring value to the system in maintaining reliability and resource adequacy, and allow for flexibility in operations.

Additionally, the discussion of these types of energy conversions from variable to dispatchable should also include the valuation of RECs and carbon credits that originate at an original source of electricity, but where the ultimate energy delivered is less than the amount generated, because

---

4 20MWh / 80MWh = 25%.

the loss has been converted from a variable MWh to a dispatchable MWh a conversion that is critical to the reliable operation of the system and maintaining resource adequacy.

Dated this 20th Day of December,

Respectfully submitted,

/s/

Dave Warren
The Warren Group, LLC
dave@warren-group.net
360-951-5551