BEFORE THE UTILITIES AND TRANPORTATION COMMISSION OF THE STATE OF WASHINGTON

U-161024 and UE-151069

In the Matter of UTILITIES AND TRASPORTATION COMMISSION OF WASHINGTON, Notice of Opportunity to Comment on Draft Report and Policy Statement on Treatment of Energy Storage Technologies in Integrated Resource Planning and Resource Acquisition.	NORTHWEST HYDROELECTRIC ASSOCIATION COMMENTS

The Northwest Hydropower Association (NWHA) appreciates the opportunity to provide comments on U-161024 and UE-151069, Notice of Opportunity to Comment on Draft Report and Policy Statement on Treatment of Energy Storage Technologies in Integrated Resource Planning and Resource Acquisition.

NWHA is a non-profit trade association that has represented and advocated on behalf of the Northwest hydroelectric industry since 1981. NWHA has 125 member companies from all segments of the industry, including utilities and generators in 6 states and Western Canada. The members of NWHA provide approximately 21,450 MW of hydroelectric capacity. NWHA is dedicated to the promotion of the Northwest region's waterpower as a clean and efficient energy source while protecting the fisheries and environmental qualities that characterize the region.

NWHA is very supportive of and encouraged by the Washington State Utilities and Transportation Commission's (WUTC) draft report and policy statement on energy storage and exploration of energy storage as a vehicle to overcoming the regulatory, operational, and market challenges of broader adoption of renewable energy to achieve our region's clean energy goals efficiently and cost-effectively. Advances in Pumped Storage hydropower (PSH) technology have expanded the benefits provided to the grid from modern PSH projects. The proven technology of PSH can help unlock even greater value from existing and future renewables. Using advanced closed-loop sitting techniques today's modern advanced PSH provides energy storage services in an environmentally responsible manner.

NWHA encourages the WUTC to view the Pacific Northwest grid from a portfolio perspective to the extent possible. Similar to the integration of the Federal Columbia River Power System (FCRPS) and the DC interties with California, when viewed through the historical regional lens perspective, grid scale closed loop pumped storage can mitigate the massive operational challenges with significant penetrations of variable renewable resources both in the Pacific Northwest and California.

The Department of Energy (DOE) recently released a comprehensive report on the value and potential for hydropower including PSH titled *Hydropower Vision Report*. The report can be found on the DOE website at https://www.energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source. In Chapter 1 of the report the DOE finds that "*Hydropower is complementary to increased integration of variable generation resources, such as wind and solar, into the power system, since hydro- power can reduce curtailment of excess generation by providing load management and energy storage*." This attribute of hydro-power should be a strongly encouraged by the WUTC in the utilities' Integrated Planning Processes in the region that is facing a significant capacity deficit in the not too distant future

In 2014, Argonne National Lab performed a detailed study to study PSH's ability to integrate variable renewable resources into the grid. Their findings a have been published in a report titled *Pumped Storage Hydropower:" Benefits for Grid Reliability and Integration of Variable Renewable Energy*. The report can be found at the following link on their website https://anl.app.box.com/s/tphlklclz9xu5lv79n2gzv2cfauuvmwv. Both the Argonne National Lab report and the DOE Hydro Vision report provide a detailed look at how PSH can be an important part of integrating increasing amounts of variable resources into the grid. Several excellent sites have already been identified in the Pacific Northwest region for development of "closed-loop" projects. Many of these locations are also strategically located within the western bulk transmission system (i.e. AC-DC Interties) that are suitable for pumped storage. PSH has many benefits including providing critical grid reliability and balancing services and carbon-free flexible capacity in the quantities necessitated by legally mandated renewable portfolio resources as well as providing significant economic development within the region.

While the WUTC staff has indicated a desire for this process to be technologically neutral, we are concerned that at this juncture the discussion has become essentially a discussion of battery technology. NWHA urges the WUTC to take steps to assure that this important storage discussion does not prematurely focus on battery technology only. As a follow-up to the WUTC Energy Storage Modeling Workshop held on August 25, 2015, and comments on the workshop by NWHA and NHA in September 26, 2015, NWHA and some of its member companies would be happy to participate in a future workshop to share expertise and experience about PSH generally, as well as about specific proposed projects in the region, providing information about this mature technology and its value to the grid.

Several of the developers and members of NWHA have undertaken and invested in significant modeling efforts that show substantial value provided by PSH project in the region providing primary frequency and voltage response, energy arbitrage (negatively priced solar and must run wind), regulation up/down, spinning reserve and non-spinning reserve, avoided renewable generation curtailment, and fuel, O&M and start cost savings for conventional facilities. These developers would be willing to share these results in a workshop or meeting with staff. While the modeling is important, the still critical barrier remains on how to contract for the services and these projects provide in a bi-lateral, highly fragment grid. The Northwest Power and Conservation Council in their 7th Power Plan Action Plan specifically call out this barrier and have started a process initiated by first draft *White Paper on the Value of the Energy Storage to the Future Power System*. In collaborating broadly, NWHA encourages WUTC to participate in this process given the regional convening authority of the NWPCC as they look to better understand fully the value of PSH to the region and the Western grid.

With 21st century technology, environmentally sound closed loop sitting and the economic value provided by PSH for our region, NWHA encourages the WUTC to develop policy that includes the many benefits of energy storage from modern P\SH. NWHA's Annual Conference was held on February 22-24, 2017 in Portland, and included a Hydropower Pumped Storage Workshop on Friday, February 24. The workshop provided an overview of Federal and Regional policies form PSH as well as an overview of some of the many projects sites located in our Region. The conference and the workshop were extremely well attended. Presentations from this workshop can be found at: http://www.nwhydro.org/events-committees/annual-conference/.

NWHA appreciates the opportunity to provide comments. Please don't hesitate to contact me at (503) 545-9420 or jan@nwhydro.org with any questions.

/s/Jan Lee, Executive Director, NWHA

/s/ Scott Flake, Chair, Pumped Storage Committee, NWHA