BEFORE THE WASHINGTON STATE UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Washington Utilities and Transportation Commission's Investigation into Energy Storage Technologies	DOCKETS UE-151069 AND U-161024 DRAFT REPORT AND POLICY STATEMENT ON TREATMENT OF ENERGY STORAGE TECHNOLOGIES IN INTEGRATED RESOURCE PLANNING AND RESOURCE ACQUISITION

COMMENTS OF THE GRID-SCALE ENERGY DEVELOPERS OF THE PACIFIC NORTHWEST

Swan Lake North Holdings LLC and National Grid USA (collectively, the "Grid-Scale Energy Developers of the Pacific Northwest") appreciate the opportunity to provide comments on Staff's Draft Report and Policy Statement on Treatment of Energy Storage Technologies in Integrated Resource Planning and Resource Acquisition (the "Draft Policy").

Pumped storage hydropower ("PSH") is the most mature and well-represented storage technology around the world. Because it can be deployed at utility-scale cost-effectively, PSH is uniquely positioned to leverage existing regional resources to address current and foreseeable regional challenges, including grid reliability and the integration of additional renewable energy resources. We are proud to be involved with the development of the two most promising pumped storage projects in the Pacific Northwest, the Swan Lake North PSH Project in southern Oregon, and the JD Pool PSH Project in southern Washington. Both projects will utilize environmentally-friendly "closed-loop" technology, are located near high voltage transmission corridors, and will each be capable of providing unmatched flexibility as a resource, capable of serving multiple roles and providing stacked benefits on a utility and/or regional basis.

In addition to our comments on the Draft Policy below, we are members of the Northwest Hydropower Association (NWHA), and support the comments filed by NWHA in connection with the Draft Policy.

A. *Changing Planning Paradigms*

To begin, we enthusiastically agree with the statement of the Draft Policy that energy storage is a key enabling technology for utilities to comply with Washington State energy policies, including resource diversification and decarbonization. As the Draft Policy notes, energy storage can perform the functions of energy, capacity, and transmission. Indeed, energy storage is a

remarkably flexible resource that can provide multiple services, including frequency response, contingency reserves, peaking capacity, regulation, load following, energy, renewable integration, arbitrage, voltage/reactive power support, outage mitigation, transmission congestion relief, and distribution and transmission upgrade deferral. Energy storage – particularly pumped storage – has a role to play in managing regional energy issues, including acting as a temporary load to mitigate energy oversupply due to California solar and seasonal high water conditions.

However, as noted in the Draft Policy, when energy storage is narrowly valued through the lens of a single function, the full value of a storage system's services will not be captured, and energy storage may not be recognized as a least cost resource. Therefore, an important first step in harnessing the potential of energy storage is to recognize and account for the multiple benefits and value of energy storage in its intended application.

Accordingly, we encourage Staff's efforts to facilitate a process that overcomes historical barriers by developing a framework that fairly reflects the "all-in" value of storage by accounting for services across the traditional silos of energy, transmission, and distribution. A fair evaluation of the benefits generated by the multiple services that storage provides will lead to better decision making, and identification of situations where energy storage is a least cost resource. When planning leads to better identification of least-cost resources, consumers benefit.

B. *Modeling Guidelines*

With regard to the Draft Policy's discussion of modeling guidelines, we believe that in the absence of an organized market that provides clear price signals, a transition to a more granular evaluation process is inevitable. In the absence of a better proposal, sub-hourly Integrated Resource Planning ("IRP") modeling software seems the best choice to better capture the flexibility benefits that energy storage can create for a utility's system. In addition, recognition of distribution – and particularly in the case of pumped storage – transmission benefits will also be important to fairly reflect the cost-effectiveness of energy storage resources.

We support the Draft Policy's recommendation that where modeling tools are publicly available, utilities should share their modeling assumptions and results with their respective IRP advisory groups, allow interested parties to understand the utility's findings, develop alternate scenario recommendations if needed, and request alternative model runs.

Because grid-scale storage resources can provide substantial regional benefits, it is necessary to consider these benefits in order to properly determine the value of the combined services that grid-scale storage can provide. A current challenge to making this assessment is that utility IRPs focus on the specific needs of each utility. Currently, the closest example to a regional IRP is the work of the Northwest Power and Conservation Council ("NWPCC") in connection with its 7th and (future) 8th Power Plan. Unfortunately, NWPCC doesn't have the sub-hourly modeling tools to fully-evaluate grid-scale storage. Because of this, in connection with our

development of pumped storage resources in the Pacific Northwest, we have made investments in significant (and ongoing) modeling efforts that show substantial value in the hundreds of millions of dollars per year of a single pumped storage project by providing generation capacity value, energy arbitrage (negatively priced solar and must run wind), regulation up/down, spinning reserve and non-spinning reserve, in addition to avoided curtailment, fuel/O&M savings, and start cost savings. If this is of interest, we would be willing to share these results with Staff or others in a workshop.

We agree with the Draft Policy that it is important to analyze a range of storage options and support development of a process to identify and analyze a reasonable, representative range of storage technologies and chemistries. Energy storage can take many forms. Batteries are but one of several different energy storage technologies. Each storage technology offers specific advantages that should be recognized. For example, as a large utility scale resource interconnecting at transmission voltage, pumped storage is capable of providing portfolio-wide benefits that can optimize a utility's existing system or even the regional bulk power system. In just one example of a portfolio-wide benefit of pumped storage, the huge synchronous generators used by pumped storage can provide the same kind of needed spinning inertia traditionally provided by thermal, must-run resources and support overall grid stability and reliability.

C. *Regulatory Treatment*

We agree with the Draft Policy that energy storage resources should be competitively procured and we commend the Draft Policy for encouraging utilities to do so. We also support the statement that utility request for proposal (RFP) documents should be technology neutral, clearly identify the suite of services that the utility expects the resource to provide, and the values of those services. To the extent that utilities can provide bidders with additional cost data, bidders will be able to provide more responsive and cost-competitive bids.

An important related issue, which was not specifically addressed in the Draft Policy, is the current challenge of contracting with a utility on a bilateral basis for an energy storage resource that provides, regional benefits that may not be realized through standard capacity contracts or power purchase agreements. Stated differently, it is extremely challenging to develop and finance a resource that produces multiple value streams on the basis of a bilateral contract that only compensates the resource for a subset of the possible benefits of the resources. This barrier has been specifically acknowledged in the NWPCC's 7th Power Plan Action Plan. In our view, further discussion regarding this gap would be beneficial to all stakeholders.

We also support the Draft Policy's acknowledgment that there are certain energy storage resource benefits that may not be easily quantifiable, including market transformation, resiliency, and reliability benefits, and its willingness to consider and give weight to these considerations, provided that the resource is otherwise reasonably competitive. We applaud

the Draft Policy for encouraging utilities to look at energy storage in a cohesive and comprehensive manner during procurement.

D. *Conclusion*

We support the overall direction of the Draft Policy and appreciate the opportunity to provide these comments. Development of a final policy on energy storage is an important early step towards realizing the potential of energy storage. Pumped storage can provide unmatched flexibility as a resource, serving multiple roles and providing stacked benefits on a portfolio-wide basis. The flexibility and value of this resource is underappreciated and likely to increase in value in the foreseeable future, given resource constraints and competing policy challenges. When the combined benefits of pumped storage are fairly evaluated, we believe this can be a least cost resource. If you have any further questions regarding these comments, please contact Nate Sandvig at (503) 602-0998 or Erik Steimle at (617) 701-3288.

Dated this 31st day of March, 2017.

Respectfully submitted,

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