BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

LC 66

In the Matter of PORTLAND GENERAL ELECTRIC, 2017 Integrated Resource Plan.	NATIONAL GRID USA's COMMENTS

National Grid USA's Comments on
Staff Report for the December 5, 2017 Public Meeting

In accordance with the Administrative Law Judge's ruling amending the procedural schedule, dated November 14, 2017, National Grid USA ("National Grid") submits these comments to the Oregon Public Utilities Commission ("the Commission" or "Oregon PUC") on the November 21, 2017 Staff Report acknowledging the PacifiCorp, dba Pacific Power ("PacifiCorp") 2017 Integrated Resource Plan ("IRP").

I. INTRODUCTION

National Grid's interests in this proceeding concern the role of pumped storage hydro in PacifiCorp's IRP process and the ability of pumped storage hydro to provide energy, capacity, and related services, while promoting reliability, integrating renewable resources, and enabling deeper greenhouse gas ("GHG") reductions. National Grid is proud to be involved with the development of the two most promising pumped storage projects in the Pacific Northwest, the 400 MW Swan Lake North Project in southern Oregon ("Swan Lake"), and the 1200 MW Goldendale Energy Storage Project in southern Washington ("Goldendale"), which was previously named JD Pool.[1] National Grid is jointly developing these projects with Rye Development, LLC. Both projects will utilize environmentally-friendly "closed-loop" technology, are located near high voltage transmission corridors, and will each be able to provide unmatched flexibility as a resource, serving multiple roles, and providing stacked energy, capacity, and other reliability and economic benefits on a utility and/or regional basis.

National Grid provides these comments in advance of the Commission's upcoming Public Meeting where the Commission will consider Staff's recommendations on the PacifiCorp IRP, which issued on November 21, 2017 ("Staff Report"). National Grid respectfully requests that the Commission direct PacifiCorp to undertake a more rigorous and thorough study of the value and benefits of pumped storage hydro. PacifiCorp should report the results of the study in future IRP updates and should be updated in subsequent IRPs. PacifiCorp should also be directed to consider the role and value of pumped storage hydro in any upcoming Flexible Reserve

[1] The Goldendale project was previously named the JD Pool project. The Swan Lake and Goldendale projects are explained in greater detail in National Grid's June 23, 2017 comments in this proceeding.

Studies. These studies would build on PacifiCorp's prior storage reports, but should include analysis on a sub-hourly basis of the benefits and cost-savings that pumped storage provides both as a generation, transmission asset class and the "portfolio effect" value added to existing grid infrastructure. National Grid further requests that the Commission direct PacifiCorp to work with National Grid and other interested stakeholders to ensure that pumped storage is properly and accurately modeled in these studies.

II. COMMENTS

In prior comments in this proceeding, National Grid demonstrated that pumped storage hydro is a proven, cost-effective resource that would support PacifiCorp's integration of additional renewable generation while promoting reliability, reducing GHGs, and supporting greater regional integration.[2] PacifiCorp responded that it had completed a Bulk Energy Storage study, which included pumped hyrdo, as part of its 2017 IRP and would continue to study pumped hydro in future IRPs.[3] PacifiCorp disagreed, however, that the IRP was the appropriate place to undertake a regional pumped storage study.

While National Grid appreciates PacifiCorp's interest in continuing to study pumped storage hydro in future IRPs, the studies that PacifiCorp has undertaken to date are insufficient. The Bulk Energy Storage study contained information regarding three potential pumped storage projects, including the two pumped storage projects being developed by National Grid, the Swan Lake Project, and the JD Pool project. While National Grid believes the information in the Bulk Energy Storage Study is helpful, it is limited to a general description of the projects and project costs. It does not include a sufficiently rigorous analysis of the value or benefits offered by these particular projects or pumped storage hydro more generally.[4] Nonetheless, PacifiCorp concedes that storage, including pumped hydro, provides stacked benefits, that certain benefit categories are difficult to value with existing IRP modeling tools, and that improving storage analytics should be a priority.[5]

National Grid is confident that further analysis will show that addition of pumped hydro in the Pacific Northwest would provide significant benefits to Oregon, as well as Washington and California, and would facilitate GHG reduction efforts, integration of renewable energy, and overall reliability, both locally and in the broader region. Planning for one or more large pumped storage projects to serve multiple utilities across the region would reduce risk and defray costs for each participating utilities ratepayers. In addition, by increasing utilization of renewable resources, pumped storage resources can help avoid overbuilding renewable generation and transmission infrastructure.

Nonetheless, the Staff Report does not direct PacifiCorp to undertake a pumped hydro study nor does it include any other recommendations specific to pumped storage hydro. It should be noted, however, that requiring further study of pumped hydro resources would be consistent with a number of staff's recommendations and, accordingly, would not constitute a

[2] Docket No. LC 67, National Grid Comments, filed June 23, 2017.

[3] Docket No. LC 67, PacifiCorp Reply Comments, filed July 28, 2017, p. 58.

[4] IRP Vol. II, Appendix P.

[5] IRP Vol. I, at 256.

significant deviation from the Staff Report. For example, addition of pumped hydro would help diversify PacifiCorp's resource mix which is consistent with staff's recommendation that PacifiCorp "investigate a more diverse renewable portfolio…."[6] In addition, as National Grid explained in prior comments, pumped storage hydro provides valuable flexible capacity and reserves, among many other benefits. While staff recommends that PacifiCorp model natural gas and storage for meeting its Flexible Resource Needs in the next IRP update, the Commission should direct PacifiCorp to specifically include pumped storage hydro on the grounds that it is both cleaner than natural gas and more cost-effective than battery storage.[7]

Due to significant economies of scale offered by pumped storage projects and the relatively high cost of battery technologies, pump storage is significantly less expensive per megawatt of storage capacity as compared to batteries. While batteries cost millions of dollars per MW of storage capacity, the Swan Lake pump storage project is projected to cost less than $200,000 per MW of storage. In addition, battery storage will only provide durations of up to 4 hours while pump storage can discharge for durations of 10 hours or longer.

To ensure that future IRPs adequately consider pumped storage, National Grid requests that the Commission direct PacifiCorp to take the following steps before filing its next IRP with the Commission:

1. Work with stakeholders to develop better modeling that adequately captures the various values grid-scale storage can provide on a sub-hourly basis as both a transmission and generation asset;

2. Develop a methodology to fully evaluate value and benefits of grid-scale storage technologies and incorporate the results into PacifiCorp's IRP portfolio analysis. This methodology should also consider the value of grid-scale energy storage to PacifiCorp's participation in the California energy imbalance market ("EIM"), particularly including the ability of storage to absorb cheap solar oversupply energy from California to offset future energy or capacity needs. Given its geographic location and ability to absorb significant amounts of energy, Swan Lake is uniquely valuable in its ability to access the EIM, absorb cheap solar from California, and provide low-cost energy to meet PacifiCorp's ramping needs; and,

3. Work with National Grid to ensure that Swan Lake is fully-modeled and evaluated in PacifiCorp's next IRP process. While National Grid recognizes that closed-loop pumped storage projects are geographically dependent, the Pacific Northwest is blessed with one of the most attractive and mature sites in the Western United States.

In addition, National Grid encourages the Commission to initiate development of a framework for PacifiCorp and other utilities to procure pumped hydro and other grid-scale energy storage projects. Given the large size of pumped storage projects, any procurement framework should allow for multiple utilities to partner and pursue joint development arrangements or contracting arrangements with multiple off-takers if the projects are

[6] Staff Report, November 21, 2017, p. 44.

[7] Staff Report, p. 47.

independently owned. National Grid suggests that such a framework could be developed through staff-led technical workshops or as part of a separate rulemaking proceeding.

Finally, National Grid recommends that the Commission consider coordinating its grid-scale energy storage efforts with the Washington Utilities and Transportation Commission ("WUTC"). In Docket U-161024, the WUTC issued a "Report and Policy Statement on the Treatment of Energy Storage Technologies in Integrated Resource Planning and Resource Acquisition" (the "Storage Policy Statement"). The Storage Policy Statement provides guidance to Washington utilities on planning, modeling, and regulatory treatment of storage resources in their respective IRP processes. This guidance is an important first step in adequately considering grid-scale storage in IRP process and, therefore, National Grid suggests that the Commission should consider working with its Washington counterpart to build upon the directives in the Storage Policy Statement and to adopt similar guidance and requirements.

III. CONCLUSION

Combining cost-effective, technologically proven, environmentally sound, utility-scale energy storage integrated with renewables holds great promise to enable the regional transmission grid to transition the electric system to a low carbon grid. Specifically, National Grid believes that proven "closed-loop" pumped storage hydropower technology can serve as an important tool to unlock the greater value of existing and future renewables and facilitate GHG reductions in Oregon and the broader region.

Accordingly, National Grid encourages the Commission to require PacifiCorp to do a study of the benefits of building pumped storage projects in the Pacific Northwest as well as regional projects to serve Oregon, Washington, and California.

Dated this 28th day of November, 2017.

Respectfully submitted,

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