

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

**UM 2059**

In the Matter of

PACIFICORP, dba PACIFIC POWER,

Application for Approval of 2020 All-Source  
Request for Proposals.

COMMENTS OF SWAN LAKE NORTH  
HYDRO, LLC

**I. INTRODUCTION**

Swan Lake North Hydro, LLC (“Swan Lake”) hereby submits its comments to the Oregon Public Utility Commission (the “Commission”) addressing the final draft 2020 All-Source Request for Proposals (“2020AS RFP”) filed by PacifiCorp, dba Pacific Power (“PacifiCorp”), on April 22, 2020. Pumped storage is a cost effective resource that is uniquely capable of providing PacifiCorp with reliable and dispatchable zero-emissions capacity that can reliably transition to a decarbonized generation fleet. We submit the following comments on the 2020AS RFP to highlight a few key areas where revisions are warranted to capture the unique benefits pumped storage can offer to PacifiCorp customers.

**II. BACKGROUND**

In its 2019 Integrated Resource Plan (“IRP”), PacifiCorp has undertaken a comprehensive analysis of its future resource needs while simultaneously re-evaluating the cost-effectiveness of its existing coal-fired generation fleet. The resulting preferred portfolio calls for the addition of almost 11,000 MW of wind and solar resources and 2,800 MW of storage capacity to maintain the reliability of the grid as it increases reliance on variable energy resources over a twenty-year period. PacifiCorp’s 2019 IRP action plan calls for procurement of a portion of these new renewable and storage resources through the 2020AS RFP.

Swan Lake<sup>1</sup> is actively engaged in the development of a 400-MW pumped storage hydroelectric project in the service territory of PacificCorp in Klamath County, Oregon. The Swan Lake project is located near high voltage transmission corridors and will utilize environmentally-friendly, “closed-loop” technology to provide unmatched flexibility needed to integrated variable renewable resources being added to the electric supply system, as well as stacked energy, capacity, and other reliability and economic benefits to the Pacific Northwest.

Other benefits of pumped storage generally and the Swan Lake project in particular include:

- Longer duration discharge (nine to twelve hours) of stored energy to meet peak demand;
- The ability to provide energy arbitrage;
- The potential to enhance and optimize the deployment of current and planned renewable facilities;
- The ability to allow existing generation plants to maintain optimal set points to minimize cycling and operations and maintenance costs;
- Intra-hour flexibility, allowing a utility participating in the California Independent System Operator’s Energy Imbalance Market to maximize value in that market;
- The ability to leverage existing transmission and rights and provide for a more optimized use of transmission facilities;
- Other “portfolio effects” across PacifiCorp’s generation fleet;
- Life-cycle cost benefits due to the long lifespan of pumped storage assets; and
- High degree of adaptability to many “use cases” over time and ability to provide many essential grid services commensurate with fossil fuel power plants, due to unparalleled flexibility.

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<sup>1</sup> Swan Lake is a joint venture between an affiliate of National Grid USA and an affiliate of Rye Development, LLC (“Rye”), which was formed for the joint ownership and development of the Swan Lake Project.

We appreciate having had the opportunity to provide information about the Swan Lake project during PacifiCorp's public stakeholder process and to provide these comments on the final draft 2020AS RFP.

### **III. COMMENTS**

PacifiCorp has identified growing needs for new firm capacity on its system to accompany the significant additions of solar and wind energy resources and retirement of existing coal-fired capacity called for in its preferred resource plan. PacifiCorp's firm capacity need increases from 533 MW in 2021 to over 3,100 MW by 2030, and continues to grow to 5,658 MW in 2038.<sup>2</sup> By offering up to 400 MW of firm, flexible, long-duration storage capacity, the Swan Lake Project can play a significant role in meeting the substantial capacity needs identified in PacifiCorp's 2019 IRP. Swan Lake requests that PacifiCorp consider the following comments to ensure that the 2020AS RFP does not disadvantage pumped storage resources.

#### **A. PacifiCorp Should Ensure Appropriate Value Resource Diversification Attributes in the 2020AS RFP Bid Scoring and Evaluation Process and Increase Weight of Non-Price Scores**

Section 6 of the 2020AS RFP outlines PacifiCorp's screening models for price and non-price scoring and ranking of bid proposals by resource type within each IRP topology location. For storage resources at each location, PacifiCorp's screening model will calculate a price score (0 to 75) based on each project's bid costs net of the associated system-value. PacifiCorp will use the StorageVET tool developed by the Electric Power Research Institute and the Planning and Risk (PaR) models to assess the value of storage. The price score will be added to the non-price score (0 to 25) to arrive at a total score that PacifiCorp will use to rank bids for IRP modeling and selection to the initial short list.

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<sup>2</sup> See PacifiCorp 2019 IRP, pp. 115-116.

Pumped storage is a more mature technology than most other forms of energy storage, is deployable at significantly larger scales and can offer more than nine hours of discharge duration. And unlike other shorter-duration energy storage technologies, pumped storage assets have a minimum useful life of 50-60 years. In addition to having very long useful lives and low overall costs, pumped storage can provide grid-scale energy storage capability to successfully integrate wind and solar resources. To fairly evaluate bid proposals for each type of storage technology under the 2020AS RFP, Swan Lake recommends that the Commission consider directing PacifiCorp to consider a broader set of project development and operational risks in its non-price bid evaluation to ensure that its portfolio is truly least-cost on a risk-adjusted basis.

As proposed, the 2020AS RFP allocates 10% of the total bid score to “Project Readiness, Deliverability and Operational Characteristics.” However, based on the matrix provided in Appendix L of the RFP, none of the factors considered address operational characteristics, nor do they appear to consider resource and technology risks that could affect project readiness, deliverability and performance. Rather the non-price bid scoring matrix provides up to 2% for the bidder’s development and construction experience, up to 2% for simply demonstrating site control, up to 4% for having completed necessary environmental studies and permits, and up to 2% for documenting safe harbor compliance with investment tax credit rules (something that doesn’t even apply to stand-alone storage). To more fully capture the project execution and performance risks that can determine project readiness, deliverability and operational characteristics, the RFP scoring and evaluation criteria should factor in the supply chain, operational and environmental risks that come with battery storage technology. Those risks include:

- Degradation risks if the technology degrades faster than expected or does not have the lifetime anticipated by planning models;
- Environmental costs and impacts if the raw materials and chemicals cannot be reused or safely recycled at the end of their useful life; and
- Supply chain risk if the production and raw materials cannot produce fast enough to meet demand due to competition from other industries and the COVID-19 pandemic.

These costs and risks are not reflected in the System Optimizer, PaR and StorageVET model inputs. As a result, the 2020AS RFP bid evaluation and selection process, which is based primarily on a proposal's levelized net cost per kW of system capacity contribution, may favor battery storage and lead to a portfolio that is more reliant on battery storage. This would expose PacifiCorp to technology, supply chain, environmental and other risks common to battery storage technologies. Swan Lake believes a more prudent procurement approach would be to diversify across storage technologies so that PacifiCorp has both fast ramping and charging resources for one to four hours from batteries, as well as longer duration discharge and capacity resources of eight hours or greater from pumped storage. Such a diversity of discharge times, durations, and operating characteristics would help ensure PacifiCorp can reliably meet the needs of its customers, while reducing the technology and operational risk associated with reliance on a single type of storage resource to meet the entire capacity need. The qualitative non-price scoring factors should be expanded to include an assessment of technology risk and contribution to portfolio diversity and risk mitigation, awarding points for technologies that are mature and have been demonstrated at the scale contemplated by this procurement, that have low environmental, operational and safety risk, and that rely on established and secure supply chains.

In addition to these proposed changes PacifiCorp should make it clear that pumped storage will qualify as a separate technology category in the development of the initial shortlist. According to the draft RFP conforming bids will be ranked according to the total price and non-price score by resource type within each IRP topology location. Top scoring bids will then be submitted to the IRP team for modelling and potential selection to the Initial Shortlist. Due to its longer-term storage duration, durability, proven technology and low supply-chain risk we believe that pumped storage should be treated separately from shorter-term storage. Doing so will ensure, in part, that the benefits of pumped storage are more fully considered in the bid evaluation.

**B. PacifiCorp Should Test a Range of Risks to Develop the Initial Shortlist**

In order to develop the Initial Shortlist, PacifiCorp's IRP team will utilize production cost models to select an optimized portfolio of resources. The RFP does not make clear what assumptions and sensitivities will be tested in this step. For reference, as the Commission surely knows, PacifiCorp's IRP evaluated the preferred portfolio selection under dozens of future cases which examined such risks as unit retirement, coal to gas conversion, carbon pricing, gas pricing and more. Portfolios were also assessed for risks regarding changes in load, market prices, and other factors.

The concern we have is that the Initial shortlist selection will simply rely on base case assumptions. If PacifiCorp does not examine these cases and risks in its Initial Shortlist modelling then the process will fail to consider a wide range of potential future impacts and may result in resources that could help mitigate future risks being discarded. Swan Lake proposes that PacifiCorp commit to study and evaluate a full range of cases and risks. One particular risk that should be studied, is the risk of delays and cost overruns on the Gateway South project. This is especially important because PacifiCorp is relying on the project for a large amount of new

supply.<sup>3</sup> It appears from the RFP that PacifiCorp will account for costs related to Gateway South in evaluating bids from Wyoming East but that the cost of the project is, to our knowledge, only an estimate at this point and subject to overruns.

**C. PacifiCorp Should Increase the Maximum Contract Length Under the 2020AS RFP**

PacifiCorp's 2020AS RFP establishes a minimum and maximum contract term length of 15 years and 25 years, respectively. While these limits make sense for battery projects, which have useful lives of less than 25 years, limiting the contract term to no more than 25 years will disadvantage pumped storage projects that have both high capital costs and very long useful lives. As previously noted, there are significant benefits associated with diversifying across multiple energy storage technologies. Allowing bidders to propose contract lengths of up to 50-60 years, which is the minimum useful life of a pumped storage project, will accurately capture the true, and much lower, cost of pumped storage relative to an equivalent amount of battery storage over a similar time frame.

There is little risk that the capacity being procured in this RFP (595 MW through 2024) will go unused in the future. As mentioned above, PacifiCorp's preferred portfolio includes the addition of 2,800 MW of energy storage through 2038. An additional 1,900 MW of gas-fired capacity is included in the preferred portfolio, with additions beginning in 2026, though PacifiCorp has left open the possibility that these gas-fired additions may be avoided in future IRPs through the addition of non-emitting resources like long-duration pumped storage. PacifiCorp's capacity needs will only increase further after 2038 as remaining coal-fired capacity is retired and battery storage additions reach the end of their useful lives.

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<sup>3</sup> Draft RFP, p. 26.

A 2019 whitepaper from a team led by the UC San Diego Professor David G. Victor pumped storage systems are “highly cost-effective for large-scale, long-duration energy storage.”<sup>4</sup> The white paper presents a detailed financial analysis that compares costs of a pumped storage system operating for 40 years for eight hours a day at full capacity and a lithium-ion battery storage system operating for 20 years for four hours a day at full capacity.<sup>5</sup> The results of this analysis summarized in Figure 7 of the whitepaper show that batteries are more expensive than pumped storage on a levelized cost basis.<sup>6</sup> In light of the long, reliable project life of pumped storage and the capital-intensive nature of those investments, Swan Lake urges PacifiCorp to allow bidders to propose tolling contracts with terms of up to the life of the project in addition to build transfer agreements to avoid effectively precluding all types of storage resources from participating in the 2020AS RFP.

**D. The RFP Should Provide a Form Tolling Agreement or Term Sheet for Pumped Storage Projects**

The 2020AS RFP requires a tolling transaction structure for pumped storage bid proposals. However, PacifiCorp has not included a pro forma tolling agreement due to the unique operating characteristics of pumped storage. During a stakeholder workshop, PacifiCorp indicated that the tolling agreement for pumped storage would be similar to the forms of agreement for battery storage systems, which call for a contract price in dollars per megawatt-hour. These form agreements do not provide a good indication of what to expect for tolling arrangements since pumped storage bids must be structured to include a capacity payment in

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<sup>4</sup> David G. Victor, PhD et al., Pumped Energy Storage: Vital to California’s Renewable Energy Future, at 21 (May 21, 2019), available at <https://www.sdcwa.org/sites/default/files/White%20Paper%20-%20Pumped%20Energy%20Storage%20V.16.pdf>

<sup>5</sup> *Id.* at 17-23.

<sup>6</sup> *Id.* at 22.

dollars per kilowatt-month. In the absence of a form tolling agreement, Swan Lake requests that the Commission require PacifiCorp to include a form term sheet with the final RFP. Either a form tolling agreement or term sheet will provide helpful guidance to bidders on how PacifiCorp will evaluate the economic and commercial merits of pumped storage proposals.

#### IV. CONCLUSION

Swan Lake appreciates the opportunity to submit these comments and looks forward to continuing to work with stakeholders during the course of the proceeding. If PacifiCorp or the Commission has any questions regarding these Comments, please contact Nathan Sandvig or Erik Steimle at the email addresses listed below.

Date this 22nd day of May, 2020

Sincerely,



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