

# PacifiCorp - Stakeholder Feedback Form

## 2021 Integrated Resource Plan

PacifiCorp (the Company) requests that stakeholders provide feedback to the Company upon the conclusion of each public input meeting and/or stakeholder conference calls, as scheduled. PacifiCorp values the input of its active and engaged stakeholder group, and stakeholder feedback is critical to the IRP public input process. PacifiCorp requests that stakeholders provide comments using this form, which will allow the Company to more easily review and summarize comments by topic and to readily identify specific recommendations, if any, being provided. Information collected will be used to better inform issues included in the 2021 IRP, including, but not limited to the process, assumptions, and analysis. In order to maintain open communication and provide the broader Stakeholder community with useful information, the Company will generally post all appropriate feedback on the IRP website unless you request otherwise, below.

Date of Submittal 6/29/2020

\*Name: Sashwat Roy

Title: Technology and Policy Analyst

\*E-mail: sashwat@renewablenw.org

Phone: 972-408-7813

\*Organization: Renewable Northwest

Address: 421 SW 6<sup>th</sup> Ave

City: Portland

State: OR

Zip: 97214

Public Meeting Date comments address: 6/18/2020

Check here if not related to specific meeting

List additional organization attendees at cited meeting:

[Click here to enter text.](#)

**\*IRP Topic(s) and/or Agenda Items:** List the specific topics that are being addressed in your comments.

Battery Storage Modeling in PLEXOS, T&D Capacity Deferral Benefits of Storage resources

Check here if any of the following information being submitted is copyrighted or confidential.

Check here if you do **not** want your Stakeholder feedback and accompanying materials posted to the IRP website.

**\*Respondent Comment:** Please provide your feedback for each IRP topic listed above.

Renewable Northwest appreciates the opportunity to provide inputs to PacifiCorp's 2021 IRP process. Overall, we identify several opportunities for clarification and further refinement of the modeling efforts that PacifiCorp will be conducting through PLEXOS. Firstly, in PacifiCorp's 2021 IRP Kick-off meeting, it was stated that PacifiCorp is considering analysis of co-located solar/wind resources paired with batteries in addition to standalone batteries located separately from the generation sources. Renewable NW would like to emphasize the fact that co-located resources provide flexibility, avoid curtailment of renewable energy resources, and provide essential grid benefits such as energy arbitrage, capacity value, and ancillary services such as frequency regulation[1] to LSEs. Co-locating resources also ensures availability of the Federal ITC (when battery is charged with renewables) thereby providing encouragement to future deployments. While standalone batteries are essential to provide key grid services, co-location of energy generation and battery storage should be encouraged in the IRP modeling efforts and in the upcoming RFPs.

Secondly, another statement mentioned by the IRP staff pertaining to the modeling of different battery storage charge/discharge durations in hybrid resources was partially unclear as to the specifics of the inputs for the PLEXOS model. Specifically, the PacifiCorp staff said that in addition to 4-hour storage, they would also be considering 3- and 5-hour durations. Based on recent market research, Renewable NW believes that it would be prudent to include 6-hour storage in addition to selected durations for the optimization modeling to reflect and analyze the wide-varying battery chemistries like Zinc-Carbon and Vanadium flow, which are available in the market currently. These new chemistries differ from Lithium-ion in characteristics such as battery lifetime, charge/discharge duration and round-trip efficiency due to their typical operational characteristics. NREL published a report [2] highlighting the peaking capacity benefits of long-duration storage and it would be beneficial for PAC to include 6-hour storage in their PLEXOS model in addition to the 5-hour storage option. While we understand the complexity and long-run times for optimization modeling in PLEXOS, a 6-hour storage option could provide essential peaking capacity benefits for PAC's BA going forward. Modeling 6-hour storage instead of the 5-hour option may free up computational complexity, reduce run-times and cover the benefits of up and coming resource options.

\* Required fields

Finally, Renewable NW believes that battery storage resources can provide a sizable benefit to transmission & distribution (T&D) system planning efforts by reducing the peak load and extending the life of ageing T&D lines and substations. Battery storage systems, being modular and flexible in nature, can provide sizable financial incentives and customer savings when operated downstream from substations to reduce peak load and reduce strain at the distribution level. The concept of “storage as a transmission asset” has been a hot topic of discussion in CAISO, MISO and SPP over the past couple of years. We urge PacifiCorp to conduct independent analysis at a local level in their BA to evaluate whether battery storage systems can provide benefits for the few peak load hours in a year. Future IRP modeling efforts and RFPs can be formulated based on this distribution-level analysis. In the future, we hope that a methodology would emanate from this process which could be integrated into the IRP modeling efforts to showcase the value of battery storage in PacifiCorp’s BA.

### **PacifiCorp Response:**

PacifiCorp agrees that there are benefits from co-locating energy storage and renewable resources, relative to stand-alone resources and intends to continue modeling co-located storage and renewables in the 2021 Integrated Resource Plan (IRP).

PacifiCorp agrees that modeling a range of energy storage options can identify opportunities to capture the unique benefits of different configurations. PacifiCorp has commissioned a study of the cost and performance characteristics of renewable resources as well as energy storage. PacifiCorp will share the results of that study at a future public meeting and will also discuss its proposed plan to model an array of options that reasonably capture the range of benefits energy storage is projected to be able to provide.

PacifiCorp currently evaluates alternative solutions to planned transmission and distribution (T&D) upgrades, and considers solar, battery, and demand-side measures as potential alternatives. The location-specific nature of most T&D requirements exceeds the granularity of the transmission system modeled in the IRP. In addition, energy storage resources that are providing support for the T&D system can be restricted based on local conditions in a manner that is difficult to account for when such constraints are not recognized in the IRP model. As a result, incorporating specific T&D-related inputs in IRP modeling is difficult. PacifiCorp recognizes that T&D related opportunities exist, and would direct stakeholders to the analysis in Appendix Q of the 2019 IRP (Energy Storage Potential Evaluation) for its most recent long-term assessment of T&D interactions with energy storage resources in the IRP.

---

**Data Support:** If applicable, provide any documents, hyper-links, etc. in support of comments. (i.e. gas forecast is too high - this forecast from EIA is more appropriate). If electronic attachments are provided with your comments, please list those attachment names here.

[1 ] Co-Located Hybrid Resources: <https://www.publicpower.org/periodical/article/number-large-battery-systems-co-located-with-renewables-continues-grow>

[2] The Potential for Battery Energy Storage to Provide Peaking Capacity in the United States: <https://www.nrel.gov/docs/fy19osti/74184.pdf>

---

**Recommendations:** Provide any additional recommendations if not included above - specificity is greatly appreciated. [Click here to enter text.](#)

---

Please submit your completed Stakeholder Feedback Form via email to [IRP@PacifiCorp.com](mailto:IRP@PacifiCorp.com)

Thank you for participating.

\* Required fields