

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 2/4/2021

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Zip: [Click here to enter text.](#)

Public Meeting Date comments address: **1/29/2021**

Check here if not related to specific meeting

List additional organization attendees at cited meeting: _____

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

Energy efficiency & renewable energy resource re-shaping, energy efficiency bundling, PIM #5 (11/16/20) staff questions & requests recirculated.

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.

Commission Staff Feedback for PacifiCorp 2021 IRP: Public Interest Meeting #7 (Jan 29, 2021)

This feedback, dated February 4, 2021, states the informal comments, questions, recommendations, and data requests of Washington Utilities and Transportation Commission Staff, Jim Woodward. Staff appreciates the continued work of PacifiCorp's IRP Team and the opportunity to participate. Timely feedback is offered as technical assistance and is not intended as legal advice. Staff reserves the right to amend these opinions should circumstances change or additional information be brought to our attention. Staff opinions are not binding on the commission.

This staff feedback document is divided into two parts: 1) questions & comments regarding PacifiCorp's January 29 PIM #7 presentation content and 2) re-issued questions staff originally circulated on November 25, 2020 following PacifiCorp's PIM #5 on Nov 16. Please note: The company addressed staff's DER questions included in the Nov 25 PIM #5 feedback document during subsequent bi-weekly staff-PacifiCorp check-ins. However, the four (4) questions & comments staff circulated specifically re: the PIM #5 technical presentation were never answered. Please address these PIM #5 questions & comments when responding to this PIM #7 feedback.

Company response by **February 26, 2021**, is appreciated for select questions and requests in **BOLD**.

* Required fields

I. **Public Interest Meeting #7 (1/29) – Presentation questions & comments**

1. Energy efficiency & renewable energy re-shaping – Overview (slide 8) – Staff appreciates Pac IRP team’s candor that re-shaping exercise to better match 2021 IRP EE potential with load forecast does not include demand response (DR). However, given Pac’s own admission that weather re-shaping can occur on a capacity basis, **staff strongly encourages PacifiCorp to similarly align its DR potential with its load forecast during future planning cycles.**

PacifiCorp Response:

Thank you for this feedback, PacifiCorp will consider incorporating this suggestion in future planning cycles, as appropriate.

2. Load shapes – Weather reference data (slide 9) – PacifiCorp indicates 2021 IRP load forecast uses 20-year average normal daily weather. Staff continue to believe only 20 years of weather data (i.e., 2000-19) is too short of a dataset to inform a 20-year, forward looking load forecast. Furthermore, assuming this dataset yields “chaotic normal” weather patterns overlooks climate change impacts that are likely underway. During the next planning cycle, **staff strongly encourages PacifiCorp to adopt a longer duration weather dataset that better approximates long-term weather trends likely underway within the WECC region or, at minimum, develop and apply a methodology that considers climate change impacts to its load forecast.**

PacifiCorp Response:

Thank you for this feedback, PacifiCorp will consider incorporating this suggestion in future planning cycles, as appropriate.

3. RE re-shaping (slides 13 – 17) – Staff appreciates both PacifiCorp undertaking this refinement process and the company’s own admission that “opportunities for refinement exist.” Based on staff’s understanding of the 2021 IRP RE re-shaping process, **staff identify the following areas for improvement the company should address during the next planning cycle:**
 - a. **Derive RE shapes from datasets longer than just single-year actuals (i.e., 2018 for the 2021 IRP cycle).** Expanding reference datasets may enable Pac to align wind and solar shapes with the same weather conditions informing the company’s load forecast (*see slide 13*).

PacifiCorp Response:

The use of a single year allows us to capture the best data for resources which have only recently come online. This is important because the hourly interaction between similarly located resources is the biggest driver of marginal costs in a local area. Because we continue to add new resources, the data set for which we have complete information is limited. This will likely be an ongoing issue as current expectation is that sizeable increases in renewables will continue over the next few years, likely through at least 2025 with the recent tax credit extensions. There may be a way to incorporate more data and the Company is interested in exploring this in the future as it recognizes that renewable resource forecasting will become an increasingly important input as it becomes a larger part of our portfolio.

- b. **Consider broader weather data components when RE re-shaping.** Staff appreciate PacifiCorp’s insight that “weather data” currently considers average daily wind speed, daily load, and average daily solar. **More comprehensive weather considerations could include: cloud cover and humidity levels and**

enable better modeling of reliability events (see article discussing how [CA wildfires hampered solar production during Sep 20](#)).

PacifiCorp Response:

The effects of humidity and cloud cover are incorporated in the forecast data. The current data relies upon generation data, which is readily available to the Company and doesn't require a meteorological background to interpret. As such, while it embodies the weather parameters identified it doesn't allow for analysis of the specific effects associated with humidity, cloud cover, or fire-related haze. To the extent that the factors related to these weather parameters are expected to significantly drive output, external assistance would likely be required to interpret those relationships.

- c. **Reevaluate need for four-year (i.e., 2016-19 actuals for the 2021 IRP cycle) comparison dataset used in stochastic analyses.** Staff still does not understand the interplay between the single-year actuals, four-year comparison dataset, and 20-year load forecast weather dataset. **Why cannot PacifiCorp directly align intra-month variations in its single-year actuals to intra-month variations derived from the 20-year forecast weather?** See 1st bullet point on slide 17.

PacifiCorp Response:

The Company uses a single year of actuals to capture actual hourly data for as many wind and solar resources as possible. This accounts for the fact that the western-most wind resource in Wyoming may increase output first as a result of a front, followed by successive resources to the east – our ability to approximate the expected output of future wind resources is not as good as this actual generation data. The use of data from a single year data set ensures that every day of the forecast has a realistic system weather condition, insofar as that weather pattern actually happened to the various locations at a single point in time. In this regard, the key component is not the use of a single year, but rather that each increment of data reflects conditions consistent with a single point in time. For example, the Company is not opposed to drawing data from two years of history so long as all resources are based on the same historical period in any interval.

The use of four years of history happens to be consistent with the period used for developing stochastic parameters, but more importantly, the Company had very few utility-scale solar resources in its portfolio prior to 2016, so earlier data would not have allowed for a consistent treatment of load, wind, and solar. As with any historical data set, the balance is between more data and more recent data. Particularly where market price effects are involved, as is the case with the stochastic parameters, more recent data is of higher importance, as the market evolves over time (gas prices fall, renewable penetration increases, coal retirements increase, and so on). For renewable output vs. load, it is likely that a longer data set would be appropriate to define this relationship.

The Company's modeling is currently configured to apply a single year renewable generation shape (8760) that repeats in every future model year – a resource will have the same generation profile on February 15, 2025 and February 15, 2030. Partly this is an artifact of the single year hourly shape, but it is also a modeling simplification. On the other hand, the load forecast rotates with the calendar, such that Feb. 15th has different loads in different years – sometimes it might be one of highest loads, other years it may be more moderate, and when it is a Sunday, it might be relatively low. While we could rotate the renewable generation shape with the calendar, that would result in a single renewable generation condition for the peak load day (and all of the other load days). We do not expect renewable output to be that predictable – the peak load is likely to experience a range of renewable output conditions over time. As currently modeled, the peak load day ends up with around seven different renewable output conditions, depending on the year of the study. For the 2021 IRP, this was an achievable modeling technique that improves upon the representation of renewable output relative to load. While stochastic or

interannual variation of renewable output could better represent the range of possible conditions, it is probably only manageable as part of stochastic portfolio analysis (many repeated iterations), and it is unlikely that it could be accommodated as part of portfolio selection.

4. Energy Efficiency : Energy Value (slide 20) – Staff commends PacifiCorp’s proposal to bundle EE to better reflect its capacity benefits and to better align EE capacity impacts with the company’s load forecast. These refinements represent very positive improvements in the way EE will be represented in the PLEXOS modeling. Staff only wonders **why PacifiCorp did not simply use their low gas/low market price forecast instead of “75% of the medium gas/medium market price” forecast?** It would appear using an existing lower market price scenario should produce similar results without taking an arbitrary fraction of another forecast.

PacifiCorp Response:

The medium gas/medium price curve is likely to be used for reporting in a variety of other contexts, so it may be helpful to have it as the ultimate basis of the analysis, for example, the Company may report energy values for other resource types using that same curve. The Company doesn’t have any reason to believe the use of the Low Gas/No CO2 price curves would have resulted in an appreciably different result as far as the ranking of measures in the bundling process

II. **Public Interest Meeting #5 (11/16) – Presentation questions & comments (Recirculated)**

*** Given staff assume PLEXOS portfolio modeling is now underway, hopefully the below four (4) questions / requests will be relatively straightforward for the IRP team to address. ***

5. PLEXOS benchmarking, action plan window results vs. 20-year planning period (slides 5 – 7) – Staff appreciated the modeling team’s walkthrough of the PLEXOS benchmarking similarities and differences compared to the SO 2019 IRP preferred portfolio. During PIM #5, the Pac modeling team maintained that PLEXOS’s endogenous consideration of reliability and stochastics explained why storage (battery) and utility solar + storage appeared to function as “substitutes.” However, staff observes two different substitution trends affecting storage and utility solar + storage over the 20-year planning horizon: 1) storage instead of utility solar + storage during the action plan window and through most of the 2020s vs. 2) solar + storage instead of storage during the 2030s, with an inflection year of 2028. **If the locational value of solar + storage yields reliability benefits, one could infer that PLEXOS would always choose** solar + storage over standalone storage.

- a. **If PLEXOS benchmarking results differences are primarily due to the LTCE model’s endogenous reliability considerations, staff would appreciate further clarification why this difference in model architecture is producing two different substitution trends over the 20-year planning period.**

PacifiCorp Response:

It is incorrect to infer that the locational value of reliability benefits remains constant relative to other options over time. At any given location and time, retirements, capacity expansion and transmission options change the relative value of and operation of resources.

6. Price-policy scenarios (slide 10) – Staff are accustomed to seeing three descriptors for each scenario (i.e., demand, gas price, GHG price). However, the slide only describes each scenario according to its gas price and CO2 cost. **Is the modeling team incorporating the load / demand forecast into these 5 scenarios? Or do these considerations come later?**

PacifiCorp Response:

* Required fields

Please see response to stakeholder feedback form 065. The response is available on PacifiCorp's IRP webpage [here](#).

7. CO2 cost scenarios (slide 14) – Re: SCGHG assumptions, staff is glad to hear PacifiCorp has adopted a 2.5% discount rate as required under WA's CETA. **Staff reminds the company will need to update its SCGHG price scenario for the 2021 IRP to reflect inflation.** The [Social Cost of Carbon](#) page on the WA-UTC's external website reflects the SCC in 2019 dollars per metric ton.

PacifiCorp Response:

PacifiCorp has updated its SCGHG price scenario to reflect inflation.

Power price scenarios (slide 15) – **WA staff agree and support the [market price recommendation](#) submitted by Oregon PUC staff on Nov 17 and posted to PacifiCorp's [Stakeholder feedback](#) web page. WA staff strongly encourage the Pac IRP team to adopt such an Aurora price forecast for purposes of the company's 2021 IRP modeling.** Not doing so may risk the company making planning decisions based upon an artificially low market price forecast that does not consider CETA cost impacts.

PacifiCorp Response:

Please see response to stakeholder feedback form 065. The response is available on PacifiCorp's IRP webpage [here](#).

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.

Links to relevant periodical included in staff feedback document.

Recommendations: Provide any additional recommendations if not included above - specificity is greatly appreciated. Please see staff feedback document.

Please submit your completed Stakeholder Feedback Form via email to IRP@Pacifcorp.com

Thank you for participating.