

PacifiCorp - Stakeholder Feedback Form

2019 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 2019 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 9/21/2018

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Public Meeting Date comments address: 8/30/2018

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.

Flexible Reserve Study

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.

Public Utility Commission of Oregon Staff (Staff) appreciates PacifiCorp's presentation and information relating to the Flexible Reserve Study provided at the 2019 IRP Public Meeting held on Aug. 30-31, 2018. Staff offers the following comments requesting further clarity and additional information so as to more meaningfully participate in this process.

1. Slide 47 and 48 show a fairly flat trajectory for resource diversity benefits. In the meeting it was mentioned that at some point, with enough additions, the model will not hold. At what point will the model stop being relevant, and what is the rationale behind that assumption? As you add more resources, do you have a method to identify when the model assumptions are no longer valid?

PacifiCorp Response:

The extrapolations on slide 47 and slide 48 use an ordinary least squares estimation with either a quadratic, cubic or log linear function dependent on the function with the best descriptive statistics, provided that the function extrapolates in an intuitively correct manner up to the level of capacity to be added over the Integrated Resource Plan's study term.

Simplistically, the extrapolation of diversity benefits should not result in a slope greater than the corresponding linear function or less than zero. Given the nature of quadratic/cubic functions, it is observed that for sufficiently large capacities, the slope of the fit begins to trend towards negative for the quadratic function and towards a value greater than the linear alternative for the cubic function. No such restrictions exist for the log linear extrapolation.

* Required fields

The models referenced above were analyzed visually for each resource type/BAA combination to determine whether or not the extrapolations held to the above principles. The model assumptions are no longer valid for capacities at which the trend becomes nonsensical. This invalidation is not relevant because the functions were chosen such that the trends remained intuitively correct for all levels of incremental capacity added over the IRP's study term.

2. Regarding slide 50, with the current pace of renewable energy resource saturation, Staff would appreciate a comparison of the Flexible Reserve Study Results, specifically the 2017 PacifiCorp System-Wide Portfolio with EIM Benefit and the 2018 PacifiCorp System-Wide Portfolio with EIM Benefits. This will help Staff and stakeholders better understand the primary drivers in the rapidly changing EIM market.

PacifiCorp Response:

The flexible reserve requirement methodology was discussed at the August 2018 public input meeting. Data enhancements since the 2017 study: actual solar forecasts and results, actual hour-ahead load forecasts, and Energy Imbalance Market (EIM) diversity corrected by California Independent System Operator (CAISO). Methodology enhancements since the 2017 study include: reserves calculated via quantile regression, co-optimized portfolio requirement, and extrapolation using cumulative stacking.

3. Although the company's update on the state of the Technical Review Committee was informative, Staff would appreciate a member of the TRC presenting at an 2019 IRP workshop: a brief historical review of the committee's role in PacifiCorp's IRP processes, commentary on the current and future need of a formal TRC review in the company's IRP, a summary of the TRC's assessment of the strengths and potential shortcomings of this Flexible Reserve Study, and any suggestions for future studies. Staff notes that it has engaged as an "observer" through the development of other utility integration/flexible reserve studies, which has resulted in a deeper understanding of the data, assumptions and methodologies employed.

PacifiCorp Response:

The Technical Review Committee (TRC) was established in PacifiCorp's 2013 Integrated Resource Plan (IRP) wind integration study to provide best practices and guidance by individuals with diverse wind integration study experience. TRC members in the most recent 2019 IRP have participated since the initial study (see Volume II, Appendix describing wind integration study in prior IRPs for more description). Input received from the TRC in the 2019 IRP was very positive regarding PacifiCorp's study and specifically that they felt their input was not as valuable given the robust methodology and experience developing the study. Andrea Coon, one TRC member, recommended that PacifiCorp provide background and foundation to help parties understand the study purpose and application with more technical information available as an appendix (as they thought PacifiCorp's presentation was very technical) and suggested that PacifiCorp emphasize its use of actual forecasts in its study as a positive advancement in the 2019 IRP study. Suggestion for future studies was that a formal TRC was no longer needed. This will be further summarized within the appendix of the Flexible Reserve Study in the 2019 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.

[Click here to enter text.](#)

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

Thank you for participating.

* Required fields