

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 12/21/2018

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*Organization: Utah Clean Energy

Address: Click here to enter text.

City: Click here to enter text.

State: Click here to enter text.

Zip: Click here to enter text.

Public Meeting Date comments address: Click here to enter date. 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.

Coal Unit Retirement Analysis

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.

Questions:

(1) Please explain why there is such a significant difference in benefits between stacked retirement portfolios C-40 and C-39?

PacifiCorp Response:

C-40 includes approximately 359 megawatts (MWs) of additional early retirement capacity relative to C-39 with the addition to the portfolio of early retirement of Jim Bridger Unit 2 in 2022. As shown in the portfolio line item detail for C-39 on slide 73 and C-40 on slide 77 of the December 3-4, 2018 public input meeting presentation, C-40 costs are higher driven primarily by a greater need for replacement resources with higher costs in fixed operations and maintenance (O&M), increased market purchases and decreased market sales, and higher costs to cover reserve deficiencies related to the less reliable C-40 portfolio.

(2) If PacifiCorp plans to update the benchmark case to reflect the proposed coal unit depreciation end dates for the Rocky Mountain Power states, please re-run the unit-by-unit analysis using the new benchmark. Then, re-run the stacked analyses with portfolios consisting of incremental units, as done originally, using the units that showed the most benefits from retirement in the new unit-by-unit analysis. We understand that this process is very time consuming. However, it is important to get this analysis correct. Re-running only a portion of the original analysis against the new benchmark will not allow an apples-to-apples comparison with the original results, and may not reveal the most beneficial retirement options. Re-running the entire analysis will provide the best foundation to move forward with. To

* Required fields

facilitate this, we understand that Rocky Mountain Power will likely need to file a waiver to the Mach 31 deadline for the IRP in Utah and propose a new time that will allow the company to include this new analysis in the final IRP.

PacifiCorp Response:

PacifiCorp is currently focused on a number of updates to the coal study results presented at the December 3-4, 2018 public-input meeting, including, among other things, evaluating an alternative benchmark case. PacifiCorp intends to focus its efforts on stacked retirement studies, including comprehensive reliability assessments, as it continues to refine and update its analysis.

What are the steps or barriers to retiring the plants that are jointly owned by 2022? Specifically, Hayden 1-2, Jim Bridger 1-2, Craig 1-2. How feasible would this be? Please perform stacked portfolio retirements that consist of the coal units that are most economic to retire, and that PacifiCorp has full control to retire. Please include portfolios between 800 and 1,200 MW worth of retirements.

PacifiCorp Response:

As discussed at the December 3-4, 2018 public input meeting, PacifiCorp plans to consider the feedback around analysis of retiring plants that are jointly owned and is running stacked cases with and without jointly-owned units.

(3) It is Utah Clean Energy's understanding that PacifiCorp plans to run a sensitivity retiring all coal units by 2030. (See spreadsheet sent out with the September 27-28 meeting material entitled 2019 IRP Portfolio Dev Matrix_2018, tab 2, column N) Please confirm that you still plan to run this sensitivity.

PacifiCorp Response:

Yes, as discussed in the September 27-28, 2018 public input meeting, PacifiCorp plans to run a case in the portfolio-development phase that assumes all coal units are retired by the end of 2030.

(4) On Slide 103 of the December 3-4 presentation deck, PacifiCorp notes that it will "evaluate potential operational adjustments or resource alternatives to remedy identified capacity shortfalls."

It is UCE's understanding that PacifiCorp will look at three options to remedy identified capacity shortfalls:

Allow increased availability of short term FOTs during the shoulder seasons when the mode I showed reliability issues

Utilization of current and future renewables as flexible and dispatchable.

Incorporate storage and/or additional resources.

Please confirm that you are utilizing the above three options.

PacifiCorp Response:

Yes.

Please provide the cost and availability assumptions for utilizing renewables as a dispatchable resource.

PacifiCorp Response:

To the extent allowed by a resource's control systems and contractual terms, renewable resources can provide regulation reserves when output is curtailed (i.e., when output is less than expected generation). These resources provide those reserves when called upon by dispatching back up to their expected generation levels. Assuming a resource is capable of dispatch and appropriate communication and control systems are in place, the cost of providing regulation reserves results from the lost generation during a curtailment, and consists of a replacement power cost (e.g. market price) plus the value of any associated renewable energy credits, production tax credits, and taxes associated with the curtailed resource, as applicable.

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PacifiCorp is exploring assumptions around availability and will discuss its assumptions and findings further at the January 24-25, 2019 public input meeting.

Please advise what storage types you consider to address reliability issues?

PacifiCorp Response:

Storage resource options listed on PacifiCorp's supply-side resource table for the 2019 Integrated Resource Plan (IRP) would be eligible to address reliability based on the resource that meets the needs least-cost and least-risk.

Are you considering additional options to address reliability issues, if so, what are they?

PacifiCorp Response:

PacifiCorp is still working on this analysis and will discuss any additional options considered as applicable at the January 24-25, 2019 public input meeting but notes that options to address reliability issues will need to be balanced with operational considerations.

Comment:

Utah Clean Energy supports operating and modeling renewable generation as dispatchable, and therefore able to satisfy reserve requirements and provide valuable grid services. A number of recent studies have demonstrated the ability of renewable energy resources to provide grid reliability through services such as spinning reserve, load following, voltage support, ramping, frequency response, variability smoothing, frequency regulation, and power quality improvement. Traditional grid operation models renewable generation as "must take" resources—failing to take advantage of its high operational flexibility. When operated more flexibly by intentionally curtailing output to enable ramping "headroom" and by allowing for further curtailment to create "footroom", renewable resources can contribute to reserve requirements, improve system reliability, and reduce the reliance on costly, inflexible conventional generation.

In addition to modeling renewable resources as dispatchable in the Reliability Assessment, Utah Clean Energy supports PacifiCorp increasing the FOT cap and/or procuring any needed storage and renewable resources capable of providing reserves and grid reliability services. Analyzing these suggestions together and separately will maximize the chances of finding the most cost effective solution to the reliability issues identified in the Reliability Assessment.

PacifiCorp Response:

PacifiCorp appreciates the feedback and will explore in its modeling efforts the potential value from curtailment and reserve capacity provided by renewables. PacifiCorp would note that the costs and constraints associated with downward dispatch requirements and day-ahead forecast error are not incorporated in the 2019 IRP analysis, so these factors are not constraining the adoption or value of renewable resources in the IRP models.

The following resources provide examples of how renewable resources may provide capacity reserves and ancillary services such as frequency response, voltage regulation, power factor regulation, and reactive power control:

Investigating the Economic Value of Flexible Solar Plant Operation: <https://www.ethree.com/wp-content/uploads/2018/10/Investigating-the-Economic-Value-of-Flexible-Solar-Power-Plant-Operation.pdf>

Demonstration of Essential Reliability Services by a 300-MW Solar Photovoltaic Power Plant: <https://www.nrel.gov/docs/fy17osti/67799.pdf>

Advanced Grid-Friendly Controls Demonstration Project for Utility-Scale PV Power Plants: <https://www.nrel.gov/docs/fy16osti/65368.pdf>

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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.

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.

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