

PacifiCorp - Stakeholder Feedback Form

2017 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 2017 IRP, including, but not limited to the process, assumptions, and analysis. In providing your feedback, PacifiCorp requests that the stakeholders identify whether they are okay with the Company posting their comments on the IRP website.

Yes No May we post these comments to the IRP webpage? Date of Submittal 9/15/2016
*Name: Lisa Tormoen Hickey Title: Regulatory Counsel
*E-mail: lisahickey@newlawgroup.com Phone: 719.302.2142
*Organization: Interwest Energy Alliance
Address: P.O. Box 8526
City: Santa Fe State: NM Zip: 87504-8526

Public Meeting Date comments address: _____ 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.

Supply Side Assumptions

Solar PV pricing Assumptions, Wind pricing assumptions

Battery Storage Assumptions

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

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

Interwest Energy Alliance (“Interwest”) appreciates this opportunity to provide comments as part of the 2017 IRP public process. Thank you for the detailed discussion and expertise available for these meetings.

We have reviewed the Supply Side Resource assumptions with several of our members, and have the following input:

1. The solar PV assumptions appear to be dated, so they should be updated to avoid missing cost- savings opportunities and inefficient investments:

A. The Capex is too high. What assumptions have you made related to the Investment Tax Credit? The ITC has been renewed, as you are aware, providing additional cost savings to your consumers. See, e.g., <http://energy.gov/savings/business-energy-investment-tax-credit-itc>. These savings for large solar will incentivize additional acquisitions of grid-scale solar energy around the West, and developers are actively preparing to bid these resources into near-term requests for proposals.

B. See generally, Bolinger, M. Seel, J., LBNL: Utility Scale Solar 2015: An Empirical Analysis of Project Cost, Performance and Pricing Trends in the United States: <https://emp.lbl.gov/publications/utility-scale-solar-2015-empirical>.

* Required fields

C. The fixed O&M figures also seems too high. \$20/kW/yr is almost double than prices expected in the marketplace for projects of the size of your proxies. We recommend that you use a figure of \$15/kW/hr as your assumed O&M cost, which is still conservative, higher than what is generally modeled by developers and operators of larger PV systems.

D. The design life for a grid-scale solar PV project should be 30 years. Design and manufacturing improvements have increased the durability of the equipment, and the larger projects make regular investments for maintenance and repair cost effective.

2. The battery storage assumptions also appear to be dated.

A. Due to rapid cost declines of energy storage, it is critical that battery COD is aligned with the COD in your IRP modeling. If not closely aligned, the pricing will be stale and far too conservative. Mid-2016 pricing estimates will be stale within a few months. Therefore, we recommend that you include a range of CODs in the battery storage table.

B. The Mid-2016 Capex estimates are already higher than what is currently available in the market.

C. Interwest recommends that you review larger energy storage system sizes that are closer to the size of aeroderivatives shown in the resource table, since this is the competing resource. There are significant economies of scale which are not being recognized in a 1 MW or even as large a project as 8 MW.

D. The Li-ion efficiency assumption is low - should be 85%. See page 10:
<http://aesenergystorage.com/wp-content/uploads/2016/05/AESEN-AdvancionBrochure-FINAL-0420.pdf>

E. Sodium sulfur is too expensive compared to other battery technologies. We recommend removing it from the study altogether until it reaches a level of market viability to make it more likely competitive.

3. The wind energy assumptions related to overall capital costs and O&M costs are also too high. The 600 MW Rush Creek project proposed by PSCo has been stipulated to be approved by a number of parties and is now pending Commission approval of this project by the Colorado PUC. (See Docket No. 16A-0117E). It provides a recently-vetted review of the prices of a new wind project, which can inform your modeling:

A. Please see the Independent Evaluator Report reviewing recent wind projects installed in and around the Xcel service area as well as the Rush Creek Project to be acquired by Public Service Company of Colorado. The Rush Creek IE studied projects spanning the period since 2007, and since that time wind installation and operational costs have plummeted, so these averages are quite high compared to projects currently available to PacifiCorp.

B. The O&M costs are stated in cost per MWh, with Rush Creek projected costs at 9.87/MWh, and the other projects studied were reported to have O&M costs as follows: low-\$8.59, average- \$12.51, high-\$17.37. (See page 23 of the attached Rush Creek Independent Evaluator Report.)

C. The overall capital costs are also overstated, and we recommend you use a still-conservative figure of \$1,543. The Rush Creek IE report found costs of \$1,337, average of \$1,543, and high costs of \$1,972. We recommend you use the average cost of \$1,543 because of the multitude of locations. Please provide a summary of bid prices (which still preserves confidentiality), such as aggregated prices, with low and high ranges from your recent RFP so we can compare, because we are confident that will support a capital cost assumption which is in this conservative range going forward.

We are available to discuss these assumptions further if helpful.

* Required fields

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.

<http://aesenergystorage.com/wp-content/uploads/2016/05/AESEN-AdvancionBrochure-FINAL-0420.pdf>

Recommendations: Provide any additional recommendations if not included above - specificity is greatly appreciated. See above recommendations. Thank you!

Thank you for participating.