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 7/18/2018

*Name: Kyle Frankiewich
Title: Regulatory Analyst

*E-mail: kfrankie@utc.wa.gov
Phone: 360-664-1316

*Organization: Washington Utilities and Transportation Commission

Address: 1300 S Evergreen Park Dr. SW

City: Olympia State: WA Zip: 98504

Public Meeting Date comments address: **6/28/2018** ☐ 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.

☐ 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.

All - WUTC staff intends to file feedback after each IRP meeting to keep the lines of communication open and to signal as soon as possible whether there are any concerns. Below are slide-by-slide comments and questions, working from the hard copy of the redacted slides (113 pgs total).

- Slide 6: Randy's overview of what models can and cannot do was very helpful. Thanks!
- Slide 17: PaR does 4-hr blocks and sample weeks over each year in the 20yr planning horizon. What level of temporal detail does SO get to? I see 3-day aggregation, but I'm not sure how else the year is constructed in the model.

PacifiCorp Response:

A year in System Optimizer (SO) is comprised of a calendar month that is represented by a sample week scaled up to the number of days in the month. The sample week is then further bucketed into three day types (average day, Saturday, and Sunday). The hourly data is then aggregated into peak, off peak, super peak, and peak hour.

- Slide 21: Staff is hoping to see some modeling to account for intra-hour effects and improve on hourly modeling. We understand that this is a heavy lift, and that PAC's system is more complex than other electric IOUs regulated by WUTC, but I was surprised that neither of the IRP modeling tools optimizes the 20 year plan on an hourly basis. Also, are 50 runs enough to capture enough randomly paired 99th percentile and 99th percentile events? I feel like I asked about this and heard that the preferred portfolio gets more vetting through more runs. Is this right?

PacifiCorp Response:

PacifiCorp is actively developing credits for eligible resources that account for intra-hour flexibility as discussed at the September 27-28, 2018 public input meeting and October 9, 2018 public input meeting conference call. In response to stakeholder feedback, PacifiCorp will not apply these credits to resource alternatives in coal studies and the portfolio

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development phase of the 2019 Integrated Resource Plan (IRP). However, PacifiCorp will calculate the impact of these credits on portfolio costs. PacifiCorp conducted a Request for Information at the end of 2017 that included investigation into modeling tools with intra-hour capability. Due to complexity of PacifiCorp's system and modeling needs, the market did not have a readily available tool however, the company will continue to explore options for future IRPs. Regarding the 50 Monte Carlo iterations conducted in the Planning and Risk model, PacifiCorp believes that is a sufficient data set to calculate the upper-tail mean and 95th and 5th percentile book-end risk stochastic measures. In past IRPs, PacifiCorp ran more iterations but did not find additional iterations had a material impact on the relative costs among different resource portfolios, which is a driver to identifying a preferred portfolio. Further, the combination of stochastic variables randomly selected in the 50 Monte Carlo iterations is the same when each portfolio is simulated in planning and risk model (PaR).

- Slide 22: Will we discuss at some point what assumptions PaR uses to optimize market transactions?

PacifiCorp Response:

PaR optimizes market transactions (sales and purchases) based on value, need, and volume limitations. If market purchases can displace higher cost generating resources, those purchases will be made to minimize system variable costs. Conversely, if market purchases are higher cost than generating resources, those market purchases are not made. If generating resources are lower cost than market, and there is sufficient generation to meet load, and there is sufficient transmission to reach a market hub, market sales will be made to lower system variable costs.

- Slide 28: Does PaR look at unit-commitment logic and intra-day system conditions? I would have thought that was part of the SO optimization, but I may be off (see slide 17 comment).

PacifiCorp Response:

PaR in the unit commitment logic is able commit or de-commit dispatchable resources on an hour-to-hour basis during the day recognizing operating constraints (i.e., minimum up and down times and ramp rates). SO model logic is simplified in its representation of system operations and does not use unit-commitment logic. It does capture intra-day system conditions by breaking up the day into peak, super-peak, and off-peak periods (as noted above).

- Coal study slides: I appreciate that this information is sensitive, but was surprised that I was asked to return my hard copy of the confidential slides. I'd encourage the company to lean on the systems it has in place – the agreement and WUTC's confidentiality rules – rather than create new hurdles for meaningful participation in the IRP process.
- Slide 57: Where does PAC source, or how does PAC build, its gas price forecast? This is something we're looking at for other IRPs as well, so an overview of the methodology would be helpful, either in a meeting or in the IRP.

PacifiCorp Response:

PacifiCorp develops its gas price forecast based on three years of market forwards, followed by blending in year four, followed by pure market fundamental forecasts starting in year five. PacifiCorp subscribes to multi-client studies to inform its market fundamentals. See the September 27-28, 2018 public input meeting material for more information.

- Slide 58: Discussion of emissions policies and pricing might be a good opportunity to highlight the Commission's 2017 IRP acknowledgement letter, which provided some specific guidance on modeling inputs and carbon pricing expectations.
- Slide 61: I didn't understand until recently that PAC's regional haze compliance obligations are only unclear because PAC is trying to negotiate with the EPA rather than comply directly. I don't have an opinion on whether this approach is good or bad, but I would encourage the company to be more clear in its description of the status quo. What are the risks to the company of not complying more expeditiously? What are the benefits?

PacifiCorp Response:

PacifiCorp will continue to discuss its regional haze portfolio assumptions throughout the IRP process. For a more detailed discussion on regional haze, see Chapter 3 (The Planning Environment) and Chapter 6 (Regional Haze Cases) of the 2017 IRP Update, filed May 1, 2018.

- Slide 64: What about the Leaning Juniper repowering project caused it to be excluded from Utah's approval? Same question for WY. Is it just the info on slide 65?

PacifiCorp Response:

See information on slide 65 from the June 28-29, 2018 public-input meeting. At the time of the repowering economic analysis, this project provided the least amount of net customer benefits over different price policy scenarios. PacifiCorp mentioned at the September 27-28, 2018 public input meeting that it has continued to evaluate equipment options for the Leaning Juniper repowering project and intends to move forward with repowering this wind facility.

- Slide 65: The rationale for PAC's qualifications of the coal study, and its critique of the methodology it was required to follow, seem reasonable. I'm curious about whether that same argument can be made for Leaning Juniper, or whether the nature of repowering means that a one-unit in/out type of analysis is reasonable.

PacifiCorp Response:

The unit-by-unit analysis performed to assess wind repowering opportunities started with a base simulation that included all proposed wind repowering projects. This was compared with a scenario that assumed one of the facilities was not repowered. This approach captures the marginal benefits of each project so that they could be individually quantified and assessed.

- Slide 70: I understand this to be an analysis of the new WY and related wind (except Uinta) and related transmission – projects that will qualify for 100% of PTCs if completed by the end of 2020. It looks like projects are beneficial in all scenarios through 2036, but not in all scenarios through 2050. What causes the estimated benefits to go down with a longer planning horizon? What variables are moving such that wind in PAC's portfolio becomes less beneficial between 2036 and 2050?

PacifiCorp Response:

Results through 2036 reflect the application of real-levelized capital costs for all incremental capital associated with portfolios with and without repowering. These results also reflect application of nominal production tax credit (PTC) benefits, recognizing that these benefits will accrue through the first 10-years of operation (within the 20-year study period)—unlike capital, they are not spread out over the 30-year life of the repowered wind facility. The results through 2050 span the full life of the repowered wind facilities, and therefore, reflect nominal treatment of capital. These results continue to reflect the nominal treatment of PTCs. The application of nominal capital results in higher revenue requirement in the early years relative to the case with real-levelized capital revenue requirement, which has more weight in present-value calculations.

- Slide 74 (and 69): This slide is a great encapsulation of the bids received. Thanks!
- Slide 75: How do the prices and terms of the recently-executed solar PPAs made outside of the RFP process compare with the prices and terms PAC discovered through the RFP?

PacifiCorp Response:

Please refer to slide 23 of the July 26-27, 2018 public input meeting.

- Slide 88 & 89: This analysis is interesting and useful. My initial impression is that this is consistent with Council methodology – indeed, using real admin costs instead of an assumed admin adder strikes me as an improvement to the model. I would encourage highlighting this departure from / improvement on the Council's approach within the narrative content of the IRP. Also, we're interested in learning more about this admin costs study. Can PAC / AEG please provide the workpapers and/or supporting data for the figures on slide 89?

PacifiCorp Response:

PacifiCorp's admin adder methodology is consistent with the Council Methodology. PacifiCorp intends to describe the methodology improvements in detail in the 2019 Conservation Potential Assessment (CPA). The CPA will be made available to stakeholders before filing the 2019 IRP. Workpapers that support this methodology and the figures on slide 89 were sent via confidential data disc.

- Slide 90: Is it possible to separate Program Delivery from Admin (break the orange bar into two)? Also, can you confirm my understanding that program delivery includes both subcontractor costs and incentive payments. Is this right? Or, is program delivery the incentive, and admin is all other program-level costs that aren't the incentive - PAC and subcontractor?

PacifiCorp Response:

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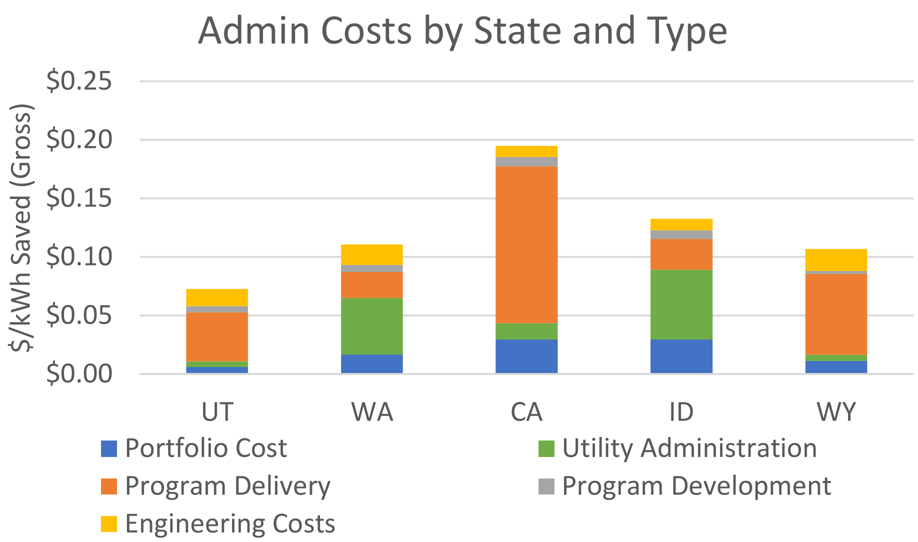
Please find the updated table presented below. Workpapers containing a live version and accompanying table were sent via confidential data disc.



- Slide 94: I feel like I should know this already, but why is the Energy Efficiency Analysis using 2014 usage data? Is this an input from the most recent building stock assessment?

PacifiCorp Response:

Data from the 2017 CPA, which used a base year of 2014, was presented during the June workshop for illustrative purposes since analysis from the current CPA was still under development and review.

- Slide 104: Is there any part of the supply curve development where PAC's access to expertise at both ETO/Navigant and AEG allows them to hone their DSM inputs? Do they compare figures and forecast results across the two models to see whether the results come at least reasonably close?

PacifiCorp Response:

Along with the sources of difference presented on slides 98 through 103 of the referenced deck, please see the presentation from August 31, 2018 for an in-depth comparison of draft technical achievable potential across the six states. During that meeting, PacifiCorp, Applied Energy Group (AEG), and the Energy Trust of Oregon highlighted key differences between the markets in the six states and how that drives differences in potential.

- Slide 107/108: I want to confirm my understanding of the workflow. AEG gives a lot of data to the Customer Solutions Planning team, who aggregates a bunch of load shapes, potential estimates and state-specific usage rates into state-specific capacity and state-specific levelized costs, which can be considered just like supply-side resources in SO. Is this right? Also, what is a one-year capacity factor shape? Is this a more granular representation of the amount and shape of the DSM potential, which gets rounded into an average MW for tables like slide 60?

PacifiCorp Response:

To clarify, AEG provides the seven files listed on slide 108 to both the Customer Solutions Planning and IRP teams. For review of potential summarized by load bubble and cost bundle and aggregation of load shapes are performed within the "Bundle Descriptions" and load shape files respectively prior to delivery. For Oregon, AEG provides files based on processing of modeling outputs from the Energy Trust of Oregon. PacifiCorp adjusts the bundle contract prices for any cost credits as described on slide 112 and develops capacity planning factors.

One-year capacity factor shapes are composed of 20-year savings-weighted hourly load shapes for all measures within a load bubble and cost bundle. It is correct that these are a more granular representation of the demand-side management (DSM) potential within a bundle. Within each hour is a percentage between 0% and 100% and represent the fraction of potential capacity realized as megawatt-hour (MWh) savings within any given hour. If the potential capacity and capacity factor shapes were multiplied together, they would then represent the magnitude of MWh savings available within each hour of the year.

Please note that the values within the table on slide 60 represent peak megawatt (MW), not average MW and are therefore not equivalent to the aMW metric referenced in the Seventh Power Plan.

- Slide 109: As the IRP model gets developed and PAC gains more clarity around which cost bundle might be on the margin, is it possible to re-bundle these bundles such that there's more granularity where it matters, and less where it doesn't? For example, if the marginal selected bundle floats between $50 and $70, perhaps bundling everything >$200 and <$20 would allow smaller bundles of $50-55, $55-60, etc., creating more granularity while potentially keeping model run times about the same.

PacifiCorp Response:

It would not be possible to re-bundle, as the bundling is done by AEG as part of the CPA which is finalized as an input to the IRP. Further granularity in bundles would extend model run time.

Please let me know whether providing feedback in this format, and with this detail, is constructive for the IRP team. I welcome any ideas that will make this more useful from the company's perspective.

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.

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

Thank you for participating.

* Required fields