

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 8/13/2018

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Public Meeting Date comments address: 7/27/2018 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.
Intra-hour dispatch credit

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.

Thank you for the opportunity to provide feedback. In this form, WRA provides initial feedback on the intra-hour dispatch credit PacifiCorp implemented in its 2017 IRP Update and coal retirement analysis and plans to incorporate in the modeling of the 2019 IRP. These initial comments are based on the limited information that has been provided to date. To better understand the implications of having implemented this credit, WRA has submitted a data request, along with this form and in the 2017 IRP docket, to enable more complete feedback.

While the Company implemented an intra-hour dispatch credit for coal units in the 2017 IRP Update, this credit has not been vetted through the public stakeholder process or evaluated by state utility commissions. WRA therefore encourages the Company to facilitate further discussions through the 2019 IRP public input process to ensure that intra-hour issues are appropriately considered in IRP modeling going forward and are consistent with IRP Standards and Guidelines. Specifically, WRA requests that the Company host an additional workshop to address the dispatch credit with IRP stakeholders. WRA recommends the Company request participants to prepare issues lists to be shared with the Company ahead of the workshop and addressed as part of the workshop.

The intra-hour dispatch credit appears to be a modeling convention designed to bolster the economics of potentially uneconomic coal units in the context of IRP coal-retirement analysis, or possibly in the context of PacifiCorp's MSP CLEAR Proposal, which assigns the costs of the longer-lived coal units to east-side states. Given the significance of this issue to IRP modeling and potentially to MSP decision making, WRA would like to investigate the appropriateness of utilizing such a credit, the implications of the method devised for expansion to other resources types, its implications for system planning, and its relationship to PacifiCorp's actual operations. In addition to these objectives, based on the

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information presented in the July public input meeting, WRA has identified the following issues, which we encourage PacifiCorp to further clarify and vet:

1. The impact of the dispatch credit on resource selection beyond its effect on any coal-retirement analysis, and thus on the load and resource balance, is unclear.
2. Applying a credit to only one technology (coal), or a small sample of technologies capable of providing intra-hour dispatch services, is problematic in a process that is fundamentally designed to optimally select among technology alternatives.
3. The Intra-Hour Dispatch Credit measures the difference between the cost of PacifiCorp coal fired generators and EIM market prices, not intra-hour flexibility.
4. Basing the coal generation capacity credit adder on analysis of only a single year (2017) misses changes in relative fuel prices, renewables penetrations, coal unit utilization, etc. that will occur over the planning time-frame.
5. The Intra-Hour Dispatch Credit appears to be double counting intra-hour services since variable renewable resources are already charged an integration cost.

1. The impact of the dispatch credit on resource selection beyond its effect on any coal-retirement analysis, and thus on the load and resource balance, is unclear. The intra-hour dispatch credit is a modeling convention used in the IRP as an added credit for existing coal units currently participating in the EIM (and potentially natural gas and storage resources at some point in the future). The extent to which this offset to the cost of an existing resource type may influence future resource selection has yet to be fully understood. PacifiCorp represented during the July public input meeting that the Intra-Hour Dispatch Credit for coal-fired generators is modeled by System Optimizer as an offset to a units' fixed O&M costs. However, because the fixed costs of existing resources do not affect their dispatch, and because PacifiCorp "locks in" coal resources before allowing the model to optimize a capacity expansion plan, it is unclear, at this point, whether the dispatch credit influences the selection of resource alternatives beyond its impact on the coal retirement analysis and thus the load and resource balance. For example, will the dispatch credit be used in PacifiCorp's analysis of Regional Haze coal-retirement scenarios and potentially an endogenous coal unit retirement analysis? Does the credit impact resource selection in any manner other than through the determination of the load and resource balance? Is it modeled by PaR? If, so, how does it influence the results?

Understanding exactly how the dispatch credit will influence resource selection is critical. In the public input meeting, PacifiCorp deflected concerns about the impact of a resource-specific dispatch credit to influence resource selection by stating that the IRP does not represent a commitment to acquire (or not acquire) any resource, and that actual resource selection takes place in an RFP process. In this way, PacifiCorp implied that the consequences of not applying the credit to other technologies, or any other shortcomings in the modeling, are insignificant. This response disregards the fact that the purpose of integrated resource planning is to inform resource acquisition. To the extent IRP modeling determines, based on inappropriate or inconsistently applied assumptions, that existing coal resources are "optimal" relative to alternatives, additional resource alternatives may be precluded from meaningful evaluation.

2. Applying a credit to only one technology (coal), or a small sample of technologies capable of providing intra-hour dispatch services, is troubling in a process that is fundamentally designed to optimally select among technology alternatives. "Improving" the modeling of only a single technology may degrade the analysis of multiple technologies. PacifiCorp stated the intra-hour dispatch credit should provide a better representation of coal-fired generators' true capabilities and therefore result in a more optimal resource portfolio. While improving the modeling of any one thing (e.g. coal) is conceptually laudable, it becomes problematic when the modeling of that one thing is improved and the results are compared with the modeling results of other things that have not had their modeling results improved. Including a credit only for coal could easily result in missing the opportunity to use a gas fired, storage, hydro, responsive renewable, or DSM technology that was technically superior and lower cost. It may be reasonable to internally test an

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analysis methodology on a single example generator or technology during analysis development, but it is problematic to apply any change to only one resource when it is being compared with others. Furthermore, PacifiCorp has not yet demonstrated that the dispatch credit is, in fact, a modeling improvement. Certainly, if PacifiCorp models a dispatch credit, they should consider a credit for all other reasonably practical technologies that provide intra-hour benefits, including, hydro, wind, and solar in addition to coal, natural gas, and storage.

3. The Intra-Hour Dispatch Credit measures the difference between the cost of PacifiCorp coal fired generators and EIM market prices, not intra-hour flexibility. The dispatch credit does not account for how much a generator actually ramps from interval to interval. Rather, the equation for calculating the dispatch credit calculates the difference between the Base Schedule (hourly schedule PacifiCorp submits to CAISO for each generator), the EIM 15-Minute Advisory Schedule, and the EIM 5-Minute Dispatch Schedule. The MW differences between the Base Schedule and the EIM Schedules are multiplied by the difference between PacifiCorp's Cost of Generation and the EIM Market Prices. This is done for every 5-minute interval. This method measures the difference in price between PacifiCorp units and the EIM rather than actual ramping capability or requirement.

A coal unit must have available capacity to move up or down in order to bid into the EIM and have the EIM be able to change the unit's scheduled output. But a generator could get a large value credit even if it was high cost and the EIM moved its schedule down consistently all year. Coal fired generators get a positive credit if they are lower cost than the EIM and the EIM increases their scheduled output. Coal units also get a positive credit if they are higher cost than the EIM and the EIM decreases their scheduled output. The credit gets larger if the difference between the unit's cost and the EIM price is larger. The credit calculation has nothing to do with how much the generator moves from interval to interval.

During the July public input meeting, WRA asked PacifiCorp if a higher cost unit would get a greater credit than a lower cost unit. PacifiCorp said that a lower cost unit would receive a higher credit. However, this is not necessarily (or likely) true. The formula credits differences in cost/price multiplied by differences in the base-schedule/EIM-schedule. If the unit cost is lower than the EIM price and the EIM moves the schedule up (as it would for an optimal dispatch) then the unit gets a positive credit. Similarly, if the unit cost is higher than the EIM price and the EIM moves the scheduled output down (as it would for an optimal dispatch) then the unit gets a positive credit. So, for a unit that has a cost that is greater than the EIM price, the higher the unit's cost the greater the Intra-Hour Dispatch Credit.

PacifiCorp was also asked if the Intra-Hour Dispatch Credit could ever be negative. PacifiCorp stated that the credit could be negative if the EIM market price dropped and the unit could not ramp fast enough to keep up. Again, PacifiCorp's answer is perplexing. The EIM must consider unit ramp rates when re-dispatching generators away from their base schedules. Unit ramp rate (actually different ramp rates throughout the unit's operating range) are required inputs from an EIM participating generator. If the EIM did not consider ramp rates it would create infeasible schedules that would result in large imbalances that could not be resolved in each five-minute interval. Instead, the EIM must limit schedule changes to what the unit can ramp to within five minutes. Given that the EIM will not attempt to schedule a unit for an output that it cannot achieve and given that the Intra-Hour Dispatch Credit compares only the Base Schedule and the EIM revised Schedule (actual generator performance is not considered in the formula) it is hard to see how a negative credit could result very frequently. It will be necessary to account for actual generator performance in the dispatch credit because coal units do not typically ramp quickly.

4. Basing the dispatch credit adder on analysis of only a single year (2017) misses changes in relative fuel prices, renewables penetrations, coal unit utilization, increased O&M costs associated with ramping, and EIM participation that will occur over the planning time frame and throughout the EIM footprint. PacifiCorp explained that the Intra-Hour Dispatch Credit was calculated for each coal fired generator based on PacifiCorp Base Schedules and EIM 15-minute and

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5-minute schedules for 2017 and the associated generator costs and EIM market prices. The PacifiCorp Base Schedules must balance PacifiCorp load and PacifiCorp generation within 1% for each interval. PacifiCorp then recalculates a total dollar credit as a capacity credit based on each unit's full capacity. PacifiCorp then applies the credit to the coal units for all years in the System Optimizer, increasing at the inflation rate.

The use of 2017 results for all future years is problematic because future fuel prices and conditions throughout the EIM footprint will likely differ from 2017 conditions. As noted above, the Intra-Hour Dispatch Credit is really a measure of the difference between the cost of PacifiCorp's coal generators and EIM market prices. If these two prices move with relation to each other, then the results will be much different. Differences between coal and natural gas prices will change the calculated credit. Differences between PacifiCorp generation costs and the rest of the EIM will be especially important. Changes in the amount of renewables will change the amount the coal units operate and thus change the calculated annual dollar credit. Additionally, the O&M costs associated with old ramping coal plants, which were not designed to ramp, are also significant and will likely increase over time.

5. The Intra-Hour Dispatch Credit appears to be double counting intra-hour services since variable renewable resources are already charged an integration cost. Renewable resources in the IRP are charged integration costs for their variability based on PacifiCorp's increased need for intra-hour reserves. The dispatch credit offsets coal resource costs based on their ability to provide intra-hour flexibility. This raises the concern that the modeling is doubly penalizing renewables. Going forward, it is necessary to ensure that assigning a dispatch credit to coal while at the same time levying a fee against renewables – based on intra-hour variability – does not doubly penalize renewables.

Conclusion

WRA seeks to understand the appropriate application of PacifiCorp's intra-hour dispatch credit. While the conversation at the July public input meeting was helpful, significant questions remain. To address these questions, WRA requests additional information (see attached data request). In addition, we request a separate workshop to not only elucidate your written answers to our questions but to allow an opportunity for active information exchange and so that PacifiCorp can further explain how it is modeling the intra-hour dispatch credit, the implications of such modeling assumptions on resource selection, and how the dispatch credit relates to PacifiCorp operations. As suggested above, in advance of the workshop, WRA recommends participants develop issues lists to be addressed as part of the workshop. WRA is interested in working collaboratively with PacifiCorp in furthering a method that will provide resources with appropriate credit for flexibility and providing participants with the understanding they seek.

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.

WRA Data Request on the intra-hour dispatch credit, which is also being submitted in Docket No. 17-035-16.

Recommendations: Provide any additional recommendations if not included above - specificity is greatly appreciated. Please respond to the questions (data request) and host an additional workshop on the intra-hour dispatch credit, as discussed above.

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

Thank you for participating.

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