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**Joint Parties’ Comments on the Flexible Ramping Product Refinements
Issue Paper and Straw Proposal**

PacifiCorp, NV Energy, Idaho Power Company and Arizona Public Service (“Joint Parties”) submit the following comments to the California Independent System Operator Corporation (“CAISO”) on the Flexible Ramping Product (“FRP”) issue paper and straw proposal published November 14, 2019 (“Proposal”). The Joint Parties appreciate the opportunity to provide comments for the CAISO’s consideration.

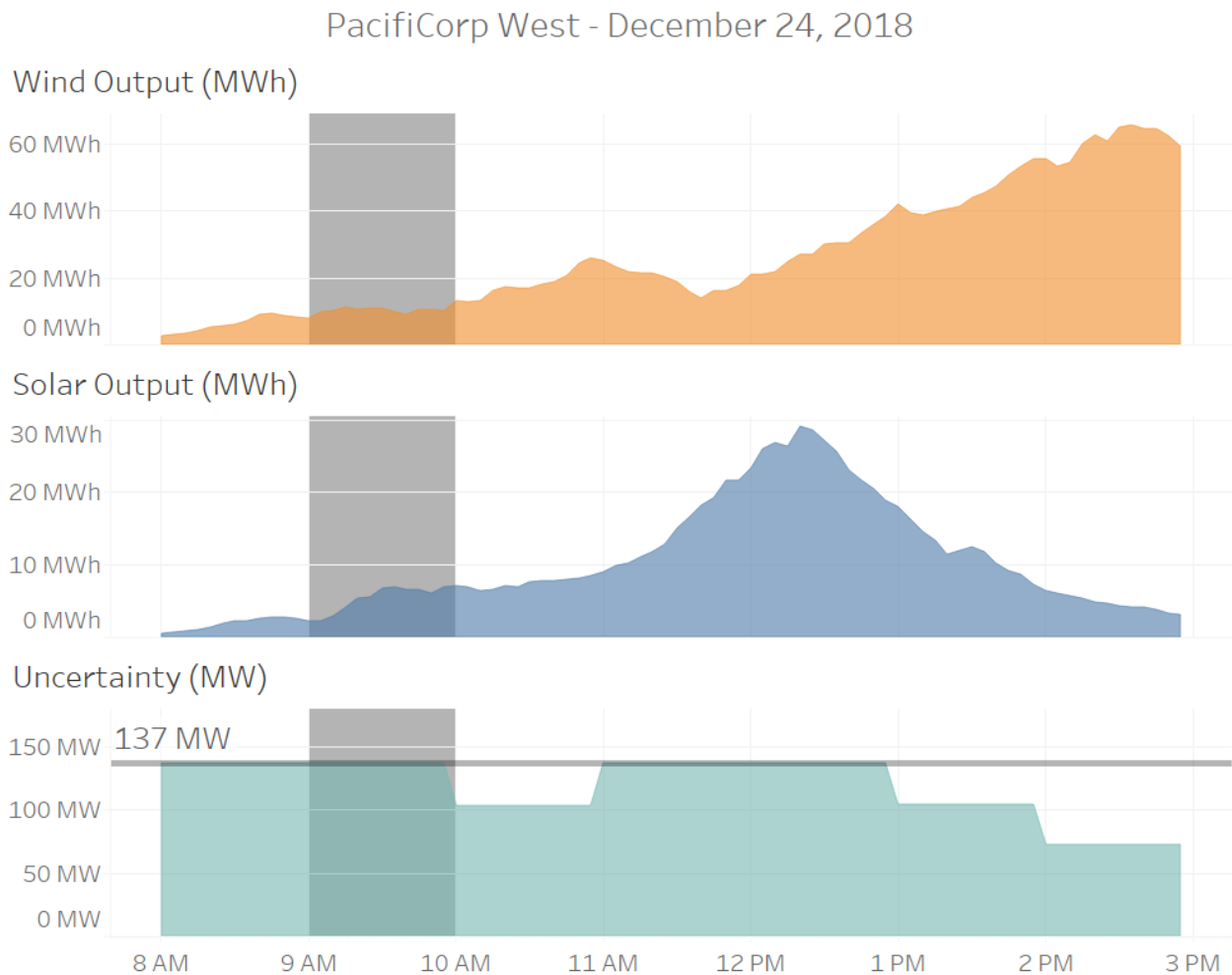
General Comments

First, the Joint Parties appreciate the opportunity to continue to refine the FRP. As stated in PacifiCorp’s Day-ahead Market Enhancements (“DAME”) comments, we have operated with flexible reserves on the system in both day-ahead and real-time since 2008 and understand the need to continue to evaluate the needs of the system as more renewables are integrated and additional constraints are identified. To that end, the Joint Parties would like to propose an additional enhancement to the FRP in the scope of this initiative. PacifiCorp has stated several times in its comments in the DAME initiatives (phase 1, phase 2, and the current initiative), its concerns regarding the calculation of the real-time FRP requirement. Specifically, due to a disconnect between forecast levels of variable energy resources (“VERs”) and the uncertainty calculation, the Joint Parties’ systems are being required to hold upward capacity beyond their needs. This results in the need to hold capacity when it is operationally unnecessary to do so. This issue is critical to the Joint Parties and, to resolve this issue, the CAISO should place greater priority on incorporating forecast levels of load, wind and solar in the determination of the real-time flexible ramping requirement.

Today, the Joint Parties, similar to the CAISO, have a large level of wind and solar within their operating systems that increases the need for intra-hour flexibility due to forecast uncertainty. And, like the CAISO, the Joint Parties’ primary concern is being able to meet this uncertainty need when it materializes within the operating hour. The scope of this initiative in regard to deliverability and maintaining the ramp capability for real-time operations will only address part of the problem if the CAISO is not accurately calculating the uncertainty need. The Joint Parties stress that the uncertainty calculation, based only on the time of day, is inadequate to ensure the appropriate level of uncertainty reserves is being held on the grid, in both an upward and downward direction. Unlike the CAISO, the Joint Parties’ internal uncertainty calculations are dependent on the respective levels of wind, solar and load forecasts for each hour and allow each system to operate in a reliable manner. However, the CAISO’s calculation of uncertainty that is included in its flexible ramping sufficiency test can vary from the requirements that the Joint

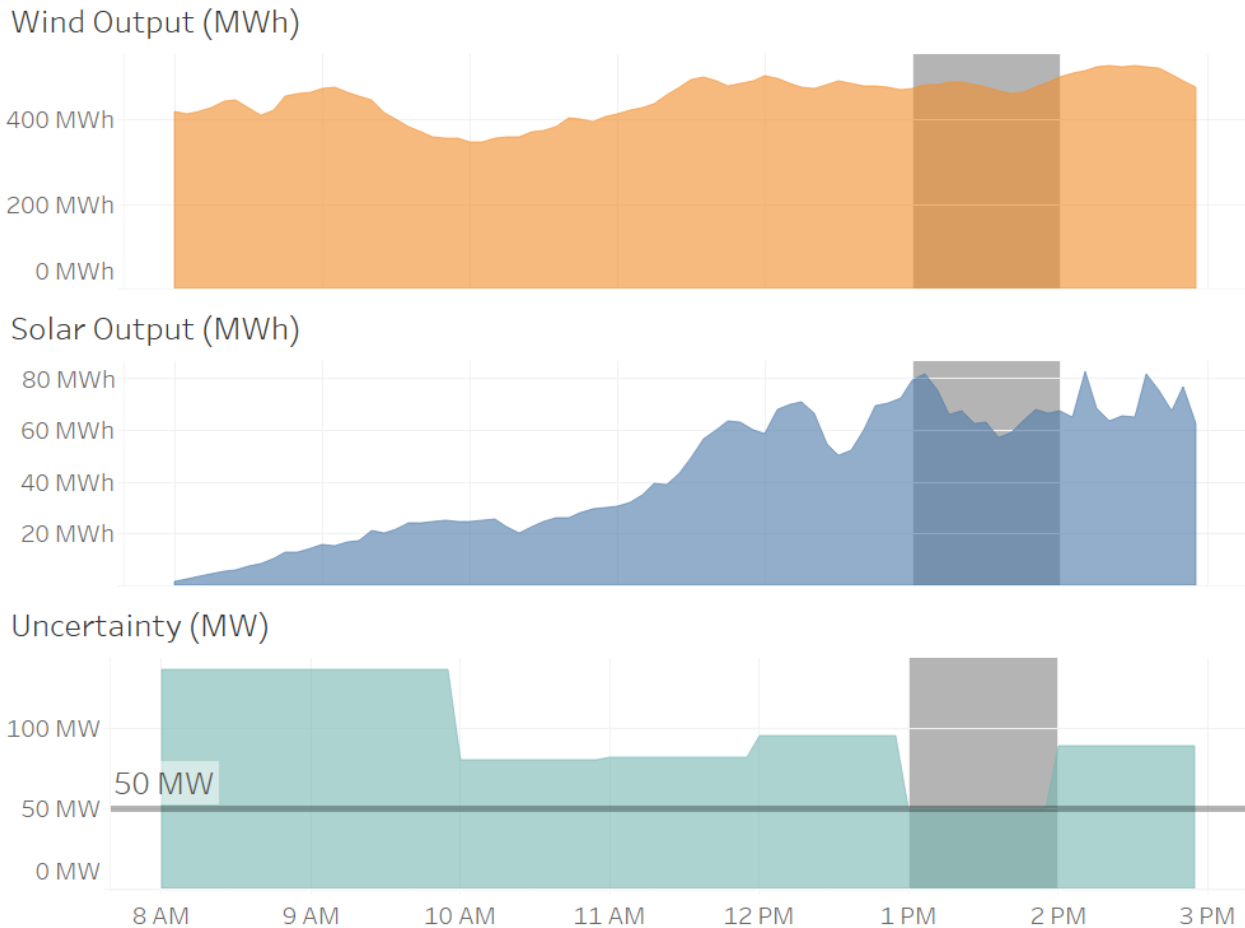
Parties have calculated due solely to the fact that the CAISO does not include the forecast levels of wind and solar.

As an example, on December 24, 2018 - hour ending 10 - in the PacifiCorp West balancing authority area (“BAA”) the CAISO calculated an uncertainty requirement of 137 MW. During this hour the average wind output of the BAA was 10 MWh, the average solar output was 5 MWh and the average load was 2,740 MWh. This is illustrated in the figure below.



With a maximum possible wind and solar forecast error of 15 MWh there is an incremental 122 MW of uncertainty remaining - which one may argue is attributable to load. However, on December 23, 2018 - hour ending 14 - the CAISO calculated an uncertainty requirement of 50 MW. During this hour the average wind output of the BAA was 477 MWh, the average solar output was 67 MWh and the average load was 2,547 MWh, as illustrated in the figure below.

PacifiCorp West - December 23, 2018



In light of these levels of load, wind and solar it is difficult to argue for the reasonableness of the uncertainty requirement and easy to argue that the requirement is often excessive and in some cases too small. It is precisely because the CAISO does not account for forecast levels of load, wind and solar that situations like these arise in which EIM entities may be required to hold inappropriately excessive levels of reserves or not enough. On many occasions, PacifiCorp must procure the energy in the real-time bilateral market in order to pass the flexible ramping sufficiency test which bases its calculation on the uncertainty requirement. Procuring energy in the bilateral market in order to free up unnecessary upward capacity on the PacifiCorp system, solely for the purpose of passing the flexible ramping sufficiency test and not for reliability reasons is costly and occasionally offsets the benefits gained by participating in the EIM.

In the interest of reliably operating the system with not only reserves that can be delivered to the appropriate zones or balancing areas, but also the correct amount of reserves, the Joint Parties believe this topic must be addressed sooner versus later in the current initiative. The Joint Parties request that this item be placed in the scope of this FRP refinements initiative and vetted with other EIM entities through this stakeholder process.

Minimum FRP Requirement for CAISO

In the Proposal, the CAISO proposes to enforce a minimum FRP requirement in the CAISO BAA to ensure that a minimum amount of FRP will be procured from resources within the CAISO BAA. Further, the CAISO states that it will evaluate if similar minimum requirements are needed for other BAAs.

With respect to the CAISO evaluating if similar requirements are needed in other BAAs, the Joint Parties believe that simply stating that the CAISO will perform “the same historical evaluation and discuss its findings” is too vague and request that the CAISO provide additional information as to how the minimum requirement will be determined. The Joint Parties would like to understand the methodology the CAISO intends to use to calculate a minimum requirement and whether or not the CAISO is contemplating any changes to the current diversity benefits. Lowering the diversity benefit could lead to disincentives to pass the flexible ramping sufficiency test.

Deliverability Enhancement

In order to manage the interaction between congestion management and FRP procurement, the CAISO proposes two new options for FRP procurement, zonal and nodal. In addition, the CAISO suggests that the approach used in the deliverability of the real-time FRP “can inform the approach to ensure deliverability of the day-ahead imbalance reserve product.” The Joint Parties believe it is premature to choose an option at this time, as further analysis is needed to determine how either option would affect each respective BAA. The Joint Parties suggest that the CAISO implement the desired approach in its own BAA first, so that EIM entities can be better informed to analyze how it would work in their BAAs.

The Joint Parties appreciate the CAISO’s consideration of these comments and look forward to further dialog.