Comments of the American Wind Energy Association of California (AWEA-California) on the CAISO's 2019-20 Transmission Planning Process (TPP) Stakeholder Meetings (Held September 25-26, 2019)

October 11, 2019

Comment Summary

AWEA-California appreciates this opportunity to comment on the discussion and materials presented during the September 25-26th TPP stakeholder meetings. AWEA-California's comments are focused on three topics:

- CAISO should provide as much information as possible on the operational and other impacts associated with each policy case that is analyzed in the 2019-20 TPP
- CAISO and the California Public Utilities Commission (CPUC) should review and improve the deliverability assumptions and transmission constraints used in RESOLVE, including accounting for:
    - How RESOLVE's transmission constraints for certain renewable energy zones would be changed (likely increased) if the transmission limits accounted for the delivery of diverse regional resources from outside of the Balancing Authority Area (BAA)to the CAISO intertie point (which is of particular importance for Policy Sensitivity #2) ; and
    - The updated Generation Deliverability Assessment Methodology (which will more closely align deliverability studies with the Effective Load Carrying Capability of the resources)
- CAISO should provide additional analysis and an opportunity for review prior to implementing the proposed Production Cost Modeling (PCM) changes for batteries

AWEA-California looks forward to continued involvement in CAISO's TPP and related initiatives and appreciates CAISO's consideration of these comments.

Discussion

I. CAISO Should Provide as Much Information as Possible on the Operational and Other Impacts Associated with the Policy Cases Studied in the 2019-20 TPP

The CPUC's Preferred System Plan for the 2017-18 Integrated Resource Planning (IRP) cycle called for certain policy cases and sensitivities in the 2019-20 TPP. The policy cases analyzed in the 2019-20 TPP are:

- "Base Portfolio" – 42 MMT GHG target
- "Policy Sensitivity #1" – 32 MMT GHG target made up primarily of in-state resources

- "Policy Sensitivity #2" – 32 MMT GHG target which includes 2,250 MW of New Mexico wind and 2,000 MW of Wyoming wind that requires new transmission
    - It is important to note that Wyoming and New Mexico wind resource are assumed to be delivered to CAISO intertie points on new transmission facilities

During the September 2019 stakeholder meetings, CAISO presented some high-level assumptions and information related to these policy cases. There is little doubt that the results of these various policy portfolios studied in the 2019-20 TPP will have quite different results from an economic, operational, and state policy achievement perspective.

Based on the CPUC's previous estimates, after paying for the transmission required to deliver Wyoming and New Mexico wind resources to CAISO, the Policy Sensitivity #2 portfolios would save ratepayers $300-$558M/year, compared to a case that excludes them. Additionally, as CAISO's previous Special Study on a 50% Renewable Portfolio Standard and Interregional Transmission Projects demonstrated, and as other industry studies have shown, a more diverse resource portfolio (such as the portfolio represented by Policy Sensitivity #2) is likely to have significantly reduced levels of generation curtailment compared to a less diverse portfolio. In providing results for the various policy cases, CAISO's 2019-20 TPP should illustrate the levels of RPS achieved in each policy portfolio and also provide information on the levels of renewable curtailment that occur in each portfolio.

The policy cases are also likely to have different impacts on system operation. For instance, one portfolio may result in a significant decrease in the three-hour net load ramp or provide other operational benefits. When draft and final results related to the policy cases are published, the CAISO should provide as much information on the operational differences of these various portfolios as possible. This includes, but is not limited to, the three-hour net load ramp for each policy portfolio analyzed in the 2019-20 TPP.

AWEA-California looks forward to working with the CAISO to put forward information that will best inform the CPUC, LSEs, and other planning entities of the need and value of a balanced resource portfolio. This is particularly important as LSEs evaluate their near-term procurement needs to meet various state energy policy requirements and goals, including Resource Adequacy, IRP, and RPS.

II. The CAISO and the CPUC Should Improve RESOLVE's Transmission Constraints

Each year, the CAISO provides the CPUC with estimated transmission constraints for use in the CPUC's IRP modeling exercise. The transmission constraints provide estimates of the capacity that CAISO expects can be accommodated on existing and already planned transmission for each renewable energy zone and include estimates of both the expected capacity from Full Capacity Deliverability Status (FCDS) resources and from Energy-Only (EO) resources. These

transmission constraints are used by the CPUC as a critical input into the RESOLVE model, which selects the resource portfolios for the IRP, with a preference for capacity that can be accommodated within these transmission limits (as that capacity is assumed not to require additional transmission build out).

These transmission constraints are a critical input that substantially drive the IRP portfolios, which in turn affects results of future TPPs, highlighting the importance of ensuring they are accurate and not overly binding. Yet, there evidence that the transmission constraints will be changing going forward, based on modifications to CAISO's Generation Deliverability Assessment Methodology. Additionally, the transmission constraints may be being applied inappropriately for Policy Sensitivity #2, as they are not appropriate for use for out-of-state resources delivered to renewable energy zones. This is because the transmission constraints used in RESOLVE do not reflect the additional MW of capacity that may be accommodated on existing transmission due more diverse resources being delivered to (or available within) a particular energy zone. The CAISO should work in conjunction with the CPUC to address these issues as quickly as possible to improve future IRPs and TPPs.

First, the RESOLVE transmission constraints will need to be updated as soon as CAISO has certainty regarding its new Generation Deliverability Assessment Methodology (if not before). The CAISO should quickly begin work to estimate what future transmission constraints for each renewable energy zone might be under the new deliverability methodology and to communicate that information to the CPUC. In the interim, while new estimates are being created by CAISO, AWEA-California has asked the CPUC to consider dramatically increasing the transmission constraints, perhaps doubling (or more) the amount of resources that can be accommodated using existing transmission from each renewable energy zone. CAISO's support for that approach, given where the Generation Deliverability Methodology is likely to end up, would go a long way in reducing the time it will take for the impacts of the new deliverability methodology to be incorporated into the state's various planning efforts.

Second, the transmission constraints used in RESOLVE do not currently reflect the resource diversity that could be achieved by delivering out-of-state resources to the CAISO at these zones. Thus, improvement of the modeling of out-of-state resources in both the IRP and TPP is required. It is important to point out that the transmission constraints that are developed by CAISO and submitted to the CPUC for use in RESOLVE are based on the predominant resource interconnection requests CAISO has received *within that zone*. For instance, the FCDS and EO transmission constraints for Southern Nevada/Eldorado/Mountain Pass zone are based on an expectation that solar resources will be interconnecting in that zone and the transmission constraints used in RESOLVE are applicable for solar resources. Thus, these limitations do not reflect additional FDCS or EO capacity that could be accommodated if there was more resource diversity in the renewable energy zone.

As relevant for the 2019-20 TPP, Policy Sensitivity #2 assumes that the Wyoming and New Mexico wind that is part of this portfolio will be delivered to existing renewable energy zones. For New Mexico/Arizona wind, we understand that these resources are modeled as delivered to Palo Verde, which corresponds to the Riverside East/Imperial renewable energy zones. We understand the Wyoming resources are modeled as delivered to the Southern Nevada/Eldorado/Mountain Pass renewable energy zone.

Once these wind resources are modeled as "delivered" to these zones in RESOLVE, the RESOLVE model then applies its existing FCDS and EO transmission constraints for those zones to these wind resources. But the renewable resource types delivered on out-of-state transmission facilities are expected to be more diverse, and have very different generation profiles, than the renewable resource types that are located within these renewable energy zones. If the resource profiles associated with the diverse, regional wind resources that are expected to be *delivered* to these zones were properly accounted for, they would likely result in very different (likely higher) transmission constraint figures than are currently modeled in RESOLVE.

Thus, it is likely that more MW of FCDS and EO resources could be accommodated from the Riverside, Imperial and Southern Nevada/Eldorado zones, if the CAISO had set the transmission limitations for these zones based on an expectation that diverse, regional wind resources would be delivered to, and available in, these zones. It is noteworthy that CAISO already studied the ability to integrate 2,000 MW of Wyoming wind and 2,250 MW of New Mexico wind as part of the Interregional Transmission Project and 50% RPS Out-of-State Special Study. In that analysis, CAISO found there was sufficient Maximum Import Capability (MIC) for renewable delivery to the CAISO system at major delivery points in the northwest and the southwest, implying that the full regional wind portfolio analyzed in Policy Sensitivity #2 can be accommodated on existing transmission and may be capable of providing Resource Adequacy benefits. [1]

Going forward, the CAISO and CPUC should better consider how diverse resource types might affect RESOLVE's transmission constraints. For Policy Sensitivity #2, it may be that additional FCDS capability would exist for wind that is interconnected in that zone.

III. Additional Analysis and Opportunity for Review is Needed Prior to Implementing the Proposed PCM Changes for Battery Dispatch

AWEA-California appreciates CAISO's continued efforts to improve its PCM and approach to the TPP as system dynamics and the resource mix in the West continue to change. During the

[1] While FCDS would not technically apply to resources located outside of the CAISO, resource specific imports, particularly dynamic transfers/pseudo ties of renewables can be used by LSEs to contribute to RA needs and, thus, the amount of "FCDS" from these zones may be an important consideration going forward.

September stakeholder meetings, CAISO presented on proposed modifications to PCM modeling for renewable curtailment and for the cost of battery dispatch.

Generally, CAISO's proposed approach for renewable curtailment appears reasonable, as it would help improve locational results, reduce curtailment "cliffs" and more closely align the PCM curtailment price with historical market experience.

However, the approach CAISO has proposed for battery dispatch requires additional consideration before moving forward. CAISO has proposed to model battery dispatch at the *average* cost of replacement capacity, when considering cycle life and depth of discharge. This approach fails to reflect the fact that revenues associated with the capacity costs for battery resources, in many instances, are likely to be recovered outside of the CAISO's market. AWEA-California is not aware of any other resource for which CAISO considers the average capacity cost replacement when considering economic dispatch in the PCM. For instance, the average cost of renewable resources (or other conventional resources) are not considered in the PCM's dispatch of these resources.

AWEA-California understands that batteries require unique consideration because batteries' economic life is dependent on the number of cycles and depth of discharge. However, application of the full average cost of replacement for every MWh of battery dispatch is inappropriate and will result in far less battery dispatch than may actually occur in the market going forward.

AWEA-California ask the CAISO to consider and further scope out the "incremental cost approach" mentioned during the meeting. Alternatively, CAISO could consider using some fraction of average costs to set a dispatch cost for battery storage. The use of the full average cost for battery dispatch, however, runs the risk of "overcorrecting" for the problem that CAISO has identified for modeling of batteries in the PCM. Thus, additional discussion and analysis is required prior to implementing this proposed change.

Conclusion

AWEA-California appreciates CAISO's consideration of these comments and looks forward to additional input opportunities to ensure the 2019-20 TPP can provide useful and accurate information to a variety of stakeholders, including the CPUC and the LSEs subject to the CPUC's IRP process.