Stakeholder Comments Template

Subject: Regional Resource Adequacy Initiative

Submitted by	Company	Date Submitted
Tom Darin *Phone: 720-244-3153* *Lisa Hickey* *Phone: 719-302-2142* *Cameron Yourkowski* *Phone: 971-634-0143*	*American Wind Energy Association* *Interwest Energy Alliance* *Renewable Northwest*	*June 15, 2016*

This template has been created for submission of stakeholder comments to the Second Revised Straw Proposal for the Regional Resource Adequacy initiative that was posted on May 26, 2016. Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on **June 15, 2016.**

Please provide feedback on the Regional RA Straw Proposal topics:

1. Resource Adequacy Unit Outage Substitution Rules for Internal and External Resources
2. Discussion of Import Resources that Qualify for RA Purposes
3. Load Forecasting
4. Maximum Import Capability
5. Monitoring Locational Resource Adequacy Needs and Procurement Levels
6. Allocation of RA Requirements to LRAs/LSEs
7. Reliability Assessment
    a. Planning Reserve Margin for Reliability Assessment
    b. Resource Counting Methodologies for Reliability Assessment

    The ISO's proposal to use the exceedance methodology for counting maximum wind and solar capacity allowable for RA fails to adopt current best

practices for analyzing the capacity benefits of wind and solar, is contrary to California law, and would be a step backwards for PacifiCorp and, by the time it is implemented in an expanded ISO, for CPUC-jurisdictional utilities as well. Because exceedance does not look over a full day and is not a robust probabilistic analysis, it does not adequately capture the rapidly changing electric system in the West. AWEA, Interwest Energy Alliance, and Renewable Northwest strongly recommend that the ISO reverse its position and incorporate the Effective Load Carrying Capability (ELCC) methodology into the next Regional RA proposal.

The ISO's proposal to continue to rely on the exceedance methodology is especially problematic given the West's (and particularly California's) unique, and changing, load shape. The exceedence methodology is outdated and inaccurate, and will become more inaccurate in the coming years as the penetration of renewable generation increases. Additionally, as many stakeholders pointed out, the "peak" hours currently used in California's exceedance calculations do not accurately capture California's net peak load periods, nor are they likely to accurately capture the peak of an expanded ISO. Even if the peak periods are updated and corrected, the exceedance methodology will create opportunities for stakeholder argument about the appropriate hours to use in the exceedance calculations. Conversely ELCC would capture wind and solar's capacity contribution, even as the load shape changes over time and should help the ISO avoid having to pick "winners and losers" by selecting the peak hours used in the exceedance calculation.

The major advantage of the ELCC method is that it recognizes that resource adequacy events do not always occur in the small number of hours that have traditionally defined peak demand hours. By looking across all 8760 hours in a year, ELCC methods capture all contributions to resource adequacy. This is not only valuable because of the increased penetration of renewable resources, but also because winter-time resource adequacy events have grown as a major reliability concern. This was seen when extreme cold triggered national and regional gas supply shortages and forced outages in January and February 2014, including significant electricity price spikes in CAISO in February 2014. The importance of winter resource adequacy concerns will likely only grow as the penetration of gas generation and solar generation increases.

Some resource adequacy events also occur during, what are traditionally viewed as, light load periods of the year, when many conventional generators may be unavailable due to planned maintenance outages. Climate change will

likely exacerbate unexpected extreme temperature events that lead to unexpected increases in electricity demand in what are traditionally mild weather periods of the year. The ELCC method addresses all of these changing dynamics of the electric system.

ELCC is actually relatively easy to calculate, and the necessary data is readily available. To conduct an ELCC calculation, one simply needs 8760 load data and wind and solar output data to create an 8760 net load profile. One can even use historical data to assess how the addition of marginal incremental resources would shift that profile.

More forward-looking ELCC analysis, as one would use for a large addition of new resources, is a bit more complex as one must make assumptions about the output profiles of future renewable resources and load. However, that can also be extrapolated from historical data, or filled in with the large body of modeled renewable output data produced by NREL and others that is widely used in renewable integration analyses.

CAISO stakeholders seem to generally agree that ELCC is the most accurate methodology to capture the resource adequacy capacity provided by wind and solar. ELCC better allows the capacity value of wind and solar to change as penetrations of variable resources increase. The industry has generally recognized this and is moving to incorporate ELCC in a variety of forums including the resource adequacy obligations and Renewable Portfolio Standard proceedings at the California Public Utilities Commission. In addition, NERC has expressed support for the use of ELCC methods for calculating the capacity value of variable renewable resources, noting that at the very least "simplified approaches [such as exceedance methods] should be benchmarked and calibrated to the rigorous ELCC calculations to ensure the validity of the approximation."[1]

ELCC and related Loss of Load Expectation (LOLE) methods are widely used in the utility industry. Using the ELCC method would also make it possible for CAISO to assess the resource adequacy contribution of all resources using the same method, ensuring all resources are evaluated on a level playing field.

The ISO certainly understands the importance of utilizing probabilistic assessments and performing studies that capture the changing dynamics of the electric system. The ISO has demonstrated its commitment to assessing

[1] http://www.nerc.com/files/ivgtf1-2.pdf

reliability under a changing resource mix in multitude of ways, including by proposing LOLE for calculating the Planning Reserve Margin (PRM) in the regional market. However, the ISO's proposal to use exceedance ignores the importance of accurately capturing the RA value offered by wind and solar and instead maintains the "status quo" that has become the norm in California's current market.

The ISO should note that many stakeholders supported or leaned towards supporting ELCC, with the CPUC commenting that ELCC is mandated by California law and will be adopted by the CPUC before a regional ISO is in place. The ISO should propose to use ELCC both because a majority of stakeholders support it and because, from a technical perspective, it is the more advanced and accurate approach to calculating RA capacity for wind and solar resources. The ISO should adopt ELCC to demonstrate that it is listening to the industry and that it will continue to evolve and develop its practices to meet, not only the needs and historic practices of California, but the broader needs of the Western Interconnection.

If, despite all the stakeholder and technical support for ELCC, the ISO still chooses to move forward with exceedance for calculating maximum RA values for wind and solar, the ISO must put forward a definitive timeline for moving to ELCC. Unless the ISO is bound to a definitive timeline, ISO initiatives often become delayed or never move forward because other issues arise that require the ISO's time and resources. Therefore, if the ISO moves forward with the outdated exceedance methodology, the next Regional RA proposal must include a definitive timeline for when the ISO will initiate, and complete, a transition to ELCC.

8. Other