

**Subject: Generation Deliverability Assessment Issue Paper**

Submitted by	Company	Date Submitted
<i>Donald Brooks, 415-703-2626</i>	<i>Energy Division California Public Utilities Commission</i>	<i>May 16, 2019</i>

CPUC staff appreciates the opportunity to comment on the California Independent System Operator (CAISO) Generation Deliverability Assessment Issue paper, and the May 2<sup>nd</sup> workshop presentation discussing the issue paper.

Energy Division staff comments are summarized below:

1. CPUC staff broadly supports conducting peak deliverability assessments with both the Highest System Need scenario and the Secondary System Need scenario in recognition of the changing electric demand and generation patterns on the CAISO grid.
2. However, CPUC staff is concerned with the apparent implementation of the deliverability assessment to calculate Net Qualifying Capacity (NQC) for Resource Adequacy (RA) illustrated by the example shown in section 7.3.2 of the Issue Paper. That example shows possible misinterpretation of the CPUC’s Electric Load Carrying Capability (ELCC) study results.
3. CPUC staff agree that CAISO should perform studies of deliverability at Secondary System Need periods as part of the interconnection process to identify upgrades that could mitigate the curtailment and share CAISO’s skepticism that deliverability network upgrades aimed to mitigate curtailment in the middle of a spring day (or other times when curtailed generation is not providing reliability benefit) are cost effective.
4. However, CPUC staff does not agree that the generator’s investment in deliverability upgrades identified to mitigate curtailment should be required to attain Full Capacity Deliverability Status (FCDS). This is because the overall system likely would not generally benefit in terms of reliability from investment in those upgrades, and ELCC determinations are not reliant on deliverability at levels higher than the ELCC value during high generation periods when there is often curtailment on a system level.

**CPUC staff broadly supports conducting peak deliverability assessments with both the Highest System Need scenario and the Secondary System Need scenario in recognition of the changing electric demand and generation patterns on the CAISO grid.**

The CAISO appropriately discusses the changing nature of the electric grid, with increasing solar and wind generation covering electric demand in the middle of the day, what used to be the peak reliability time. Now reliability risk occurs later in the day when solar generation decreases. CPUC staff agree with the CAISO’s position in the issue paper that assessing peak deliverability during the High System Need period minimizes required reliability and deliverability network upgrades identified in the interconnection process, but that this approach may lead to increased curtailment from generators in the Secondary System Need period. Were the CAISO to continue assessing deliverability at the Secondary System Need period as they have in the past, this would promote transmission investment to preserve generation

delivery when it is not really needed for reliability. CPUC staff agrees that investments simply to mitigate curtailment may not be a cost effective.

**However, CPUC staff is concerned with the apparent implementation of the deliverability assessment to calculate Net Qualifying Capacity (NQC) for Resource Adequacy (RA) illustrated by the example shown in section 7.3.2 of the Issue Paper. That example shows possible misinterpretation of the CPUC's Effective Load Carrying Capability (ELCC) study results.**

The CAISO summarizes the CPUC's efforts to develop and implement an ELCC methodology, in light of the large growth in wind and solar electric generation occurring over the last few years, and includes information resulting from CPUC's work that identifies hours of the day and months of the year when reliability (Loss of Load) events are likely to occur. Based on this analysis, the High System Need scenario is supported by CPUC's results. However, it is not accurate to suggest, as the example in section 7.3.2 does, that the ELCC of a particular generator or resource class depends on it being deliverable at full capacity during the Secondary System Need period. Whenever there is curtailment at the Secondary System Need period, that generation does not usually contribute to reliability and would not alleviate Loss of Load events. Clearly a resource must be deliverable at some level between its ELCC level and full capacity, but it is unlikely a resource must be deliverable at full capacity in order to be given an ELCC or to meet the Highest System Need scenario.

As to how to use the curtailment information to determine NQC of a generator in RA, CPUC staff suggest that the Secondary System Need scenario identify and quantify curtailment or non-deliverability that a generator faces, then compare the deliverable level to ELCC percentages.

**CPUC staff agree that CAISO should perform studies of deliverability at Secondary System Need periods as part of the interconnection process to identify upgrades that could mitigate the curtailment and share CAISO's skepticism that deliverability network upgrades aimed to mitigate curtailment in the middle of a spring day (or other times when curtailed generation is not providing reliability benefit) are cost effective.**

CPUC staff agrees with the CAISO's assessment that the High System Need scenario should be the primary means of identifying reliability network upgrades. We also agree that it is important for the CAISO to study and identify expected magnitude and mitigation for curtailment as part of the interconnection process, so the Secondary System Need scenario is important. If there are some minor upgrades that can mitigate curtailment, it would be good to identify those, and if there are some resources that are not curtailed at all, it would be good to identify those as well. However, there will certainly be upgrades to mitigate curtailment that will not be cost effective and thus should be considered optional. It is expected there will be a range of curtailment and mitigation identified on a case by case basis.

**However, CPUC staff does not agree that the generator's investment in deliverability upgrades identified to mitigate curtailment should be required to attain Full Capacity Deliverability Status (FCDS). This is because the overall system likely would not generally benefit in terms of reliability from investment in those upgrades, and ELCC determinations are not reliant on deliverability at levels higher than the ELCC value during high generation periods when there is often curtailment on a system level.**

FCDS status should be given to generators by comparing deliverability amounts to ELCC amounts, and FCDS status restricted to partial deliverability only in events when the deliverability of a resource in the High

System Need scenario and Secondary System Need scenario is LOWER than the ELCC amount (MW installed capacity times ELCC percentage) of a resource. This is due to the methodology used in performing ELCC studies. In particular, when a resource or group of resources is tested, it is removed and replaced with Perfect Capacity, which is roughly equivalent to a CT that is operable 24/7 at full capacity. As a practical matter, the ELCC value then translates to the MW capacity of presumably deliverable Perfect Capacity generation that must be installed to balance the potentially partially deliverable MW of the resource being tested. While this is a bit of a crude translation, it is likely true that not all intermittent wind and solar generators would need to be deliverable at a level higher than ELCC level during the Secondary System Need period in order to alleviate Loss of Load events. The ELCC model already identifies significant curtailment at a system level during the Secondary System Need period when there is no Loss of Load events in the ELCC model, thus it is not critical for the CAISO to preserve deliverability at that Secondary System Need period for FCDS the way it may have been needed when exceedance calculations needed higher MW amounts to average with lower MW amounts to calculate the QC value. In the case of ELCC, a resource generally only needs to be deliverable to the ELCC level for reliability.

CPUC staff expect that non-deliverability of ELCC amounts at either the highest System Need period or the Secondary System Need period would be a rare event, and occur on a resource by resource basis so CPUC staff would disagree with any proposal to impose a uniform rule about deliverability at full capacity for FCDS, rather than deliverability at lower ELCC capacity levels.