Comments of Calpine Corporation on

Updates to Local Capacity Technical Criteria

Issue Paper

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Summary:

Calpine supports the ISO's suggestion that the Local Capacity Technical Criteria should match, without exception, the mandatory Transmission Planning (TP) standards. By using the same standards applied in TP, the CAISO appropriately will identify the total amount of local capacity needed to operate the grid.

Discussion:

Calpine understands that the CAISO is obligated, by WECC and NERC, to comply with various mandatory reliability planning standards. Those standards, as identified in the Issue Paper, require reliability analysis under a broad spectrum of possible contingencies (i.e., single and multiple outages of transmission and/or generation facilities.) In the annual transmission planning process, the CAISO complies with the mandatory requirements of WECC and NERC -- as they have evolved over time. Where reliability shortcomings are identified through the application of the various outages or combinations of outages, the TPP solicits solutions – including transmission and alternatives[1] (potentially including storage, preferred resources and/or demand side solutions).

The Local Capacity Technical (LCT) studies include many of the most common contingencies as required by mandatory standards but not the same comprehensive set as the TPP studies. In fact, as identified in Table 1 of the Issue Paper, there are nearly two dozen sets of contingencies which are "mandatory" for transmission planning, but excluded from the subsequent and derivative LCT analysis. As the Issue Paper confirms, the NERC/WECC

[1] In some cases, NERC/WECC allows post-contingency "non-consequential load loss" for several multiple contingencies, in other words load dropping so long as there is no consequential risk of cascading outages.

mandatory contingency lists have emerged and evolved without similar modifications to LCT study assumptions.

The modeling of contingencies is designed to simulate system conditions after outage(s) ("post-contingency") and observe whether any elements of the system are threatened, given a set of physical thermal and stability limits. If facilities are overloaded, or voltage or stability concerns emerge, those effected elements are flagged for further study of possible mitigation measures.

As a very simple example, consider two parallel lines serving load. If one of the lines has an outage, much of the flow may shift to the second line (or other lines if available), potentially overloading that facility. In this very simple example, there are two possible solutions to the potential overload – (1) re-conductor both lines (if feasible[2]) so that either line can carry the entire load if one line fails, or (2) redispatch generation (increase generation at the load location) so that the flows are always below the capacity of the most constrained line (pre-contingency dispatch). As one can imagine, the modeling becomes very complicated when one considers hundreds or thousands of possible outages occurring individually, simultaneously or sequentially. But what should be clear is that generally, as one tests more and more possible contingencies, the constraints on operating the system may grow.

Local Capacity Technical Studies, in simplest terms and, as in the second option above, seek to identify how much pre-contingency dispatch of generation is required in a local area constrained by, and defined by transmission import limits. The LTC study simulates different sets of outages on the transmission and generation network and observes possible overloaded facilities. The most constraining of the tested contingencies establishes the minimum generation that is needed within the load pocket. This is in essence the Local Capacity Requirement (LCR).

Calpine agrees with the CAISO proposal to match the LCT with the TPP mandatory contingencies in order to ensure reliability.

First, applying a less stringent set of contingencies, as is the case today, will produce an LCR value that could be lower than the true reliability need. The total RA required may not[3] represent a necessary or sufficient solution to avoid either consequential load shedding or ensure a secure system. As the ISO said in the TPP meetings[4] last fall,

[2] Note that in the last TPP, the CAISO conducted a study of the feasibility of eliminating or reducing local area requirements with transmission reinforcements.

[3] It should be noted that the inclusion of all mandatory requirements *may not increase* LCR values, particularly if the to-date untested contingencies produce local capacity requirements lower than other modeled contingencies.

[4] See slide 31, of the October 2018 meeting materials.

> Limiting the number of contingencies (e.g., boundary elements) would contradict with real time operations where the ISO needs to maintain system reliability for all possible contingencies.

Second, the CAISO tariff observes the mandatory standards[5], but the contingency list provided does not reflect the current categories or fully represent the contingencies identified in the planning standards. In fact, Calpine would suggest that the tariff be amended to clarify – either the congruence or incongruence -- of the mandatory planning standards and those contingencies applied by the LCT methodology.

> In performing the Local Capacity Technical Study, the CAISO will apply those methods for resolving Contingencies considered appropriate for the performance level that corresponds to a particular studied Contingency, **as provided in NERC Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0, and TPL-004-0,** as augmented by CAISO Reliability Criteria in accordance with the Transmission Control Agreement and Section 24.2.1.

Third, this potential reliability risk will only grow with time. In particular, the retirement of local resources (either by OTC compliance or other causes) will place more pressure on the accuracy of the LCR results. Resources that are needed based on the mandatory standards, but not required because of the application of an inferior subset of mandatory contingencies may not be available for Exceptional Dispatch. The use of other backstop mechanisms (CPM or RMR) would be inappropriate given that the reliability needs are identifiable and in some ways – already known to the CAISO as a result of TPP studies.

Finally, as identified by the CAISO, applying the full and more stringent requirements only in the TPP will allow transmission and transmission-like solutions (e.g., storage as a transmission asset) to preferentially solve true reliability matters that are not surfaced in LCT studies.

Calpine recommends that all P1 through P7 contingencies identified in the mandatory standards be a part of the LCT studies. Other extreme events should be handled on a case-by-case basis.

Thanks

[5] Tariff, Section 40.3.1.1