Stakeholder Comments

CAISO Contingency Modeling Enhancements Draft Final Proposal and Technical Analysis

Submitted by	Company	Date Submitted
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SCE appreciates the opportunity to comment on the California Independent System Operator (CAISO) Contingency Modeling Enhancements (CME) Draft Final Proposal (the CAISO Proposal) and Technical Analysis[1].

Summary of SCE comments

SCE recognizes and agrees with the CAISO on the importance of grid reliability. However, SCE is concerned that the CAISO Proposal will

- Introduce significant complexity to an already complex market
- Impact the cost that electricity consumers have to pay when CME constraints are binding
- Impact the Settlements system for both CAISO and market participants
- Impact Congestion Revenue Right (CRR) market

At this stage, SCE is not convinced that the CAISO Proposal will be more economic or robust than the status quo or alternatives. SCE believes it is more appropriate for the CAISO to consider the study methodology described in the CAISO Proposal to develop situational awareness tools to enhance grid reliability. This will provide more experience with the methodology[2] and can be useful in helping to determine whether the market, as currently designed, provides sufficient corrective capacity by itself to address N-1-1, and if not, whether it can be addressed through Residual Unit Commitment (RUC) and/or an enhanced Ancillary Service market with locational attributes. SCE notes that, under unusual conditions such as N-1-1, the ISO has tools available to manage the situation that are not modeled in the optimization. This includes certain demand response programs, utilization of Remedial Action Schemes (RAS), and assistance from neighboring Balancing Authorities, as well as out-of-market dispatches to ISO resources. Given there are un-modeled tools available in those unusual circumstances, it is inappropriate to attempt to resolve issues in advance using ONLY tools modeled in the optimization.

SCE also suggests that the CAISO align its stakeholder process considering the timeline of the FERC Price Formation Order (AD14-14)[3] to minimize the risk of any design overhaul. SCE recommends that the CAISO reevaluate the potential benefits and costs including impacts on an already busy implementation schedules of this initiative.

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[1] CAISO Contingency Modeling Enhancements CRR Draft Final Proposal, dated August 11, 2017: http://www.caiso.com/Documents/DraftFinalProposal-ContingencyModelingEnhancements.pdf.
CAISO Technical Analysis Paper, dated August 17, 2017: http://www.caiso.com/Documents/TechnicalAnalysis-ContingencyModelingEnhancements.pdf

[2] Although the CAISO has performed the simulation and parallel operation, it does not appear the simulation and parallel operation is complete in that the CAISO is proposing to apply this design to any facility with a 30-minute emergency rating or a 4-hour emergency rating that the CAISO considers applicable, while the simulation and parallel operation only considers a very small set of constraints and only 30-minute rating.

[3] FERC Order AD14-14, Price Formation in Energy and Ancillary Services Markets Operated by Regional Transmission Organizations and Independent System Operators (RTO/ISO), Section II, Commitments to Manage Multiple Contingencies.

In summary, SCE supports the CAISO's use of the study methodology described in the CAISO Proposal as a tool to monitor situations in real-time to ensure operators are aware of potential problems. At this stage, SCE opposes the proposal of the inclusion of N-1-1 constraints explicitly within the optimization and the creation of the nodal corrective capacity product modeled under N-1-1 constraints.

SCE provides detailed comments on the CAISO Proposal and the recent study results herein.

1. Comments on the CAISO Proposal

SCE has provided its detailed comments regarding the overall CAISO CME Proposal throughout this stakeholder process and SCE appreciates the opportunity for its stakeholder participation; key concerns associated with the CAISO CME Proposal are listed below.

1) The CAISO Proposal introduces significant complexity to an already complex market.

SCE believes adding more constraints, e.g. N-1-1 transmission constraints, to the market model won't necessarily improve the efficiency of price formation or the markets. On the contrary, without careful evaluation, simply including N-1-1 reliability constraints can overly complicate an already complex market. Adding those constraints to the market will introduce into the market price a new dimension, which is temporal in nature. Among other things, this new dimension can make price discovery more difficult[4].

2) There is no demonstration that the CAISO Proposal would result in least-cost outcomes for consumers.

SCE understands and agrees with the notion to minimize out-of-market dispatch (such as exceptional dispatch and the use of minimum online capacity constraints, or MOCs) at a reasonable cost. However, with the N-1-1 contingences perceivably being extremely low-probability events, out-of-market dispatch may ultimately be optimal to address those situations. Under the current design, resources dispatched out-of-market fully recover their costs and receive compensation through various forms, including energy and A/S revenue, Bid Cost Recovery (BCR) payment, RUC payment, and RA payment, etc.

More broadly, under unusual conditions such as N-1-1, the ISO has tools available to manage the situation that are not modeled in the optimization. This includes certain demand response programs, utilization of RAS, and assistance from neighboring Balancing Authorities, as well as out-of-market dispatches to ISO resources. Given there are un-modeled tools available in those unusual circumstances, it is inappropriate to attempt to resolve issues in advance using only tools modeled in the optimization. The attempt to explicitly model extremely low-probability events in the market, without recognizing those outside-market tools that are available to the ISO, will inappropriately increase the marginal clearing price and significantly impact the cost that electricity consumers have to pay when those constraints are binding.

3) Alternatives should not be ruled out especially if they can provide better economic and reliability benefits.

[4] As an example, changes to existing Local Market Power mitigation have been proposed in order to accommodate the Proposal. Although the changes are necessary, they add to the complexity of the design.

Generally, multiple contingencies including N-1-1 contingencies are not modeled in a RTO/ISO market on a regular basis as system conditions concerning an N-1-1 occurrence are more pertinent to real-time and only for a limited time frame. Even when those contingencies need to be considered in the day-ahead and on a daily basis, there are alternative approaches that may provide a better price signal than through market constraints. For instance, local reserve products may be preferable. By procuring local reserves in targeted areas, resources in those areas can address N-1-1 events and restore the reserves lost due to the contingencies. These reserves can be co-optimized with energy, subsequently priced and procured through the markets. This approach would be beneficial because it would provide predictable local market signals to, for instance, build fast-starting units that can satisfy the needs (to have local resources that can address 30 minute or 4 hour restoration). Such an approach would also keep the current CRR market design intact.

4) The CAISO Proposal will compensate resources financially without an obligation to perform, which is not just and reasonable.

Under the Proposal, resources will be financially compensated for modeled corrective capacity in the Day-Ahead Market (DAM) and Real-Time Market (RTM) on a daily basis regardless the probability of the occurrence of N-1-1 events. However, the compensation comes with no obligation. There is no guarantee that the resources receiving compensation would be those resources that actually provide corrective capacity to restore the grid under an N-1-1 event[5]; nor would those resources who actually provide corrective capacity during the event receive the corrective capacity compensation under the CAISO Proposal.

2. Comments on the technical analysis and the changes in the latest CAISO Proposal

In its DFP, the CAISO has proposed that CRRs will be allocated, auctioned, and settled, only on existing preventive constraints and not on corrective constraints. During the stakeholder call, the CAISO stated that the proposal is no longer restricted to the eight (8) WECC paths that were previously contemplated. Further, the CAISO proposed that the approach be broadly applicable to both 30 minute emergency limit and 4 hour emergency limit. In its technical analysis, the CAISO found that the CME constraints rarely bind during the simulation[6].

1) Under the CAISO Proposal, CRRs will not be able to hedge any risk associated with post-contingency congestion introduced under the CAISO Proposal.

Although it may be preferable compared to the previous approach of developing 8 different CRRs[7], settlement of CRRs only on preventive constraints will cause the CRR to no longer fully hedge congestion by design. This brings a risk for consumers not being able to fully hedge the modeled post-contingency congestion under the CAISO Proposal. This creates potential difficulty for parties

[5] During an emergency situation such as N-1-1 event, grid operators will take whatever actions necessary to restore the grid at the time, for example, FRP will be utilized if available. However, the Proposal does not consider FRP being eligible to count towards corrective capacity. Further, those resources receiving corrective capacity revenue may not be most economic to address contingencies determined by Real-Time Contingency Dispatch when energy cost is considered.

[6] The technical analysis concludes that CME constraints bound only in one of the twelve stressed cases, i.e., market solutions without CME would be sufficient to address N-1-1 in 11 out of 12 cases. Further, CME constraints did not bind in a two week period of parallel operations conducted around the end of March 2017.

[7] http://www.caiso.com/Documents/CRRAlternativesDiscussionPaper-ContingencyModelingEnhancements.pdf

to correctly value a CRR making the allocation and auction process more difficult[8] to properly evaluate.

2) SCE shares the concern brought by stakeholders[9] that the CAISO Proposal is overly broad and vague in terms of the scope and important details of the new corrective capacity product.

During the recent stakeholder meeting, stakeholders became aware of a significant change affecting the CAISO's proposal. The change is significant in that the original WECC reliability standard the CAISO Proposal was tailored to meet no longer exists[10]. This is important, because up to this point, all discussions about the need of the new corrective capacity product have been focused on the 30-minute emergency limit on the predefined 8 WECC paths. In the Draft Final Proposal, however, the CAISO has proposed to expand its Proposal to any facility with a 30-minute emergency rating or a 4-hour emergency rating that the CAISO considers applicable[11]. Since a 4 hour capacity product is quite different from a 30-minute product, it should be thoroughly evaluated how the proposal would work with the 4 hour time horizon. For example, how should the 4-hour time horizon be treated in the DAM and various market processes in RTM. More fundamentally, should a 4-hour capacity product be modeled in an energy market[12] and how it interacts with the three-hour requirement of being a flexible RA?

3) The CAISO and stakeholders should consider more simulation cases.

SCE appreciates the CAISO's effort in conducting the simulation to demonstrate how often CME constraints may bind. However, the CAISO's latest proposal is that the design can be applied to *any* facility with a 30-minute emergency rating up to a 4-hour emergency rating that the CAISO considers applicable. This suggests that more simulation studies should be performed since the recent simulation study considers only a very small set of otherwise applicable facilities.

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[8] With the CAISO Proposal, one will likely have to "reverse engineer" DAM congestion at a node to find the expected value of a CRR in the allocation and auction process. This is because the DAM congestion at a node will include a portion relevant to the CRR evaluation and a portion that's not. Further, the CRR model used in the allocation and auction will include just preventive constraints, while the DAM model will include both preventive and post-contingency constraints. In this sense, the CRR model and the DAM model will not be consistent.

[9] For example, DMM raised a question relating to 4 hour emergency limit as the CAISO Proposal does not have sufficient discussion of this topic (e.g., how many of those constraints and where are they located).

[10] "On December 3, 2015, the WECC Board of Directors approved the retirement of WECC Regional Reliability Standard TOP-007-WECC-1a and FERC approved the retirement in April 2016. The original purpose of the WECC standard was to limit instances where actual flows on critical transmission paths exceed system operating limits on those paths for more than 30 minutes….The WECC Board therefore voted to retire the regional standard because it was duplicative of the NERC standards." Page 11-12, DFP.

[11] Slide 15, CAISO Presentation available at http://www.caiso.com/Documents/Presentation-ContingencyModelingEnhancements.pdf

[12] With a 4-hour time horizon, if an N-1 event occurs, likely that event will be incorporated into the next RTM market run and thus be handled through sequential RTM market runs instead of the proposed methodology.