

Stakeholder Comments

CAISO Contingency Modeling Enhancements

Submitted by	Company	Date Submitted
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SCE appreciates the opportunity to comment on the California Independent System Operator (CAISO) Third Revised Straw Proposal (Proposal) on Contingency Modeling Enhancements 2015¹. SCE recognizes and agrees with the CAISO on the importance of grid reliability. However, SCE is not convinced that the CAISO Proposal will be more economic or robust than alternatives². SCE also has concerns on specific design elements of the Proposal³. SCE recommends (1) that the CAISO continue to explore issues with this Proposal and expand its evaluation to other alternatives, and (2) that the CAISO align its stakeholder process considering the timeline of the FERC Price Formation Order (AD14-14)⁴ to minimize the risk of any design overhaul. SCE believes it is more appropriate for the CAISO to consider the study methodology described in the Proposal to develop situational awareness tools to enhance grid reliability. This will provide real-world experience with the methodology and can be useful in helping to determine whether a market product is necessary and what is the right procurement quantity (e.g. for a reserve product).

The CAISO has not demonstrated that the Proposal will be more economic or robust than the status quo or alternatives.

SCE appreciates the effort that the CAISO has taken to develop the mathematical formulation of its Proposal. However, so far the CAISO has not demonstrated that the Proposal will address the reliability needs in an economic and robust fashion. The cost to meet post-contingency needs is relatively small today at the status quo. For example, the CAISO estimated roughly \$47 million occurred in uplifts for exceptional dispatches that were used to meet post-contingency needs in 2012. This represents less than 0.6% of the total cost of serving load that is at \$8.4 billion in 2012. It is unclear how much the current Proposal will cost the market to meet post-contingency needs but it is likely the cost will be high due to the fact that the transmission grid will have to operate at lower (potentially significantly lower)

¹ CAISO DMM Straw Proposal, dated November 20, 2015 and the presentation for the December 10, 2015 stakeholder web conference can be accessed through the links below:

<http://www.caiso.com/Documents/ThirdRevisedStrawProposal-ContingencyModelingEnhancements.pdf>

<http://www.caiso.com/Documents/AgendaandPresentation-ThirdRevisedStrawProposal-ContingencyModelingEnhancements.pdf>

² Alternatives include Regional Flexibility Market proposed by SCE in 2014, the current approach taken by the CAISO (e.g., MOC constraints and EDs), Reserve Zone Products as implemented in other ISO/RTOs including MISO, NYISO and ISO-NE, to address 30-minute reserve needs.

³ Those specific issues include the treatment of virtual bids, RA payment in RUC, and other issues that may or may not arise depending on the prototype results to be released by the CAISO. For a full list of issues, please see Section 2 of prior SCE comments at <http://www.caiso.com/Documents/SCEComments-ContingencyModelingEnhancements-SecondRevisedStrawProposal.pdf>

⁴ FERC Order AD14-14. Section II.

ratings to reflect N-1-1 contingencies, compared to today where the transmission grid operates at normal ratings and emergency ratings under N-1 contingencies while exceptional dispatches remain available to address N-1-1 contingencies when they occur.⁵

The CAISO Proposal can incur additional re-dispatch costs and can be less robust than alternatives to meet post-contingency needs, due to false precision in the Day-Ahead time frame. For example, an N-1-1 issue that the DAM sees and is trying to solve by re-dispatching expensive physical resources may not exist in the RTM (e.g., the N-1-1 issue in the DAM may be due to virtual bids increasing flow on the path, or due to renewable and load forecast error, or topology changes or unit outages), or may not be as severe in RTM, or may not be the same type of the issue the RTM sees. Under any of these cases, it is questionable that the CAISO Proposal can yield a more robust solution and lead to lower uplift costs than the status quo or a reserve product.

The Proposal introduces significant complexity to current LMP and CRR market design without being fully tested. The Proposal will make market prices less transparent with material impacts to Settlements systems and increasing market solution time.

The CAISO Proposal introduces multiple changes to the core LMP and CRR market design. Given the volume of energy transactions and the significant revenue involved in the market, a seemingly small change to the price formulation, without careful examination and testing, can turn into material impact upon implementation for actual market operations.

Under the CAISO Proposal, LMP now reflects a new congestion component that is associated with post-contingency flow attributable to corrective capacity at T+30 minutes as if the contingency were in place. The standard framework for LMP, consisting of three components with clear and distinct formulation no longer holds. In fact, the physical meaning of LMP and its components becomes less and less clear. With this Proposal, the LMP now has eight (8) different components.⁶ How those different components are grouped within the standard three components continues to become less and less clear. In addition to the changes to the LMP formulation, there will be a capacity price at each node on the grid under the Proposal. Market results will be more difficult to understand due to the interaction between this nodal capacity price and LMP. Consequently, market prices will become less transparent and price discovery more difficult.

⁵ The CAISO Proposal lists eight (8) paths that are subject to more conservative, N-1-1 contingency rating. Those paths include Path26, COI, SCIT, SDGE-CFE, West of Colorado River, South of Los Banos or Midway-Los Banos, Lugo-Victorville 500kV, and PG&E – SPP, all important paths to import power from WECC to California.

⁶ LMP in CAISO markets has the following seven (7) components today and each component is calculated differently: (1) loss component, (2) energy component, (3) GHG component, (4) a component due to congestion on transmission facility in Base Case under normal rating (5) a component due to congestion on transmission facility in N-1 contingency cases under emergency rating, (6) a component due to EIM transfer hitting transfer constraint (schedule-type of constraint. EIM transfer can be a result of power imbalance within an EIM area) creating price separation between EIM areas, (7) a component due to EIM area power imbalance reflected in the system power balance constraint that can result elevated prices across the market. Components (3) – (6) are grouped in Marginal Congestion Component of LMP and Component (7), which may represent similar power imbalance in an EIM area as Component (6), is grouped in Marginal Energy Component of LMP. This Proposal will further add the eighth component to LMP, i.e. (8) a component due to modeled N-1-1 congestion at T+30 minutes as if an N-1 contingency were in place.

The proposed change on the CRR market, namely contingency CRRs (CCRRs), if adopted, will make participation in the market more complicated and introduce business risks to market participants. For example, the valuation, bidding, and settlements of CRRs will change dramatically under the Proposal, which pose risks to CRR market participants.

Given the expanded full network model and the challenges in solving AC/DC power flow⁷ in both Day-Ahead and Real-Time Markets, the complexity in calculating nodal LMPs and corrective capacity prices can further impact the market solution time and delays in publishing market results. Last but not least, the proposed changes will impact Settlements systems both at the CAISO and at market participants.

SCE supports the use of, and the development of enhanced situational awareness tools as well as refining the use of existing tools.

SCE supports the CAISO refining Exceptional Dispatch (ED) and Minimum Online Constraints (MOC) to address perceived shortcomings and to reduce EDs. This includes building new off-line tools to better assist operators in making appropriate, minimally invasive reliability commitments and dispatch decisions.

The CAISO should consider the use of the current study methodology in the CAISO Proposal to assist with situational awareness. The approach of implementing a viable new “off-line” optimization tool to inform operational decisions would also provide real-world experience with the approach and would be useful in determining a procurement quantity for a reserve product if necessary.

The CAISO should consider aligning this stakeholder process with the timeline of FERC Order AD14-14, to minimize the risk of any design overhaul.

Given its importance, the topic of N-1-1 contingency modeling is also live in the FERC Price Formation Order. To minimize the risk of any design overhaul, in the event that the CAISO’s Proposal is not consistent with potential future direction from the FERC, the CAISO should fully consider the downside of pushing forward with this Proposal at this time. Setting priorities among other important ongoing initiatives is probably a better use of CAISO and its stakeholders’ resources and it will also minimize the risk of any design overhaul.

⁷ A DC solution and market publication delays can be caused by variety of issues, and in general is due to the added complexity to the markets. See details in the CAISO presentation available at the link below.
<http://www.caiso.com/Documents/BriefingonDay-AheadMarketRunTime-ISOPresentation-July2015.pdf>