

Stakeholder Comments

CAISO Contingency Modeling Enhancements CRR Alternatives Discussion Paper

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) CRR Alternatives Discussion Paper¹. SCE continues to question whether the CAISO’s CME Proposal will be more economic or robust than alternatives including reserve zone products to address 30-minute reserve needs. SCE notes that the CAISO has made no demonstration that their approach to N-1-1 will result in least-cost or even just and reasonable outcomes. Moreover, the approach may lead to additional material complications with the CRR process. SCE continues to recommend a resolution that does not create the complexities contemplated here by procuring additional reserves (likely Non-spin) on a more locational basis. This approach has the additional benefit of allowing the CRR process to continue to function as it does today².

SCE’s comments herein focus only on the CRR revenue inadequacy issue under the CAISO’s CME Proposal. The CAISO market is experiencing significant CRR revenue shortfall³ and this has resulted in a significant amount of revenue being taken from load serving entities to fund CRR holdings. Such an outcome deserves redress. The CAISO should launch an effort to redesign how a CRR revenue shortfall should be allocated as a long term solution. Before such solution is in place and within the scope of this initiative, the CAISO should take a more direct and simpler approach while avoiding imposing complicated changes to the CRR process. In particular, the CAISO should consider the approach developed by the DMM in 2014⁴ as an interim solution that can achieve the same goal as many of the CAISO’s proposed options without significant changes to the CRR process.

¹ CAISO Contingency Modeling Enhancements CRR Alternatives Discussion Paper, dated January 28, 2016, also presented at the February 11, 2016 Market Surveillance Committee Meeting, can be accessed through the links below:

<http://www.aiso.com/Documents/CRRAlternativesDiscussionPaper-ContingencyModelingEnhancements.pdf>
http://www.aiso.com/Documents/ContingencyModelingEnhancementsDiscussion-ISO_Presentation-February2016.pdf

² There are other benefits of adopting a reserve product approach, as described in previous SCE comments available at:
<http://www.aiso.com/Documents/SCEComments-ContingencyModelingEnhancements-SecondRevisedStrawProposal.pdf>

³ CRR revenue shortfall was \$102 million for 2013 and \$199 million for 2014, when auction revenues are excluded. Page 161, 2014 Annual Report, available at

http://www.aiso.com/Documents/2014AnnualReport_MarketIssues_Performance.pdf.

The total revenue shortfall amount for 2015 is expected to be available soon. The percentage of the shortfall amount relative to day-ahead congestion rent remained in about same range in 2014 and first four months in 2015. Page 12, Market Performance and Forum, May 2015 Presentation, available at

http://www.aiso.com/Documents/Agenda_MarketPerformance-PlanningForum_May20_2015.pdf.

For monthly shortfall amount in the last two years, see Page 3 of the CAISO presentation, available at

http://www.aiso.com/Documents/ContingencyModelingEnhancementsDiscussion-ISO_Presentation-February2016.pdf

⁴ A copy of the paper describing the 2014 DMM approach is available through the link below:

http://www.aiso.com/Documents/AllocatingCRRRevenueInadequacy-Constraint-CRRHolders_DMMWhitePaper.pdf

The CAISO should consider adopting the 2014 DMM approach to avoid complicated changes to the CRR process. The 2014 DMM approach can achieve the same goal and produce the same end results as many of the CAISO's proposed options.

The proposed new CCRR and CRR^k & CRR^{kc} products can impose complicated changes to the CRR process. For instance, there are eight (8) paths currently proposed to be subject to an N-1-1 limit, this means there could be up to nine (9) CRR awards for a single source and sink CRR. The volume of CRR awards can be eight (8) times higher than today. Even if it is possible to bundle all eight (8) new CRR products into one, such bundling itself can create additional complexity. Further, the inter-relationship between the proposed new CRR products and the existing CRR product can introduce uncertainty to the CRR process. This is because a cleared MW quantity of one CRR product would depend on the cleared quantity of another CRR type. For instance, the cleared quantity of regular CRRs would depend on how many MWs of CCRRs are being offered and subsequently cleared in the auction. Similarly, the MW of available CRR^k would depend on that of CRR^{kc}. Such uncertainty can lead to significant risks in valuing and acquiring CRRs.

As an example of the practical implication of the new CCRR and CRR^k & CRR^{kc} products, suppose that in the annual CRR process an entity is allocated 10 MWs of CRR^k and CRR^{kc}. In the monthly process, the entity finds that their need has reduced to 7 MWs. However, in selling the 3 MWs (i.e., purchasing the counterflow) it may only make sense if they get all of the pieces (CRR^k and CRR^{kc}). With potentially eight (8) varieties, the probability that the entity gets exactly what they need is small and therefore introduces significant risk due to the complication. Another example of the practical implication is that an entity owning a long term CRR (e.g. 10-year product) may be forced to have CCRR (or CRR^{kc}) in its portfolio for the remaining of the product life, while the financial risk of the new CCRR (or CRR^{kc}) was not factored into when the long term CRR was valued and acquired.

While the ultimate goal here is to not introduce CRR revenue inadequacy from the design under this initiative, this goal can be achieved in a simpler and more effective way without introducing significant changes to the CRR process. The CAISO should consider adopting the payment adjustment approach on a constraint by constraint basis that was proposed by the DMM in October 2014. The essence of that approach is to pay CRRs up to the portion that matches day-ahead flow limit, as the portion above the day-ahead flow limit would contribute to the CRR revenue shortfall for a binding constraint. Because post-contingency constraints can't be modeled in the CRR process in a similar way as in the day-ahead market, a portion of CRR flow that is above a post-contingency limit can contribute to CRR revenue shortfall when the post-contingency constraint binds. By paying CRRs only up to the portion of day-ahead flow limit, it will achieve the same CRR revenue adequacy goal while avoiding complicated changes to the CRR process. At a minimum, SCE recommends this as an interim solution while the market gains a better understanding of the impact the new N-1-1 constraints on congestion.

To the extent that the volatility of post-contingency congestion is significant and creates other unanticipated issues, more complicated CRR products may warrant further evaluation in the future based upon evidence of need from actual market data.

As mentioned above, SCE continues to question whether the CAISO's CME proposal will be more economic or robust than alternatives. That being said, to the extent the volatility of post-contingency congestion in the day-ahead market is significant and creates other unanticipated issues that need to be addressed beyond the payment adjustment approach, new CRR products such as those proposed by the CAISO may warrant further evaluation in future. When actual market data (e.g., of a two-year period to cover seasonality) is available, the CAISO and market participants can better assess whether there would be any substantial benefit that outweighs the complexity of new CRR products.

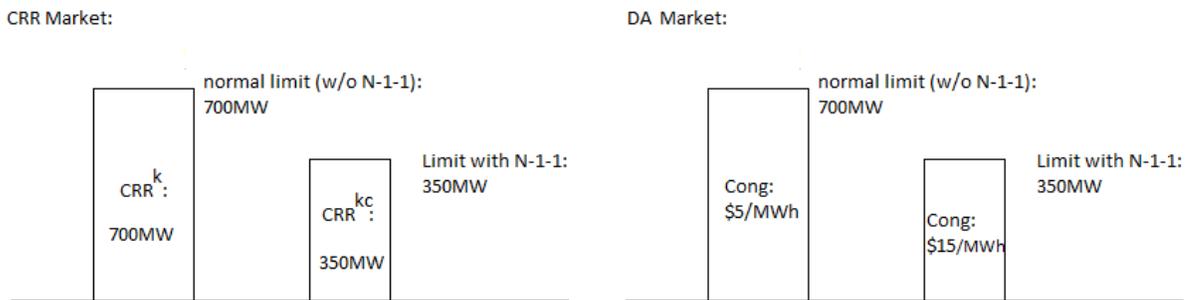
Given the significance of the CRR revenue shortfall, the CAISO should launch an effort to redesign how CRR revenue shortfall is allocated.

Last but not least, the CAISO should launch an effort to develop a long term solution to redesign how CRR revenue shortfall should be allocated. While this may not be entirely within the scope of this initiative, the importance of the CRR revenue shortfall and the resultant allocation issue needs to be fully recognized and addressed.

Appendix: Hypothetical Example: The 2014 DMM Approach vs. CAISO Proposed Options

As mentioned in the body of the comments, the 2014 DMM approach can achieve same goal of CRR revenue adequacy and produce same end results as many CAISO proposed options. Below Proposed Option 3(c) is used for illustration. With the same example in the CAISO’s Proposal, for a path with normal limit at 700MW and N-1-1 limit at 350MW, Option 3(c) would result 700MW CRR^k and 350MW CRR^{kc}. In the day-ahead market, the path binds with \$5/MWh shadow price for Base Case and N-1 contingency cases and \$15/MWh for N-1-1 contingency. The 700MW CRR^k will be paid at \$5/MWh and the 350MW CRR^{kc} at \$15/MWh. The total CRR payment is \$8,750/h (700MW x \$5/MWh + 350 x \$15/MWh). This is illustrated in the diagram below.

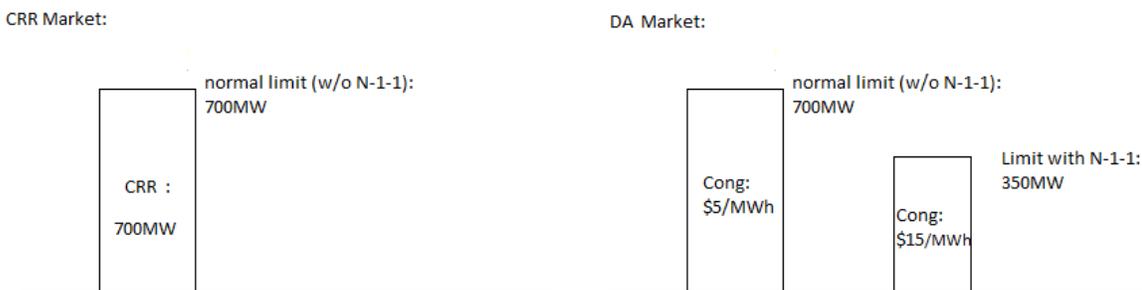
Option 3(c)



$$\text{CRR Payment: } 700\text{MW} \times \$5/\text{MWh} + 350\text{MW} \times \$15/\text{MWh}$$

By applying the 2014 DMM approach, the auction would clear 700MW CRR on the path just as today⁵. Different than Option 3(c), the 700MW CRR will only be paid up to the portion that matches the day-ahead flow limit of 350MW for the post-contingency constraint. As illustrated below, the total CRR payment will be $700\text{MW} \times \$5/\text{MWh} + 700\text{MW} \times \$15/\text{MWh} \times (350/700) = \$8,750/\text{h}$, which is the same as Option 3(c).

Suggested Payment Adjustment Approach as interim solution



Adjusted CRR Payment on Constraint by Constraint basis:

CRR Quantity X DA Congestion X Flow Limit Ratio.

where: Flow Limit Ratio = DA Flow Limit / CRR Flow Limit.

CRR payment for congestion under normal limit (w/o N-1-1): $700\text{MW} \times \$5/\text{MWh} \times (700/700) = 700\text{MW} \times \$5/\text{MWh}$

CRR payment for congestion under N-1-1 limit: $700\text{MW} \times \$15/\text{MWh} \times (350/700) = 350\text{MW} \times \$15/\text{MWh}$

⁵ This 700MW CRR is equivalent to 700MW CRR^k and 700MW CRR^{kc} under Option 3(c). The 700MW CRR^{kc} would then be paid at actual day-ahead flow limit, which can vary, rather than at a pre-determined quantity as it was under Option 3(c).