

Comments on the Imbalance Conformance Enhancement Straw Proposal

Department of Market Monitoring

December 20, 2017

The ISO proposed enhancements to the *load bias limiter* feature of the ISO's real-time software in a technical bulletin published in December, 2016.¹ The ISO proposed changing the limiter to focus on the effect on market infeasibilities of imbalance conformance changes between market intervals rather than on the magnitude of the imbalance conformance in each interval. DMM submitted comments on the enhancement on May 19, 2017.² DMM is supportive of this proposed enhancement, which we believe is a significant improvement over the current approach.

This document provides comments by the Department of Market Monitoring (DMM) on the ISO's Imbalance Conformance Enhancement straw paper. DMM reiterates that the enhancement reflects a significant improvement over the current approach and supports the proposal.

Impact of the proposed imbalance conformance limiter

DMM's earlier comments reported on the impact of the enhanced limiter for 2016. The section below replicates that analysis for 2017. Overall, the proposed imbalance conformance limiter logic would have resulted in a significant reduction in the number of power balance constraint relaxations resolved by the limiter, but would not have had a significant impact on prices.

The limiter would not have had a significant impact because the price outcome after the limiter triggers is dependent on the last economic signal (i.e. dispatched bid) in the market. In many cases in 2017 when the current limiter triggered, we observed economic bids at or near the bid cap of \$1,000/MWh such that the resulting price for the under-supply infeasibility, with or without the limiter, was often similar. In many of these cases, proxy demand response resources (bid in at the bid cap) were dispatched to provide energy and set the market price. In other instances, energy storage resources (batteries) or gas resources were the marginal unit.

DMM has discussed the inability of proxy demand response resources to respond to single isolated 5-minute dispatches in the 2016 annual report and recommended that the ISO develop market modeling enhancements which could more accurately reflect characteristics of resources unable to respond to isolated 5-minute dispatches.³ We continue to recommend the ISO address this issue to prevent prices from being set by bids from demand response resources that are not able to respond to dispatch instructions.

Figure 1 shows the frequency of the current and proposed imbalance conformance limiter in the 5-minute market between January and November, 2017. As shown in Figure 1, the current limiter

¹ *Load Conformance Limiter Enhancement*, Technical Bulletin, December 28, 2016.

http://www.caiso.com/Documents/TechnicalBulletin_LoadConformanceLimiterEnhancement.pdf.

² Comments on the Load Conformance Limiter Enhancement, May 19, 2017:

<http://www.caiso.com/Documents/DMMComments-LoadConformanceLimiterEnhancement.pdf>.

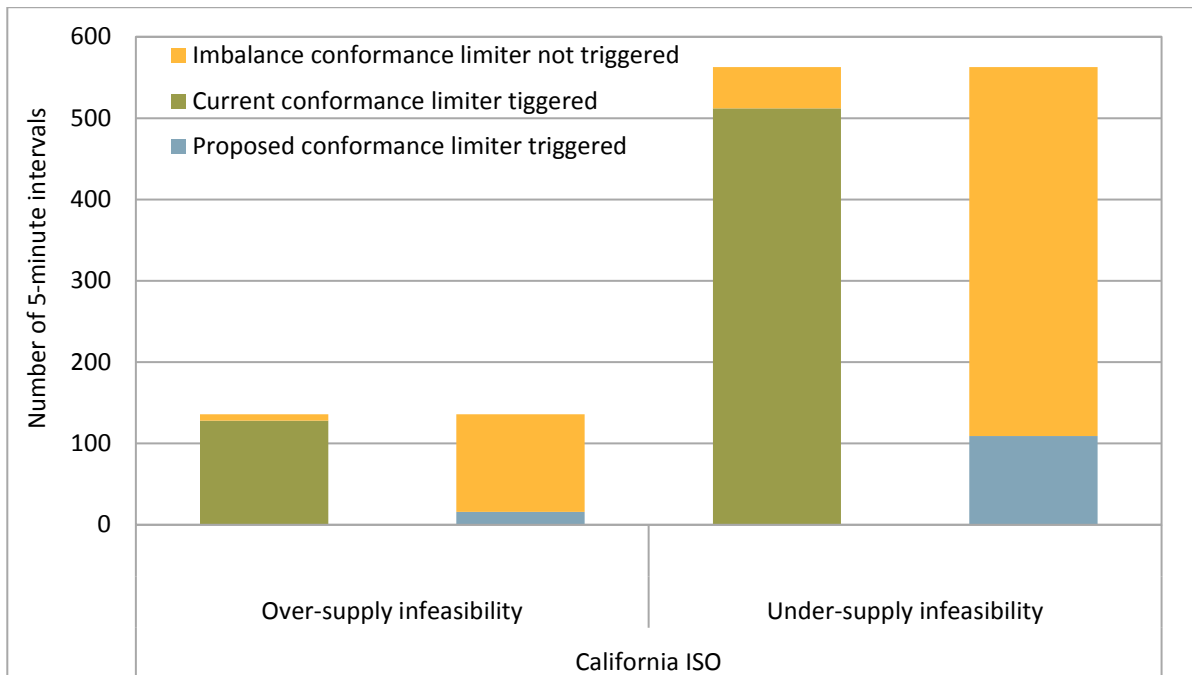
³ 2016 Annual Report on Market Issues and Performance, Department of Market Monitoring, May 2017, pp. 259-261: <http://www.caiso.com/Documents/2016AnnualReportonMarketIssuesandPerformance.pdf>.

triggered during about 91 percent of under-supply infeasibilities and 94 percent of over-supply infeasibilities in the 5-minute market. Alternatively, the proposed limiter would have triggered during only about 19 percent of under-supply infeasibilities and 12 percent of over-supply infeasibilities in the 5-minute market.

Figure 2 shows the impact of the imbalance conformance limiter logics on average 5-minute prices for the PG&E load area between January and November, 2017.⁴ On average, prices in the 5-minute market would have been about \$0.70/MWh higher (2 percent) if the proposed logic was in effect in 2017. Average 5-minute prices would have been about \$0.94/MWh (3 percent) higher if no conformance limiter was in effect in 2017. In the 15-minute market, the price impact would have been even smaller as a result of a lower frequency of infeasibilities in the 15-minute market than in the 5-minute market.

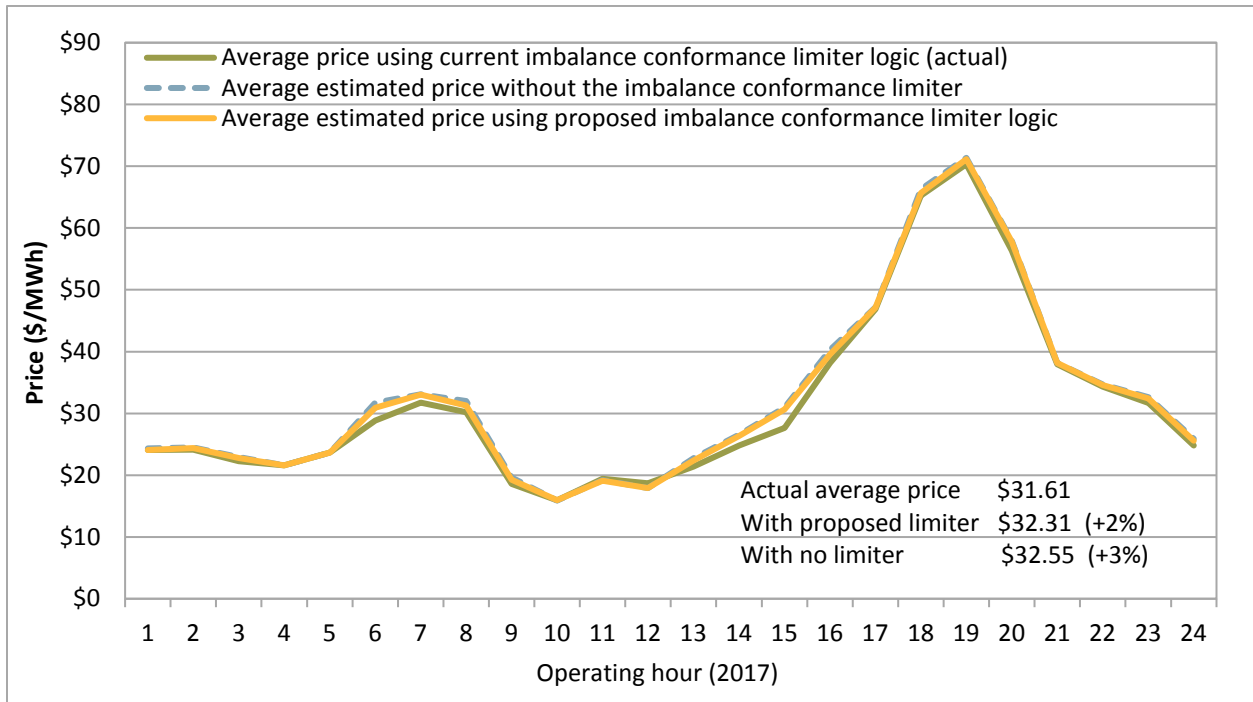
DMM notes that while there was no significant price separation between the approaches in 2017, there could be a significant impact on prices with the implementation of FERC Order No. 831. Under Order No. 831, energy offers used in setting market energy prices will be capped at the higher of \$1,000/MWh or \$2,000/MWh for virtual resources, imports and other resources with verified cost-based bids. Further, the penalty parameter for an under-supply infeasibility will be increased by \$1,000/MWh to \$2,000/MWh to reflect this change.

Figure 1. Frequency of imbalance conformance limiter in the 5-minute market (2017)



⁴ DMM used PG&E load area prices for this analysis. These are representative of the impact on system market energy prices throughout the ISO system during most intervals.

Figure 2. Impact of imbalance conformance limiter on average 5-minute prices (PG&E LAP)



Recommendation

The ISO’s proposed approach addresses many of DMM’s concerns with the current implementation of the imbalance conformance limiter.

To the extent that imbalance conformances are more automated and more visibility is provided to operators, the need for the imbalance conformance limiter should be reduced. However, until that time, we believe that it is reasonable to have a mechanism in place to limit unintended market impacts due to changes in imbalance conformance. After implementation of the new approach, we recommend that the ISO review and report on the results of the new approach.

DMM is doing a further review on the scenarios that the proposed imbalance conformance limiter might encounter. DMM notes that the examples covered in the straw proposal do not include instances where the memory component is non-zero. DMM recommends that the memory component, its limitations, and its impact are added to the discussion.

For instance, a potential limitation to the approach is that something transient, such as a brief change in wind output, may resolve the power balance and break the persistence for an interval. However, the transient event could revert back to its original state and the power balance relaxations would recur. In this instance, the ISO’s proposed approach would not activate the imbalance conformance limiter, though the instance may have been attributable to a previous change in imbalance conformance. In addition, we would like the ISO to clarify how the proposed logic would interact with missing data.