



California ISO
Your Link to Power

Technical Bulletin

2010-01-04

Real-Time Dispatch Intermittent Failure to Use Mitigated Bids

January 19, 2010

Technical Bulletin 2010-01-04

Real-Time Dispatch Intermittent Failure to Use Mitigated Bids

1. Introduction

On November 23, 2009, the ISO determined that periodically the execution of the market runs in real-time resulted in a failure to transfer bids that were mitigated in the Market Power Mitigation (MPM) pass to the Real-Time Dispatch (RTD). Through further investigation, the ISO determined that if the Hour-Ahead Scheduling Process (HASP) run completed prior to T-57.5 minutes, the mitigated bid set would generally transfer correctly to RTD. However, if the HASP run completed after T-57.5 minutes the process for transferring the bids to the five-minute RTD would not process correctly. Consequently, in such intervals, if a submitted bid was in fact mitigated, the RTD ran with the original bid set instead of the mitigated bid. Once the ISO determined the root cause of the issue, the ISO was able to quickly resolve this timing issue with a software patch, which was deployed to production on November 27, 2009. Since then there have been no failures to transfer the mitigated bid set.

The ISO Department of Market Monitoring (DMM) and ISO staff collaborated on an analysis to evaluate both the frequency of mitigated bid transfer failure and the impact to market outcomes based on intervals where the RTD ran without the mitigated bid set. After a detailed review of the issue, the ISO determined that 23% of the RTD intervals may have been affected by this issue since the start of the new market design on April 1, 2009. The estimated impact on RTD energy costs for the market overall over the eight month period is approximately \$1.1 million, or less than \$140,000 per month. This analysis also revealed that for the period from April 1st to November 26th:

- 9% of the hours, no mitigation was triggered in the MPM pass;
- 23% of the hours, the mitigated bid set correctly transferred to RTD;
- 45% of the hours, mitigated bids should have been utilized in the RTD but there was no potential price impact because no additional capacity from units with mitigated bids would have been dispatched in RTD if the mitigated bid had transferred correctly; and
- 23% of the hours mitigated bids should have been used and during those hours an average of approximately 37 MW of additional capacity could have been dispatched in RTD from units for which mitigated bids should have been used in RTD. The overall cost for incremental energy

dispatched in RTD during these intervals would have been about 1% lower if the mitigated bids had correctly transferred.

Based on the information developed, given the minimal impact to the market, the significant amount of time required to re-run each five market interval, and inconsistencies between actual dispatches and recalculated prices created by estimated re-runs, the ISO will not be making any retroactive market settlement adjustments. The analysis presented herein required approximately two hours of dedicated staff time for every five minute interval. A complete re-run of all affected intervals would therefore require a significant amount of time and resources. Further, a settlement re-run based on an extrapolation of the estimated impact derived from average differences for the affected intervals cannot reproduce a market outcome fully consistent with what the market outcome would have been had the affected intervals ran with the mitigated bids. Given the minimal estimated market impact discussed in this technical bulletin, such a laborious and inaccurate re-run is not warranted.

2. Analysis

The methodology used in this analysis incorporated a three step process for assessing the potential impacts during intervals when mitigated bids were not passed to RTD.

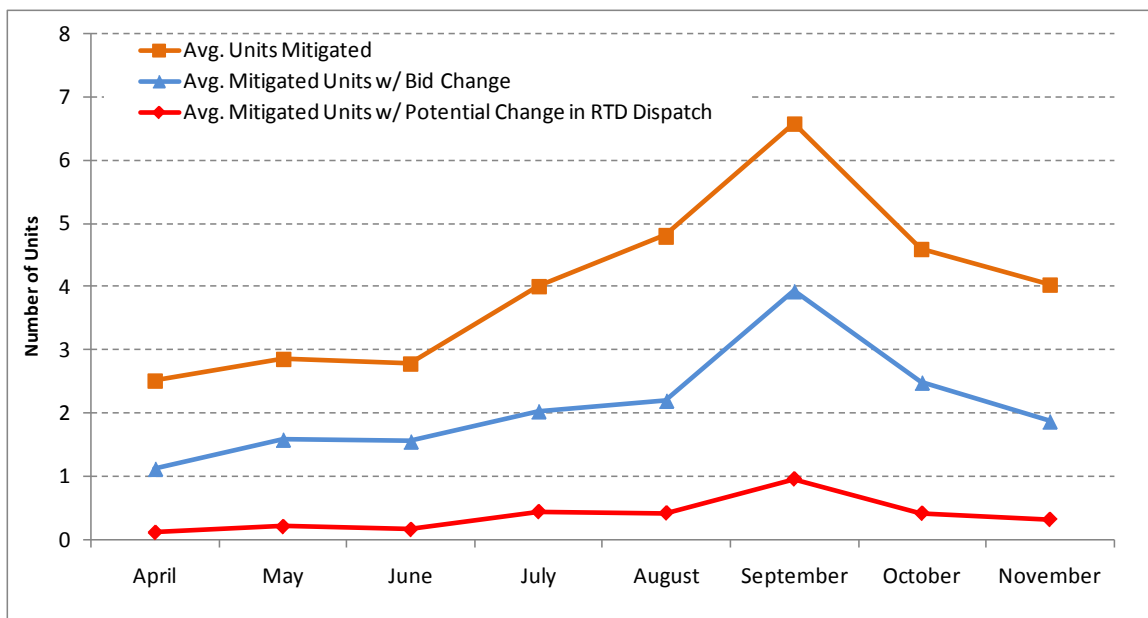
- First, DMM developed an algorithm to compare each unit's bids *with* and *without* mitigation, and determine the extent to which each unit may have been dispatched at a higher level in RTD if it had been correctly mitigated given the unit's actual nodal locational marginal price (LMP) for each 5-minute interval.
- Second, DMM and ISO staff re-ran the RTD software with mitigated bids for a sample of 58 intervals during which mitigated bids were not passed to RTD. The sample was stratified based on results of the first step of this analysis in order to ensure the sample included a significant number of intervals when the failure to pass mitigated bids to RTD was determined to have potentially impacted RTD dispatches.¹
- Finally, results of the RTD re-runs were then extrapolated to estimate the total potential market impact of this issue based on the total amount incremental energy dispatched in RTD during intervals when the failure to pass mitigated bids to RTD was determined to have potentially impacted RTD dispatches.²

¹ The categories used to stratify the sample and extrapolate results are based on the potential increase in capacity that may have been dispatched in RTD from units that should have been mitigated each interval, as calculated in the first step of the analysis.

² Re-run results were extrapolated by multiplying (1) the average percentage increase in overall LMPs observed from the re-run intervals within each strata by (2) the total cost for incremental energy dispatched in RTD during all intervals within each strata.

Figure 1 provides additional results of this analysis in terms of the average number of units impacted by the mitigated bid transfer issue over the 8 month period between April 1st and November 26th. The number of resources that were subject to mitigation as a result of MPM procedures averaged from approximately 2 to 7 units.³ Of these units, the average amount of resources that actually had a bid segment lowered due to mitigation was 1 to 4 units out of a fleet of approximately 600 units per hour over this 8 month period. Lastly, the number of units that may have been dispatched at a higher level in RTD due absent this bid mitigation issue averaged less than 1 unit per hour over this 8 month period.

Figure 1: Hourly Average Number of Units Mitigated by Month



In addition, it should be noted that a significant portion of these increased market costs would have been paid to generation that is owned or under contract to the major Load Serving Entities (LSEs), so that the overall net cost to load would be significantly less than this amount. Specifically, approximately 45% of the estimated \$1.1 million increase in incremental energy costs represents generation from units owned or under contract to major LSEs, making the net estimated impact only about \$625,000.

³ Units are subject to mitigation if the level at which they are dispatched in the All Constraints run of the MPM pass is higher than the level at which they are dispatched in the Competitive Constraints run. However, bids for units that are subject to mitigation are lowered only if their market bid exceeds their Default Energy Bid. Also, the unit's highest priced market bid dispatched in the Competitive Constraints run is used as a floor below which no segment of the unit's final bid curve is lowered during this mitigation process.