Issue Paper and Straw Proposal

Ex Post Price Correction "Make-Whole" Payments for Accepted Demand Bids

October 28, 2009

Ex Post Price Correction "Make-Whole" Payments for Accepted Demand Bids

Prepared for Discussion on a Stakeholder Conference Call – November 4, 2009

1 Introduction

Ex post price corrections have led to instances in which demand bids that were cleared in the market are no longer economic when evaluated against the corrected price. This can affect bids for internal ISO demand or exports in the integrated forward market, as well as export demand in the real-time market (including the hour-ahead scheduling process). Currently, the ISO does not have a policy or mechanism for compensating market participants when this occurs. The absence of such a "make-whole" mechanism was based on the assumption that the market results would always be consistent with the cleared bids. In practice, this is generally the case. When market prices require corrections, however, settlement prices can differ from the value of the cleared bids. Through this initiative, the ISO will develop a "make-whole" payment mechanism to compensate market participants for adverse financial impacts in cases when prices are corrected in a way that is not consistent with their accepted demand bids. This issue paper and straw proposal describes the issues to be addressed and offers a preliminary straw proposal for addressing one of the issues.

2 Price Correction to Demand Bids and Potential Make-Whole Approaches

When market clearing prices are adjusted upward in the instance of price correction, demand bids that were originally cleared in the market may no longer be economic. For a market participant who has cleared demand bids in the ISO market, there are two possible scenarios: 1) The price is corrected upward such that it is higher than the highest bid price, which renders all of the cleared MWhs uneconomic; or 2) The price is corrected upward, but is still within the range of the bid curve such that only a portion of the cleared MWhs becomes uneconomic. This section offers a straw proposal for calculating an appropriate per-interval make-whole payment amount for each of the two scenarios. In addition the ISO poses the question of whether make-whole payments for accepted demand bids should be applied on a per-interval basis or on a whole-day basis comparable to the current approach for bid cost recovery for supply resources.

2.1 Approach for Calculating Per-Interval Make-Whole Payment Amount

Scenario 1: Corrected Price > Original Market Clearing Price and is outside of bid curve.

Suppose a market participant submitted the following demand curve, and purchased 500 MWh at market clearing price of $20/MWh. If the market clearing price is corrected upward to $80/MWh, the 500 MWh which was originally cleared is no longer economic and 0 MWh would have been cleared at the corrected price. However, since the cleared MWh cannot be reversed, there is a need to determine a reasonable settlement price for this transaction.

The demand bid curve indicates that the market participant is willing to pay $25/MWh for 500 MWh. To honor the demand curve, a possible solution to settle all the cleared MWh at bid price of $25/MWh. Table 2 shows the results of this proposal.

Table 1. Example of a Demand Bid Curve.*

Bid Curve Segment	MW	Price ($/MWh)
0 ~ 150	0	$75.00
150 ~ 200	150	$65.00
200 ~ 250	200	$60.00
250 ~ 300	250	$55.00
300 ~ 340	300	$50.00
340 ~ 375	340	$45.00
375 ~ 400	375	$40.00
400 ~ 450	400	$35.00
450 ~ 475	450	$30.00
475 ~ 500	475	$25.00
	500	$25.00

*This example assumes no self-schedule.

Table 2. Corrected Price > Original Market Clearing Price and is outside of bid curve.

	Cleared MWh	Original Market Clearing Price	
Original Case	500	$20.00	
What Should Have Happened	**MWh Should Have Cleared under Corrected Price**	**Corrected Price**	
	0	$80.00	
Potential Solution	**Cleared MWh**	**Settlement Price**	**$ Amount**
		Bid @ 500 MWh	
Settle all 500 MWh at bid.	500	$25.00	$12,500.00

Settlement Amount @ Corrected Price without "Make-Whole" Payments	=$80*500MW	$40,000
Adjusted Settlement Amount		$12,500
"Make-Whole" Payment		$27,500

In this example, if the corrected price of $80 is applied in the settlement process the participant would be charged $40,000 for 500 MWh, whereas the appropriate charge based on the above approach would be $12,500. Thus the adverse impact of the price correction would be the difference, $27,500, which would then be the amount subject to the make-whole adjustment.

Scenario 2: Corrected Price > Original Market Clearing Price and but is still within the range of bid curve.

When price is corrected upward but is still within the range of the demand bid curve, only a portion of the originally cleared MWh becomes uneconomic. Following the same example illustrated in Table 1, if price is corrected to $42/MWh, 375 MWh would have been cleared under the corrected price, and the additional 125 MWh would become uneconomic at the corrected price. In this case, it would be reasonable to settle 375 MWh at the corrected price. The additional 125 MWh resulted in a total purchase of 500 MWh, and the market participant was willing to pay no more than $25/MWh at 500 MWh. Therefore, a potential solution would be to settle the additional 125 MWh at $25/MWh. The results are summarized below in Table 3.

Table 3. Corrected Price > Original Market Clearing Price but is still within the range of bid curve.

	Cleared MWh	Original Market Clearing Price	
Original Case	500	$20.00	
What Should Have Happened	**MWh Should Have Cleared under Corrected Price**	**Corrected Price**	
	375	$42.00	
Potential Solution	**Cleared MWh**	**Settlement Price**	**$ Amount**
Settle 375 MWh at corrected price, and the additional cleared 125 MWh at bid.	375	$42.00	$15,750.00
	Additional Cleared MWh	Bid @ 500 MWh	
	125	$25.00	$3,125.00
	Total Cleared MWh		$ Amount
	500		$18,875.00

Settlement Amount @ Corrected Price without "Make-Whole" Payments	=$42*500MW	$21,000
Adjusted Settlement Amount		$18,875
"Make-Whole" Payment		$2,125

In this example, if the corrected price of $42 is applied in the settlement process the participant would be charged $21,000 for 500 MWh, whereas the appropriate charge based on the above approach would be $18,875. Thus the adverse impact of the price correction would be the difference, $2,125, which would then be the amount subject to the make-whole adjustment.

The per-interval make-whole payment calculation, as summarized above, would apply to both export bids and internal load bids that are adversely affected when market clearing prices are corrected upward. For export bids this could apply to either day-ahead or real-time price corrections, whereas for internal load bids it would apply only to day-ahead price corrections.

2.2 Per-Interval versus Whole-Day Make-Whole Settlement Adjustment

The approach described above can serve as the basis for calculating the amount of money in each interval that would be required to keep the participant whole with respect to its submitted demand bids under the two scenarios. An additional question to discuss is whether the adverse impact of price correction should be compensated in isolation from other market intervals, or whether the settlement approach should take a whole-day perspective analogous to the way bid cost recovery works for supply resources. A whole-day approach would consider, in addition to the hours when price corrections resulted in adverse impacts to the participant, those hours when the party received energy at a price lower than its bid, e.g., $20 for 500 MWh when the party was willing to pay $25. The $2500 consumer surplus ($5 per MWh times 500 MWh) could be viewed as offsetting the adverse impact when the price is corrected to be above the bid price. For instance, to continue with the example in Table 2, compared to the per-interval make-whole payment of $27,500, the $2500 surplus from the other hour would offset the $27,500, resulting in a make-whole adjustment of $25,000.

Table 4. An Example of Make Whole on Daily Basis.

Per-Interval Make-Whole Payment (from Table 2)				$27,500
	Cleared MWh	**Market Clearing Price**	**Market Participant's Lowest Demand Bid**	**Offset Amount**
Offset Amount from Interval with Market Clearing Price < Lowest Bid	500	$20.00	$25.00	$2,500
				Net $ Amount
Adjusted "Make-Whole" Payment				$25,000

The ISO requests stakeholder comments on whether the make-whole adjustments should be applied on a per-interval basis or a whole-day basis, and welcomes proposals of other options to make the market participant whole.

3 Impact on Revenue Neutrality

Settling demand at bid prices below corrected market clearing prices while paying supply the corrected market clearing prices will cause imbalances on revenue neutrality. In the example presented in Table 3, 375 MWh is settled at the corrected price $42 on both demand and supply side, assuming for simplicity that there are no locational price differences due to congestion and losses. The additional 125 MWh is settled at the bid price $25/MWh on demand side, and $42/MWh on supply side, resulting in a revenue shortfall for the ISO of $2,125 (Table 5). The ISO requests stakeholder comments on what is the appropriate approach to allocate this revenue neutrality imbalance caused by make-whole payments made to compensate for price correction impacts.

Table 5. Impact on Revenue Neutrality.

Demand		**Supply**		**Revenue Neutrality Imbalance**
Cleared MW	**Settlement Price**	**Cleared MW**	**Settlement Price**	
375	$42.00	375	$42.00	$0.00
Additional Cleared MW	Bid @ 500 MW			
125	$25.00	125	$42.00	$2,125
Total Cleared MW		Total Cleared MW		
500		500		

4 Process and Timetable

The following timetable shows the proposed stakeholder process for developing the proposal and presentation to ISO Board of Governors for approval. The ISO welcomes stakeholder comments on this issue paper and straw proposal. Written comments should be submitted to Holly Liu at dliu@caiso.com by no later than November 11, 2009.

28-Oct-09	Post *Issue Paper and Straw Proposal*
4-Nov-09	Stakeholder Conference Call
11-Nov-09	Written Comments due*
16-Nov-09	Post *Draft Final Proposal*
20-Nov-09	Stakeholder Conference Call
December 15 - 17, 2009	Presentation to ISO Board of Governors

*A comment template will be posted to the ISO website at http://caiso.com/2453/2453ab8e10ff0.html