Draft Final Proposal

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

January 12, 2010

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Prepared for Discussion on a Stakeholder Conference Call – January 19, 2010

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 cleared bids for ISO internal demand or exports in the integrated forward market, as well as export demand in the hour-ahead scheduling process (HASP). 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. The scope of this proposal applies to cleared demand bids including export and load in the event of an upward price correction. For export bids this applies to either day-ahead or hour-ahead price corrections, whereas for internal load bids it would apply only to day-ahead price corrections. In addition, this proposal also considers a make-whole payment approach for virtual bids in the event of price correction in the day-ahead market. In summary, this paper proposes 1) a method to calculate make-whole payment for cleared demand bids; 2) an approach to settle the make-whole payment; and 3) a make-whole payment approach for virtual demand and virtual supply bids.

2 Make-Whole Payment for Price Correction to Demand Bids

2.1 Make-Whole Payment Approach

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 paper discusses a method for calculating the make-whole payment for cleared demand bids under these two scenarios.

Suppose a market participant submitted the following demand curve, and purchased 500 MWh at original market clearing price of $20/MWh. In scenario 1, the market clearing price was corrected upward to $80/MWh. In scenario 2, the market clearing price was corrected upward to $60/MWh, but was still within the range of the demand curve. Based on discussion during the stakeholder conference calls and written comments received, the CAISO recommends consider each relevant segment in the demand curve in calculating a make-whole payment. In both scenarios, the make-whole payment can be determined by the area between the demand bid curve and the corrected price. The advantage of considering each bid segment rather than relying on the last cleared bid to determine the make-whole payment is to avoid creating incentives for demand to bid at extremely low prices.

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.

Figure 1. Make-whole payment approach for both scenario 1 and scenario 2.

The above proposed make-whole payment would apply on an hourly basis to cleared internal demand and exports in the day-ahead IFM and cleared exports in the HASP. Price correction in HASP is made simultaneously to all four 15-minute intervals in an hour, so the make-whole payment can be calculated based on the simple average of the four 15-minute HASP prices and the hourly demand bid prices. In day-ahead, the make-whole payment can be determined by the hourly load bid prices and the corrected market clearing price.

It is worth clarifying that self-scheduled load and export are price-takers, and clear at the corrected market clearing price. Therefore the concept of the make-whole payment does not apply to self-schedules.

The CAISO Proposal:

In case of an upward price correction to cleared demand bids, the ISO proposes to calculate a make-whole payment on an hourly basis determined by the area between the demand bid curve and the corrected price. This proposal applies to both load and export in day-ahead and only applies to export in hour-ahead.

2.2 Make-Whole Payment Settlement

To simplify the make-whole payment settlement, the ISO proposes to incorporate the make-whole payment into the final settlement price to avoid a separate payment to export and load. The make-whole payment, as illustrated by the area between the corrected price and the demand bid curve, can be calculated as

Bid segment MW *[MAX(0, Corrected price - Bid segment price)].

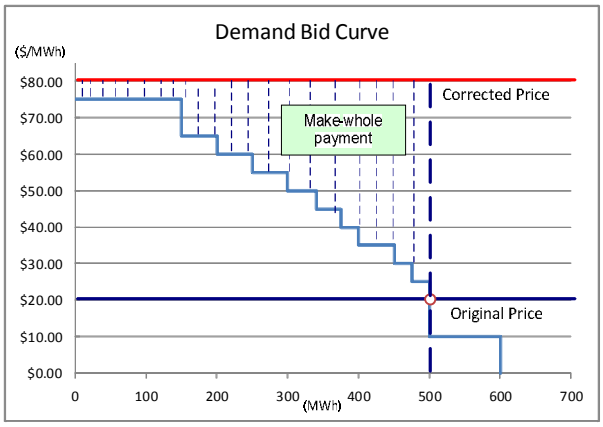
Given the bid curve in the previous example (Table 2), when the price was corrected to $80/MWh from $20/MWh, the corresponding make-whole payment is calculated to be $12,050. The final settlement after the make-whole payment would be $27,950 ($40,000-$12,050), resulting in an implicit settlement price of $55.90/MWh. The ISO proposes to use this derived price $55.90/MWh to settle demand.

The ISO has analyzed the impact of price correction and the potential magnitude of make-whole payment. The results have shown that potential make-whole payment is relatively small. The analysis results are presented in Section 3. Given the relatively small amount of potential make-whole payment, the ISO proposes not to design and implement a separate allocation mechanism, rather to utilize current settlement

mechanism to handle market imbalances. Revenue imbalances caused by make-whole payment by default would be settled through real-time and day-ahead offset charges (i.e., revenue neutrality charges).

Table 2. Make-whole payment settlement.

Bid Curve MW	Bid Price	Bid Segment MW	Corrected Price - Bid Price	Make Whole Payment
0	$75	150	$5	750
150	$65	50	$15	750
200	$60	50	$20	1000
250	$55	50	$25	1250
300	$50	40	$30	1200
340	$45	35	$35	1225
375	$40	25	$40	1000
400	$35	50	$45	2250
450	$30	25	$50	1250
475	$25	25	$55	1375
500	$25			
Make-whole payment				$ 12,050



Original Price		$20
Corrected Price		$80
Settlement Based on Corrected Price	500MW * $80	$40,000
Make-whole payment		$12,050
Final Settlement		$27,950
Implicit Settlement Price	$27,950 / 500MW	$55.90

The CAISO Proposal:

The ISO proposes a simple settlement approach to calculate a final settlement price which incorporates the make-whole payment. The new final settlement prices are resource level locational marginal prices that apply to load and export.

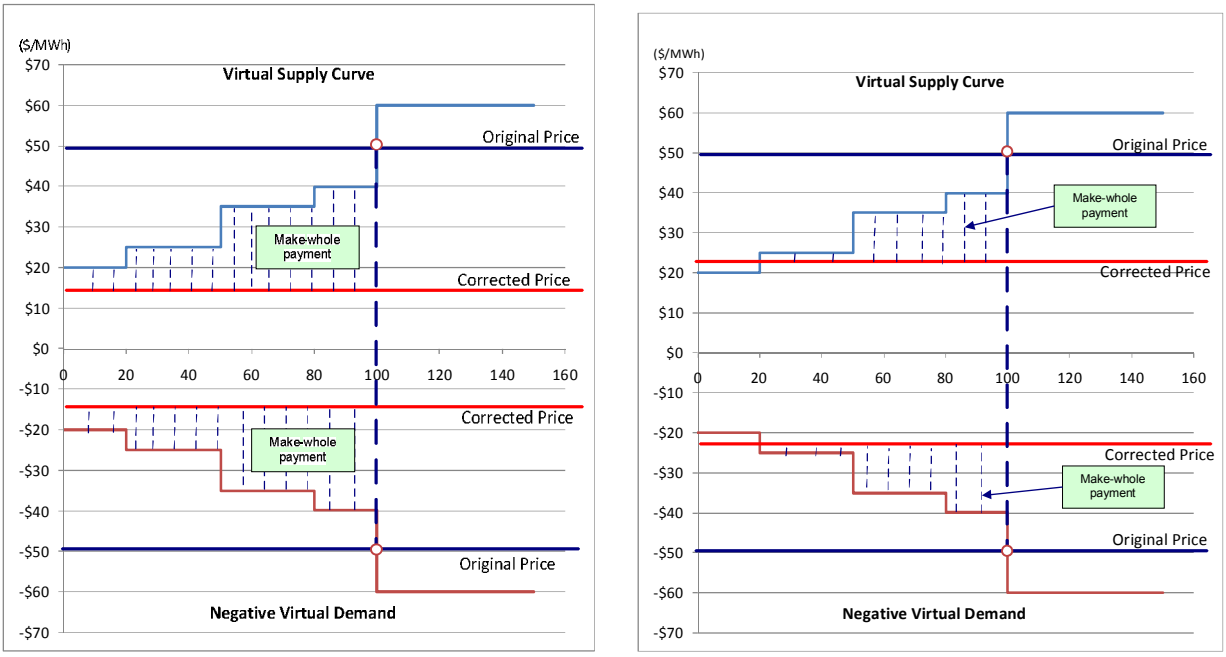
2.3 Make-Whole Payment for Virtual Bids

The ISO proposes to apply the make-whole payment approach discussed above to virtual bids in case of price correction in the day-ahead market. The methodology discussed above applies to virtual demand bids directly. Virtual supply bids can be conceptually considered as negative virtual demand so that the methodology discussed

above still applies. For example, as illustrated in the chart below (Figure 2), a virtual supply bid originally cleared 100 MWh at $50/MWh, if price was corrected to be $15/MWh, the make-whole payment to virtual supply can be determined by the area between the corrected price and the virtual supply bid curve. Considering virtual supply as negative virtual demand, this situation is equivalent to adjusting price from -$50/MWh to -$15/MWh for the virtual demand. The resulted make-whole payment to the virtual demand is the area between the corrected price and the virtual demand curve, which is the mirror image of make-whole payment area to virtual supply reflecting same amount of monetary payment.

Figure 2 also shows that if price was corrected to $22/MWh from the original price $50/MWh for virtual supply so that the corrected price is within the range of the supply curve, the make-whole payment can still be determined by the area between the corrected price and the virtual supply bid curve.

Figure 2. Make-whole payment approach for virtual supply bids.



The CAISO Proposal:

The ISO proposes to apply the make-whole payment approach described above to virtual bids in case of price correction in the day-ahead market. The ISO proposes to apply the same methodology described above directly to cleared virtual demand bids, and treat virtual supply bids as negative virtual demand bids for the purpose of determining a make-whole payment in case of price correction in the day-ahead market.

3 Price Correction and Make-Whole Payment Analysis

To provide some background on the magnitude of potential make-whole payment, the ISO has analyzed the impact of price correction by comparing the corrected prices with the original prices since April 1, 2009 for both the day-ahead market and HASP, and has estimated an upper bound for potential make-whole payment. The upper bound is calculated as cleared MW multiplied by price differences between the corrected price and the original price.[1] The results presented in the following table show that the impact due to day-ahead price correction is minimal, and the monetary impact due to HASP price correction is also relatively small. Given the improvements the ISO is making in its market processes, price corrections and the resulted make-whole payments are expected to decline even further in the future.

Table 3. Make-whole payment upper bound.

	Make-Whole Payment Upper Bound	
	HASP	DA
Apr-09	$99,787	$250,775
May-09	$111,221	$210,930
Jun-09	$547,556 (6/26: $449,634; rest of June $97,923)	$0
Jul-09	$33,032	$0
Aug-09	$32,405	$0
Sep-09	$126,258	$0
Oct-09	$61,133	$0
Nov-09	$37,726	$32
Total	$1,049,118	$461,736

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 will hold a stakeholder conference call on January 19 to review with stakeholders this draft final proposal.

[1] In case the original price is below the bid floor -$30/MWh while the corrected price is above -$30/MWh, given that the affected party will not be compensated beyond its bid, the upper bound of the make-whole payment is estimated by (corrected price – (-$30))*Cleared MW.

28-Oct-09	Post *Issue Paper/Straw Proposal*
4-Nov-09	Stakeholder Conference Call
11-Nov-09	Written Comments due
1-Dec-09	Post *Presentation*
8-Dec-09	Stakeholder Conference Call
11-Dec-09	Written Comments due
16-Dec-09	Post *Revised Straw Proposal*
23-Dec-09	Stakeholder Conference Call
5-Jan-10	Written Comments due
12-Jan-10	Post *Draft Final Proposal*
19-Jan-10	Stakeholder Conference Call
February 10 - 11, 2010	Presentation to CAISO Board of Governors
March 2010	Filing at FERC