memo

To: Market Participants

From: Market & Credit Risk Department

Date: 8/13/08

Subject: Virtual Bid Financial Assurance Methodology

This document describes the ISO's methodology for calculating the Financial Assurance (FA) requirements associated with unsettled Virtual transactions.

FA requirements for unsettled Virtual transactions:

Bucket 1: Bid But Not Cleared Requirement:

Virtual bids placed in the DA market prior to having been cleared (accepted or rejected).

1. For Increments Offers (INC) and Decrement Bids (DEC) placed for the same day, at the same location, at the same hour (day/location/hour), the larger of the sum of the INC MWs times the INC proxy or the absolute value of the sum of the DEC MWs times the DEC proxy for that day/location/hour is selected.[1]
    a. The maximum default exposure is created if only one of the two Virtual positions (the INC or DEC) clears the Day-Ahead Market. If both clear, the positions would offset one another creating a lower exposure.
2. For Increments Offers (INC) and Decrement Bids (DEC) that do not offset (different days, different locations, or different hours), the INC MWs times the INC proxies and the absolute value of the DEC MWs times the DEC proxies are summed.
3. Steps 1 and 2 are summed.
    a. This equals the Bucket 1 portion of the overall Virtual contribution to Total CT Obligations or FA Test Obligations.
    b. All Virtual bids result in an obligation at this stage.
        i. Uncertain as to which transactions will clear the market.
        ii. Bid returns cannot be measured as LMPs have not been established.

[1] INC and Generator Offer MWs are positive while DEC and Demand bid MWs are negative

Bucket 2: Cleared But Not Settled Requirement:
Virtual bids that have cleared (accepted) prior to DA and RT LMPs being calculated for the entire dispatch day.

1. Cleared offsetting INC and DEC MWs are netted by day/location/hour.[2] If netting results in 0 MWs for a day/location/hour proceed to Step 4. Otherwise, offsetting the net Virtual transactions against Physical positions by day/location/hour is described in Steps 2 & 3.
    a. Physical offsets may occur if both of the following conditions are met:
        i. Step 1 sum does not result in a value of 0 MW for a day/location/hour.
        ii. The Participant has Cleared Physical transactions for the same day/location/hour as the Cleared Virtual transactions.
2. If Step 1 results in a negative MW value by day/location/hour (more DECs than INCs) the MW value is netted against Cleared Generator offer (GEN) MWs at that same day/location/hour.[3] The absolute value of the result is multiplied by the DEC proxy price.
    a. The net DEC MWs (negative) are offset by GEN MWs (positive) only up to the point at which the net DEC MWs reach a value of 0.
3. If Step 1 results in a positive value by day/location/hour (more INCs than DECs) the MW value is netted against Cleared Demand bids (DEM) MWs at that same day/location/hour.[4] The value is multiplied by the INC Proxy price.
    a. The net INC MWs (positive) are offset by DEC MWs (negative) only up to the point at which the net INC MWs reach a value of 0.
4. If there are only INCs and/or DECs at a day/location/hour (i.e., no offsetting Generator offers and/or Demand bids at that day/location/hour) the absolute value of the Step 1 results, by day/location/hour, are summed and multiplied by the corresponding Proxy price.
5. Steps 2, 3, and 4 are summed.
    a. This equals the Bucket 2 portion of the overall Virtual contribution to CT Obligations or FA Test Requirements.
    b. All Virtual bids result in a FA obligation at this stage.
        i. Bid returns cannot be measured as LMPs have not been established.

Bucket 3: Real Time Cleared But Not Settled

Cleared Virtual bids that have had the DA and RT LMPs calculated for the entire corresponding dispatch day

1. Cleared offsetting INC and DEC MWs are summed by day/location/hour.[5] If sum results in 0 MWs for a day/location/hour proceed to Step 4. Otherwise, offsetting the net Virtual transactions against Physical positions by day/location/hour is described in Steps 2 & 3.
    a. Additional offsets may occur if both of the following conditions are met:
        i. Step 1 sum does not result in a value of 0 MW for a day/location/hour
        ii. The Participant has Cleared Physical transactions for the same day/location/hour as the Cleared Virtual transactions.
2. If Step 1 results in a negative MW value by day/location/hour (more DECs than INCs) the MW value is netted against Cleared Generator offer (GEN) MWs at that same day/location/hour. [6] The result is multiplied by the Locational Hourly LMP Variance (DA LMP – RT LMP).
    a. The net DEC MWs (negative) are offset by GEN MWs (positive) only up to the point at which the net DEC MWs reach a value of 0.
3. If Step 1 results in a positive value by day/location/hour (more INCs than DECs) the MW value is netted against Cleared Demand bids (DEM) MWs at that same day/location/hour.[7] The value is multiplied by (DA LMP – RT LMP).
    a. The net INC MWs (positive) are offset by DEM MWs (negative) only up to the point at which the net INC MWs reach a value of 0.
4. If there are only INCs and/or DECs at a day/location/hour (i.e., no offsetting Generator offers and/or Demand bids at that day/location/hour) the Step 1 results, by day/location/hour, are multiplied by (DA LMP – RT LMP).
5. Steps 2, 3, and 4 are summed and the sign is inverted (made negative).
    a. This equals the Bucket 3 portion of the overall Virtual contribution to CT Obligations or FA Test Requirements.
    b. Bucket 3 can result in either an obligation (a positive value) or a credit (a negative value).

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[2] Summing is equivalent to netting as this results in the summing of a positive (INC) plus a negative (DEC)s

[3] The Step 2 MW value is capped at a maximum of 0 MWs after netting against Cleared Generator offers,

e.h., Max (INC MW + DEC MW + GEN MW, 0)

[4] The Step 3 MW value floor is a minimum of 0 MWs after netting against Cleared Demand bids, e.g., Min (INC MW + DEC MW + DEM MW, 0)

[5] Summing is equivalent to netting as this results in the summing of a positive (INC) plus a negative DEC

Bucket 4: Real Time Cleared DA Settled:
Cleared Virtual bids that have had the DA and RT LMPs calculated for the entire corresponding dispatch day and the DA portion has been settled.

1. Procedure is identical to Bucket 3 except that the DA LMP is replaced with a value of $0.
2. The DA portion of the Virtual transactions have been settled thus are accounted for in unbilled settlements for purposes of calculating CT Obligations or FA Test Requirements. The RT half of the virtual transaction remains in Bucket 4. This acts to keep the Virtual transaction "whole" on a FA perspective and maintains consistency with respect to margining the position.

Processing Virtual contribution to CT OBLIGATIONS OR FA TEST REQUIREMENT (Buckets 1 – 4):

1. If the sum of the Virtual Buckets 1 – 4 nets to a credit (negative value), the credit will be used to offset the Participant's CT Obligations or FA Test Requirements.
2. If the sum is a net obligation (positive value), the sum will be added to the Participant's CT Obligations or FA Test Requirements.

[6] The Step 2 MW value is capped at a maximum of 0 MWs after netting against Cleared Generator offers, e.g., Max (INC MW + DEC MW + GEN MW, 0)

[7] The Step 3 MW value floor is a minimum of 0 MWs after netting against Cleared Demand bids, e.g., Min
(INC MW + DEC MW + DEM MW, 0)