ISO TARIFF AND PROTOCOLS

AMENDMENT NO. 11

AFFECTED TARIFF AND PROTOCOL SECTIONS, MARKED TO SHOW CHANGES

TARIFF

2.5.13   Evaluation of Ancillary Services Bids.

When Scheduling Coordinators bid into the Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve markets, they may bid the same capacity into as many of these markets as desired by providing the appropriate bid information to the ISO. The ISO shall evaluate bids in the markets for Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve sequentially and separately in the following order: Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve. Any capacity accepted by the ISO in one of these markets shall not be passed on to another market, except that capacity accepted in the Regulation market that represents the downward range of movement accepted by the ISO may be passed on to another market; any losing bids in one market may be passed onto another market, if the Scheduling Coordinator so indicates to the ISO. A Scheduling Coordinator may specify capacity bid into only the markets it desires. A Scheduling Coordinator shall also have the ability to specify different capacity prices and different Energy prices for the Spinning Reserve, Non-Spinning Reserve, Replacement Reserve and Regulation markets. The bid information, bid evaluation and price determination rules set forth below shall be used in the Day-Ahead, Hour-Ahead and real time procurement of Regulation, Spinning Reserve, Non- Spinning Reserve, and Replacement Reserve.

A Scheduling Coordinator providing one or more Regulation, Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve services may not change the identification of the Generating Units or Loads offered in the Day-Ahead Market, the Hour-Ahead Market or in real time for such services unless specifically approved by the ISO.

2.5.14   The Regulation Auction.

Bid Information. Each Scheduling Coordinator j shall submit the following information for each Generating Unit i for each Settlement Period t of the following Trading Day:

(a) bidder name/Identification Code;

(b) resource identification (name and Location Code);

(c) the date for which the bid applies;

(d) maximum operating level (MW);

(e) minimum operating level (MW);

(f) ramp rate (MW/Min) $Ramp_{ijt}$;

(g) the upward and downward range of generating capacity over which Generating Unit i from Scheduling Coordinator j is willing to provide Regulation for Settlement Period t ($Cap_{ijt}max$ (MW) where $Cap_{ijt}max \leq Period_{minutes} \text{10}^* Ramp_{ijt}$, and $Period_{minutes}$ is established by the ISO by giving Scheduling Coordinators twenty-four (24) hours advance notice, within a range from a minimum of 10 minutes to a maximum of 30 minutes). Bidders shall offer upward and downward range for Regulation service;

(h) the bid price of the capacity reservation ($CapRes_{ijt}$ ($/MW));

(i) the bid price of the Energy output from the reserved capacity ($EnBid_{ijt}$($/MWh));

Bid Evaluation. Based on the quantity and location of the system requirements, the ISO shall select Generating Units with the bids which minimize the sum of the total bids of the Generating Units selected subject to two constraints:

(a) the sum of the selected bid capacities must be greater than or equal to the required Regulation capacity; and

(b) each Generating Unit's bid capacity must be less than or equal to that Generating Unit's ramp rate times $Period_{minutes}$ 10.

The total bid for each Generating Unit is calculated by multiplying the capacity reservation bid price by the bid capacity.

Thus, subject to any locational requirements, the ISO will accept winning Regulation bids in accordance with the following criteria:

$$Min \sum_{i,j} TotalBid_{ijt}$$

Subject to

$$\sum_{i,j} Cap_{ijt} \geq Requirement_t \text{ and } Cap_{ijt} \leq Cap_{ijt\,max}$$

Where

$TotalBid_{ijt} = CapRes_{ijt} * Cap_{ijt}$

$Requirement_t$ = Amount of upward and downward movement capacity required

Price Determination. The price payable to Scheduling Coordinators for Regulation capacity made available for upward and downward movement in accordance with the ISO's Ancillary Services schedules shall, for each Generating Unit concerned, be the zonal market clearing price as follows:

$PAGC_x = MCP_{xt}$

Where:

The zonal market clearing (MCP_{xt}) price is the highest priced winning Regulation capacity bid in Zone X based on the capacity reservation bid price i.e.

$MCP_{xt} = Max\ (CapRes_{ijt})\ in\ zone\ x\ for\ Settlement\ Period\ t$

The ISO's auction does not compensate the Scheduling Coordinator for the minimum Energy output of Generating Units bidding to provide Regulation. Therefore, disposition of any minimum Energy associated with Regulation selected in the ISO's Ancillary Services markets is the responsibility of the Scheduling Coordinator selling the Regulation.

ANCILLARY SERVICES REQUIREMENTS PROTOCOL

ASRP 4.1.2   Determination of Regulation Quantity Needed

The quantity of Regulation capacity needed for each Settlement Period of the Day-Ahead Market and the Hour-Ahead Markets shall be determined as a percentage of the aggregate scheduled Demand for that Settlement Period. ~~The percentage shall range between a minimum of one percent to a maximum of five percent.~~

SCHEDULING PROTOCOL

SP 9.2   Sequential Evaluation of Bids

(a)   When SCs bid into the Regulation, Spinning Reserve, Non-Spinning
Reserve and Replacement Reserve markets, the same resource
capacity may be offered into more than one of these Ancillary Services
markets at the same time. The ISO will evaluate bids in the reserve
markets for Regulation, Spinning Reserve, Non-Spinning Reserve and
Replacement Reserve sequentially and separately in the following order:

(i)   Regulation

(ii)   Spinning Reserve

(iii)   Non-Spinning Reserve

(iv)   Replacement Reserve

(b)   SCs are allowed to specify different reserve prices and different Energy
prices for each Ancillary Service they bid. SCs can bid the same
resource capacity into any one or all of the Ancillary Service markets
they desire. Any resource capacity accepted by the ISO in one of these
reserve markets will be deducted from the resource capacity bid into the
other reserve markets, except that resource capacity accepted in the
Regulation market that represents the downward range of movement
accepted by the ISO will not be deducted from the resource capacity bid
into other reserve markets.

SP 9.5.1. Regulation Bid Evaluation

   (a)   Based on the quantity and location of the system requirements, the ISO will select Generating Units and System Units with the Regulation bids which minimize the sum of the total Regulation bids of the Generating Units and System Units selected subject to two constraints:

        (i)   the sum of the selected amounts of Regulation bid must be greater than or equal to the required amount of Regulation; and

        (ii)   the amount of Regulation bid for each Generating Unit or System Unit must be less than or equal to that Generating Unit's or System Unit's ramp rate times $Period_{minutes}$, where $Period_{minute}$ is established by the ISO by giving Scheduling Coordinators twenty-four (24) hours advance notice, within a range from a minimum of 10 minutes to a maximum of 30 minutes. 10 minutes.

   (b)   The total Regulation bid for each Generating Unit or System Unit is calculated by multiplying the reserve reservation bid price by the amount of Regulation bid. Subject to any locational requirements, the ISO will accept winning Regulation bids in accordance with the following criteria:

$$Min \sum_{i,j} TotalBid_{ijt}$$

subject to

$$\sum_{i,j} Cap_{ijt} \geq Requirement_t$$

and

$$Cap_{ijt} \leq Cap_{ijt} \max$$

where:

$TotalBid_{ijt}$ $\quad = \quad$ $Cap_{ijt} * CapRes_{ijt}$

$Requirement$ $\quad = \quad$ $Amount\ of\ upward\ and\ downward\ movement$

$\quad\quad\quad\quad\quad\quad\quad\quad\quad (Regulation)\ required\ by\ the\ ISO.$