

- Requirement* = the total amount of reserve that must be scheduled for a particular Ancillary Service required by the ISO in a Settlement Period (in MW).
- i, j, t* = Generating Unit *i*, Scheduling Coordinator *j*, Settlement Period *t*.

SP 9.5 Regulation Bid Evaluation and Pricing

SP 9.5.1 Regulation Bid Evaluation

- (a) Based on the quantity and location of the system requirements, the ISO will select Generating Units, System Units, and System Resources with the Regulation bids which minimize the sum of the total Regulation bids of the Generating Units, System Units, and System Resources 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, System Unit, or System Resource must be less than or equal to that Generating Unit's, System Unit's, or System Resource'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.
- (b) The total Regulation bid for each Generating Unit, System Unit, or System Resource 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:

$$\text{Min} \sum_{i,j} \text{TotalBid}_{ijt}$$

subject to

$$\sum_{i,j} \text{Cap}_{ijt} \geq \text{Requirement}_t$$

and

$$\text{Cap}_{ijt} \leq \text{Cap}_{ijt} \text{ max}$$

where:

$$\text{TotalBid}_{ijt} = \text{Cap}_{ijt} * \text{CapRes}_{ijt}$$

Requirement = *Amount of upward and downward movement
(Regulation) required by the ISO.*

SP 9.5.2 Regulation Price Determination

The price payable to SCs for Regulation made available for upward and downward movement in accordance with the ISO's Ancillary Services schedules will, for each Generating Unit, System Unit, and System Resource concerned, be the zonal Market Clearing Price for Regulation calculated as follows:

$$Pagc_{ijt} = MCP_{xt}$$

where:

the zonal Market Clearing Price (MCP_{xt}) for Regulation is the highest priced winning reservation bid of a Generating Unit, System Unit, or System Resource serving Demand in Zone X based on the reservation bid price (i.e., $MCP_{xt} = \text{Max}(CapRes_{ijt})$ in Zone X for Settlement Period t). In the absence of Inter-Zonal Congestion, the zonal Market Clearing Prices will be equal.

SP 9.6 Spinning Reserves Bid Evaluation and Pricing

SP 9.6.1 Spinning Reserves Bid Evaluation

- (a) Based on the quantity and location of the system requirements, the ISO will select the Generating Units, System Units and external imports of System Resources with the Spinning Reserve bids which minimize the sum of the total Spinning Reserve bids of the Generating Units, System Units and external imports of System Resources selected subject to two constraints:
 - (i) the sum of the selected amounts of Spinning Reserve bid must be greater than or equal to the required amount of Spinning Reserve; and
 - (ii) the amount of Spinning Reserve bid for each Generating Unit, System Unit or external import of a System Resource must be less than or equal to that Generating Unit's, System Unit's ramp rate times 10 minutes.
- (b) The total Spinning Reserve bid for each Generating Unit, System Unit or external import of a System Resource is calculated by multiplying the reserve reservation bid price by the amount of Spinning Reserve bid. Subject to any locational requirements, the ISO will select the winning Spinning Reserve bids in accordance with the following criteria:

