ATTACHMENT B

2.5.6   Technical Requirements for Providing Ancillary Services.

All Generating Units, System Units, Loads and System Resources providing Ancillary Services shall comply with the technical requirements set out in Sections 2.5.6.1 to 2.5.6.4 below relating to their operating capabilities, communication capabilities and metering infrastructure. No Scheduling Coordinator shall be permitted to submit a bid to the ISO for the provision of an Ancillary Service from a Generating Unit, System Unit, Load or System Resource, or to submit a schedule for self provision of an Ancillary Service from that Generating Unit, System Unit, Load or System Resource, unless the Scheduling Coordinator is in possession of a current certificate issued by the ISO confirming that the Generating Unit, System Unit, Load or System Resource complies with the ISO's technical requirements for providing the Ancillary Service concerned. Scheduling Coordinators can apply for Ancillary Services certificates in accordance with the ISO's Protocols for considering and processing such applications. The ISO shall have the right to inspect Generating Units, Loads or the individual resources comprising System Units and other equipment for the purposes of the issue of a certificate and periodically thereafter to satisfy itself that its technical requirements continue to be met. If at any time the ISO's technical requirements are not being met, the ISO may withdraw the certificate for the Generating Unit, System Unit, Load or System Resource concerned.

* * *

2.5.14   The Regulation Auction.

Bid Information. Each Scheduling Coordinator j shall submit the following information for each Generating Unit or System 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 or System 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 $_{minutes}$ * $Ramp_{ijt}$. 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; and

(h)   the bid price of the capacity reservation, stated separately for Regulation Up and Regulation Down ($CapRes_{ijt}$ ($/MW))$_{i}$.

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

If the bid is for the provision of Regulation from an external import of a System Resource, each Scheduling Coordinator j shall submit the following information for each System Resource i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

(b)   type of market (Day-Ahead or Hour-Ahead) and Trading Day;

(c)   Scheduling Point;

(d)   interchange ID code;

(e)   external Control Area ID;

(f)   Schedule ID (NERC ID number) and complete WSCC tag;

(g)   preferred bid flag, a "YES" indicates a bid and a "NO" indicates a self-provided schedule;

(h)   the contract reference number, if applicable;

(i)   maximum operating level (MW);

(j)   minimum operating level (MW);

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

(l)   the upward and downward range of generating capacity over which System Resource i from Scheduling Coordinator j is willing to provide Regulation for Settlement Period t ($Cap_{ijt}max$ (MW)) where $Cap_{ijt}max \leq$ Period $_{minutes}$ * $Ramp_{ijt}$. 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; and

(m)   the bid price of the capacity reservation, stated separately for Regulation Up and Regulation Down ($CapRes_{ijt}$ ($/MW)).

(n)   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, System Units, and System Resources with the bids, which minimize the sum of the total bids of the Generating Units, System Units, and System Resources selected for Regulation Up or Regulation Down, 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, System Unit's, or System Resource's bid capacity must be less than or equal to that Generating Unit's, System Unit's, or System Resource's ramp rate times *Period* $_{minutes.}$

The total bid for each Generating Unit, System Unit, or System Resource 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:

$$Min \sum_{i,j} TotalBidijt$$

Subject to

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

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 Final Day-Ahead Schedules shall, for each Generating Unit, System Unit, and System Resource 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, System Units, or System Resources 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.

The price payable to Scheduling Coordinators for Regulation capacity not included in the ISO's Final Day-Ahead Schedules but made available in accordance with amended Ancillary Services supplier schedules issued in accordance with Section 2.5.21 shall be the bid price of the Regulation Capacity reserved ($CapRes_{ijt}$ ($/MW)).

2.5.15   The Spinning Reserve Auction.

Bid Information. If the bid is for the provision of Spinning Reserve from a Generating Unit or System Unit, each Scheduling Coordinator j must submit the following information for each Generating Unit or System 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);

(g)   MW additional capability synchronized to the system, immediately responsive to system frequency, and available within 10 minutes ($Cap_{ijt}max$) for Generating Unit i, or System Unit I, from Scheduling Coordinator j, for Settlement Period t.

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

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

(ji)   an indication whether the capacity reserved would be available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency.

If the bid is for the provision of Spinning Reserve from an external import of a System Resource, each Scheduling Coordinator j must submit the following information for each external import of a System Resource i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

(b)   the date for which the bid applies;

(c)   ramp rate if applicable (MW/Min);

(d)   MW additional capability synchronized to the system, immediately responsive to system frequency and available at the point of interchange with the ISO Control Area, within 10 minutes ($Cap_{ijt}max$) of the ISO calling for the external import of System Resource i, from Scheduling Coordinator j, for Settlement Period t;

(e)   bid price of capacity reserved ($CapRes_{ijt}$ ($/MW));

(f)   ~~bid price of Energy output from reserved capacity ($EnBid_{ijt}$ ($/MWh));~~ and

(gf)   an indication whether the capacity reserved would be available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency

Bid Evaluation. Based on the quantity and location of the system requirements, the ISO shall select the Generating Units, System Units and external imports of System Resources with the

bids which minimize the sum of the total bids of the Generating Units, System Units and external imports of System Resources selected subject to two constraints:

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

(b)   each Generating Unit's, System Unit's or external import's bid capacity must be less than or equal to that Generating Unit's, System Unit's or external import's ramp rate times 10 minutes.

The total bid for each Generating Unit, System Unit or external import of a System Resource is calculated by multiplying the capacity reservation bid price by the bid capacity. Thus, subject to any locational requirements, the ISO will select the winning Spinning Reserve 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

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

$Requirement_t$ = the amount of Spinning Reserve capacity required

Price Determination. The price payable to Scheduling Coordinators for Spinning Reserve Capacity made available in accordance with the ISO's Final Day-Ahead Schedules shall, for each Generating Unit or external import of a System Resource concerned be the zonal market clearing price for Spinning Reserve calculated as follows:

$Psp_{xt} = MCP_{xt}$

Where the zonal market clearing price (MCP_{xt}) for Spinning Reserve is the highest priced winning Spinning Reserve 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 a Scheduling Coordinator for the minimum Energy output of Generating Units, System Units or System resources bidding to provide Spinning Reserve. Therefore, any minimum Energy output associated with Spinning Reserve selected in the ISO's auction is the responsibility of the Scheduling Coordinator selling the Spinning Reserve.

The price payable to Scheduling Coordinators for Spinning Reserve Capacity not included in the ISO's Final Day-Ahead Schedules but made available in accordance with amended Ancillary Services supplier schedules issued in accordance with Section 2.5.21 shall be the bid price of the Spinning reserve capacity reserved ($CapRes_{ijt}$($/MW)).

2.5.16 The Non-Spinning Reserve Auction.

Bid information. If the bid is for the provision of Non-Spinning Reserve from a Generating Unit or System Unit, each Scheduling Coordinator j must submit the following information for each Generating Unit or System Unit i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

(b)   Generating Unit or System Unit 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);

(g)   the MW capability available within 10 minutes ($Cap_{ij}max$);

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

(i)   time to synchronization following notification (min);

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

(k̶j)   an indication whether the capacity reserved would be available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency.

If the bid is for the provision of Non-Spinning Reserve from an external import of a System Resource, each Scheduling Coordinator j must submit the following information for each external import of a System Resource i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

(b)   the date for which the bid applies;

(c)   ramp rate if applicable (MW/Min);

(d)   the MW capability available at the point of interchange with the ISO Control Area, within 10 minutes ($Cap_{ij}max$) of the ISO calling for the external import of System Resource I, from Scheduling Coordinator j, for Settlement Period t;

(e)   the bid price of the capacity reserved ($CapRes_{ijt}$($/MW)); ~~and~~

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

(f̲)(g̶)   an indication whether the capacity reserved would be available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency.

If the bid is for the provision of Non-Spinning Reserve from a Load located within the ISO Control Area, each Scheduling Coordinator j must submit the following information for each Load i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

(b)   Load identification name and Location Code;

(c)   the date for which the bid applies;

(d)   Demand reduction available within 10 minutes ($Cap_{ijt}max$);

(e)   to interruption following notification (min);

(f)   maximum allowable curtailment duration (hr);

(g)   the bid price of the capacity reserved ($CapRes_{ijt}$($/MW$));

(h)   ~~the bid price for Demand reduction from the reserved capacity ($EnBid_{ijt}$($/MWh$));~~ and

(i~~h~~)   an indication whether the capacity reserved would be available for Demand reduction only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency

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

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

(b)   each Generating Unit's, System Unit's, Load's or external import's bid capacity must be less than or equal to that Generating Unit's, System Unit's, Load's or external import's ramp rate (or time to interruption in the case of a Load offering Demand

reduction) times the difference between 10 minutes and the time to synchronize in the case of a Generating Unit or System Unit or to interruption in the case of a Load. The total bid for each Generating Unit, System Unit, Load or external import of a System Resource is calculated by multiplying the capacity reservation bid by the bid capacity.

Thus subject to any locational requirements, the ISO will accept the winning Non-Spinning Reserve bids in accordance with the following criteria:

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

Subject to

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

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

Where

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

$Requirement_t$ = the amount of Non-Spinning Reserve capacity required

Price Determination. The price payable to Scheduling Coordinators for Non-Spinning Reserve Capacity made available in accordance with the ISO's Final Day-Ahead Schedules shall for each Generating Unit, System Unit, Load or external import of a System Resource concerned be the zonal market clearing price for Non-Spinning Reserve calculated as follows:

$$Pnonsp_{xt} = MCP_{xt}$$

Where the zonal market clearing price (MCP_{xt}) for Non-Spinning Reserve is the highest priced winning Non-Spinning Reserve 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 price payable to Scheduling Coordinators for Non-Spinning Reserve Capacity not included in the ISO's Final Day-Ahead Schedules but made available in accordance with amended Ancillary Services supplier schedules issued in accordance with Section 2.5.21 shall be the bid price of the Non-Spinning Capacity reserved ($CapRes_{ijt}(\$/MW)$).

2.5.17 The Replacement Reserve Auction.

Bid Information. If the bid is for the provision of Replacement Reserve from a Generating Unit or System Unit each Scheduling Coordinator j must submit the following information for each Generating Unit or System Unit i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

(b)   Generating Unit or System Unit 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);

(g)   the MW capacity available within 60 minutes ($Cap_{ijt}max$);

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

(i)   time to synchronize following notification (min);

(j)   ~~the bid price of the Energy output from the reserved capacity ($EnBid_{ijt}$ ($/MWh$)).~~

If the bid is for the provision of Replacement Reserve from an external import of a System Resource, each Scheduling Coordinator j must submit the following information for each external import of a System Resource i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

(b)   the date for which the bid applies;

(c)   ramp rate applicable (MW/Min);

(d)   the MW capability available at the point of interchange with the ISO Control Area, within 60 minutes ($Cap_{ijt}max$) of the ISO calling for the external import of System Resource i, from Scheduling Coordinator j, for Settlement Period t; and

(e)   bid price of capacity reserved ($CapRes_{ijt}$;($/MW)); and

~~(f)   bid price of Energy output from reserved capacity ($EnBid_{ijt}$($/MWh)).~~

If the bid is for the provision of Replacement Reserve from a Load located within the ISO Control Area, each Scheduling Coordinator j must submit the following information for each Load i for each Settlement Period t of the following Trading Day:

(a)   bidder name/Identification Code;

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

(c)   the date for which the bid applies;

(d)   the Demand reduction available within 60 minutes *(Cap_{ijt} (MW))*;

(e)   time to interruption following notification (min);

(f)   maximum allowable curtailment duration (hr); and

(g)   the bid price of the capacity reserved *($CapRes_{ijt}$ ($/MW))*;

~~(h)   the bid price of the Demand reduction from the reserved capacity *($EnBid_{ijt}$($/MWh))*.~~

Bid Evaluation. Based on the quantity and location of the system requirements, the ISO shall select the Generating Units, System Units, Loads or external imports of System Resources with

the bids which minimize the sum of the total bids of the Generating Units, System Units, Loads or external imports of System Resources selected subject to two constraints:

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

(b)   each Generating Unit's, System Unit's, Load's or external import's bid capacity must be less than or equal to that Generating Unit's, System Unit's, Load's or external import's ramp rate (or time to interruption in the case of a Load offering Demand reduction) times the difference between 60 minutes and the time to synchronize in the case of Generating Unit or System Unit, or to interruption in the case of Load.

The total bid for each Generating Unit, System Unit, Load or external import of System Resource is calculated by multiplying the capacity reservation bid price by the bid capacity.

Thus, subject to any locational requirements, the ISO will select the winning Replacement Reserve bids in accordance with the following criteria:

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

Subject to

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

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

Where

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

$Requirement_t$ = the amount of Replacement Reserve capacity

Price Determination. The price payable to Scheduling Coordinators for Replacement Reserve Capacity made available in accordance with the ISO's Final Day-Ahead Schedules shall, for

each Generating Unit, System Unit, Load or external import of a System Resource, be the zonal market clearing price for Replacement Reserve calculated as follows:

$$PRepRes_{xt} = MCP_{xt}$$

Where the zonal market clearing price (MCP_{xt}) for Replacement Reserve is the highest priced winning Replacement Reserve 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 price payable to Scheduling Coordinators for Replacement Reserve Capacity not included in the ISO's Final Day-Ahead Schedules but made available in accordance with amended Ancillary Services schedules issued in accordance with section 2.5.21 shall be the bid price of the Replacement Reserve capacity reserved ($CapRes_{ijt}(\$/MW)$).

2.5.18   Voltage Support.

As of the ISO Operations Date, the ISO will contract for Voltage Support service with the owners of Reliability Must-Run Units. Payments for public utilities under the FPA shall be capped at the FERC authorized cost based rates unless and until FERC authorizes different pricing. The ISO shall pay owners of Reliability Must-Run units for long term Voltage Support through their Scheduling Coordinators.

In addition, any Participating Generator who is producing Energy shall, upon the ISO's specific request, provide reactive energy output outside the Participating Generator's Voltage Support obligation defined in Section 2.5.3.4.

The ISO shall select Participating Generator's Generating Units which have been certified for Voltage Support to provide this additional Voltage Support. Subject to any locational requirements, the ISO shall select the least costly Generating Units from a computerized merit

order stack to back down to produce additional Voltage Support in each location where Voltage Support is needed.

The ISO shall pay to the Scheduling Coordinator for that Participating Generator the opportunity cost of reducing Energy output to enable reactive energy production. This opportunity cost shall be:

Max{0, Zonal ~~BEEP~~Settlement Interval Ex Post Price - Generating Unit bid price } x reduction in Energy output (MW).

If necessary, the ISO shall develop a regulatory cost based determination of marginal operating cost to be used in place of the Generating Unit bid price.

* * *

2.5.22.2 General Principles. The ISO shall base real time dispatch of Generating Units, System Units, Loads and System Resources on the following principles:

(a)   the ISO shall dispatch Generating Units, System Units, and System Resources providing Regulation service to meet NERC and WSCC Area Control Error (ACE) performance requirements;

(b)   ~~once ACE has returned to zero,~~ the ISO shall determine whether the Regulation Generating Units, System Units, and System Resources are operating at a point away from their preferred operating point and project the Imbalance Energy requirements based on the forecasted load for the next Dispatch Interval. The ISO shall then ~~adjust the output of~~Dispatch Generating Units, System Units, and System Resources available (either providing Spinning Reserve, Non-Spinning Reserve, Replacement Reserve or offering Supplemental Energy) to meet the projected Imbalance Energy requirements for the next Dispatch Interval and return the Regulation Generating

Units, System Units, and System Resources to their preferred operating points to restore their full regulating margin;

(c)   the ISO shall economically D~~d~~ispatch Generating Units, System Units, Loads and System Resources only to meet its Imbalance Energy requirements and eliminate any Price Overlap between ~~incremental and decremental~~ E~~e~~nergy B~~b~~ids subject to resource and transmission system constraints;

(d)   subject to Section 2.5.22.3 and its subparts, the ISO shall select the Generating Units, System Units, Loads and System Resources to be dispatched to meet its Imbalance Energy requirements and eliminate any Price Overlap based on a ~~merit order of Energy bid prices~~constrained optimization method to minimize the overall cost of Imbalance Energy subject to resource and transmission system constraints;

(e)   subject to Section 2.5.22.3 and its subparts, the ISO shall not discriminate between Generating Units, System Units, Loads and System Resources other than based on price, and the effectiveness (e.g., location and ramp rate) of the resource concerned to respond to the fluctuation in Demand or Generation;

(f)   Generating Units, System Units, Loads and System Resources shall be dispatched during the operating hour only until the next variation in Demand or the end of the operating hour, whichever is sooner. In dispatching such resources, the ISO makes no further commitment as to the duration of their operation, nor the level of their output or Demand, except to the extent that a Dispatch ~~I~~instruction causes Energy to be delivered in a different ~~BEEP~~Dispatch Interval.

2.5.22.3   Ancillary Services Dispatch. The ISO may D~~d~~ispatch Generating Units, Loads, System Units and System Resources contracted to provide Ancillary Services (either procured through the ISO's competitive market, or self provided by Scheduling Coordinators) to supply Imbalance Energy. During normal operating conditions, the ISO shall D~~d~~ispatch the following

resources to supply Imbalance Energy: (i) those Generating Units, Loads, System Units and System Resources having offered Supplemental Energy bids, (ii) those Generating Units, Loads, System Units and System Resources contracted to provide Replacement Reserve and (iii) those Generating Units, Loads, System Units and System Resources that have contracted to provide Spinning and Non-Spinning Reserve, except for those resources that have indicated that the capacity reserved would be available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency. In the event of an unplanned Outage, a Contingency or a threatened or actual System Emergency, the ISO may also Ddispatch all other Generating Units, Loads, System Units and System Resources contracted to provide Spinning Reserve or Non-Spinning Reserve to supply Imbalance Energy. If a Generating Unit, Load, System Unit or System Resource, which is supplying Operating Reserve, is Ddispatched to provide Imbalance Energy, the ISO shall replace the Operating Reserve from the same or another resource within the time frame specified in the WSCC guidelines.

2.5.22.3.1   Dispatch of Competitively Procured and Self-Provided Ancillary Services.
Generating Units and Loads selected in the ISO competitive auction or self-provided shall be Ddispatched based on their Energy Bbids prices as described in Dispatch Protocol Section 8.6.2their Ancillary Service schedule and their effectiveness, subject to the limitation on the Dispatch of Spinning Reserve and Non-Spinning Reserve set forth in Section 2.5.22.3.

2.5.22.3.2   Dispatch of Self Provided Ancillary Services. Where a Scheduling Coordinator has chosen to self provide the whole of the additional Operating Reserve required to cover any Interruptible Imports which it has scheduled and has identified specific Generating Units, Loads, System Units or System Resources as the providers of the additional Operating Reserve concerned, the ISO shall Dispatch only the designated Generating Units, Loads, System Units or System Resources in the event of the ISO being notified that the Interruptible

Import is being curtailed. For all other Ancillary Services which are being self provided the Energy Bid shall be used to determine the ~~position of the Generating Unit, Load, System Unit or System Resource in the merit order for real time~~ Dispatch, subject to the limitation on the Dispatch of Spinning Reserve and Non-Spinning Reserve set forth in Section 2.5.22.3.

2.5.22.4 Supplemental Energy Bids. In addition to the Generating Units, Loads and System Resources which have been scheduled to provide Ancillary Services in the Day-Ahead and Hour-Ahead markets, the ISO may Dispatch Generating Units, Loads or System Resources for which Scheduling Coordinators have submitted Supplemental Energy bids.

2.5.22.4.1   Timing of Supplemental Energy Bids.

Supplemental Energy bids must be submitted to the ISO no later than sixty (60) minutes prior to the operating hour. Bids may also be submitted at any time after the Day-Ahead Market closes. These Supplemental Energy bids cannot be withdrawn after sixty (60) minutes prior to the Settlement Period.~~, except that a bid from a System Resource may specify that any portion of the bid that is not called prior to the beginning of the Settlement Period shall not be called after the beginning of the Settlement Period. The ISO may dispatch the associated resource at any time during the Settlement Period.~~

2.5.22.4.2   Form of Supplemental Energy Bid Information.

Supplemental Energy bids must include the <u>information specified in Schedules and Bids Protocol Section 6.1.</u>~~following:~~

~~(a)   Bidder name and identification;~~

~~(b)   Resource name, identification, and location;~~

~~(c)   the positive or negative bid price of incremental and decremental changes in Energy (up to eleven ordered pairs of quantity/price representing up to ten steps);~~

~~(d)   Generating Unit operating limits (high and low MW);~~

(e) ~~Generating Unit ramp rate (MW/Min); and~~

(f) ~~Such other information as the ISO may determine it requires to evaluate bids, as published from time to time in ISO Protocols.~~

2.5.22.5 **[Not Used]**~~Information used in the Real Time Dispatch. The ISO shall place all the bid price information (except for Regulation bid prices and Adjustment Bids carried forward from the Day-Ahead and Hour-Ahead Markets) received from available Generating Units, Loads, System Units and System Resources in a database for use in real time Dispatch of Balancing Energy. The database shall indicate:~~

(a) ~~Generating Unit/Load/ System Unit/ System Resource name;~~

(b) ~~congestion zone;~~

(c) ~~quantity bid;~~

(d) ~~normal ramp rate;~~

(e) ~~price;~~

(f) ~~whether the Generating Unit/ Load/ System Unit/ System Resource has been contracted to provide any Ancillary Services and/or Supplemental Energy, and, if so, which ones.~~

~~The quantity blocks shall be ordered in a merit order stack of ascending incremental and descending decremental price bids. Energy bids associated with Spinning and Non-Spinning Reserve shall be included in the merit order stack during normal operating conditions unless the capacity associated with such bids has been designated as available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency.~~

2.5.22.6   **Real Time Dispatch.** The ISO shall economically D~~d~~ispatch each Generating

Unit, Load, System Unit or System Resource that is effective to meet Imbalance Energy

requirements and eliminate any Price Overlap in real time, subject to the limitation on the

Dispatch of Spinning Reserve and Non-Spinning Reserve set forth in Section 2.5.22.3. The ISO

shall determine that additional output is needed if the current output levels of the Regulation

Generating Units, System Units, and System Resources ~~exceed~~ deviate from their preferred

operating points by more than a specified threshold (to be determined by the ISO), or to meet

the projected Imbalance Energy requirements for the next Dispatch Interval. ~~The ISO shall~~

~~determine that less output is needed if the output levels of the Regulation Generating Units,~~

~~System Units, and System Resources fall below their preferred operating points by more than a~~

~~specified threshold (to be determined by the ISO). To minimize the cost of providing Imbalance~~

~~Energy, the ISO shall economically increase or reduce Demand or Energy output from~~

~~Generating Units, Loads, System Units or System Resources according to Energy Bid prices.~~

~~Once a bid has been accepted by the ISO, the database shall be adjusted to reflect the change~~

~~in status of the bid. Once a decremental bid has been used by the ISO, it will then be included~~

~~in the incremental part of the database with an incremental bid equal to its decremental price~~

~~bid. Once an incremental bid has been used by the ISO it will then be included in the~~

~~decremental part of the database with a decremental bid equal to its incremental price bid.~~

The ISO shall employ a multi-interval constrained optimization methodology (RTD Software) to

calculate an optimal dispatch for each Dispatch Interval within a time horizon that shall extend to

the end of the next hour. The ISO shall Dispatch resources that have submitted Energy Bids

over the time horizon to meet forecasted Imbalance Energy requirements minimizing the

Imbalance Energy procurement cost over the entire time horizon, subject to resource and

transmission system constraints. However, Dispatch Instructions shall be issued for the next

Dispatch Interval only. The ISO also shall instruct resources to start up or shut down over the

time horizon based on their submitted and validated Start-Up Fuel Costs, Minimum Load Costs

and Energy Bids. These resources shall receive binding start-up or shut-down pre-dispatch instructions as required by their startup time. The ISO shall only start resources that can start within the time horizon. The ISO may shut down resources that do not need to be on-line if constraints within the time horizon permit. However, resources providing Regulation or Spinning Reserve shall not be shut down. On-line resources providing Non-Spinning or Replacement Reserve shall also not be eligible for shutdown, unless their minimum down time does not exceed 10 minutes.

2.5.22.6.1   Resource Constraints.

The RTD Software shall enforce the following resource physical constraints:

a) Minimum and maximum operating resource limits. Outages and limitations due to transmission clearances shall be reflected in these limits. The more restrictive operating or regulating limit shall be used for resources providing Regulation so that the RTD Software shall not Dispatch them outside their regulating range.

b) Forbidden Operating Regions. Resources can only be ramped through these regions. The RTD Software shall not Dispatch resources within their Forbidden Operating Regions unless at the maximum applicable ramp rate to clear the Forbidden Operating Region in consecutive Dispatch Intervals.

c) Operational ramp rates and start-up times. The submitted operational ramp rate as provided for in SBP Section 6.5 shall be used for all Dispatch Instructions. Each Energy Bid shall be Dispatched only up to the amount of Imbalance Energy that can be provided within the Dispatch Interval based on the applicable operational ramp rate. The Dispatch Instruction shall consider the relevant start-up time as provided for in SBP Section 6.6, if the resource is off-line, the relevant ramp rate function, and any prior commitments such as schedule changes across hours and previous Dispatch Instructions. The start-up time shall be determined from the start-up time

function and when the resource was last shut down. The start-up time shall not apply if the corresponding resource is on-line or expected to start.

d) Maximum number of daily start-ups. The RTD Software shall not cause a resource to exceed its daily maximum number of start-ups.

e) Minimum up and down time. The RTD Software shall not start up off-line resources before their minimum down time expires and shall not shut down on-line resources before their minimum up time expires.

f) Operating (Spinning and Non-Spinning) Reserve. The RTD Software shall Dispatch Spinning and Non-Spinning Reserve subject to the limitations set forth in Section 2.5.22.3.

g) Hourly Pre-Dispatch. If Dispatched, each System Resource flagged for Hourly Pre-Dispatch in the next hour shall be Dispatched to operate at a constant level over the entire hour. The RTD Software shall perform the Hourly Pre-Dispatch for each hour once prior to the operating hour. Hourly Pre-Dispatched System Resources shall be pre-dispatched in merit order, but shall be price-takers, *i.e.*, shall not set the price. The Hourly Pre-Dispatch shall not subsequently be revised by the RTD Software.

2.5.22.6.2   Transmission System Constraints.

RTD shall use a zonal DC network model where all nodes within a zone would be collapsed into a single equivalent "zonal bus." The constraints using the zonal network model shall be the following:

a) Power balance constraint in each zone. The system Imbalance Energy requirement shall be calculated on a zonal basis. The power balance constraints shall dictate an optimal dispatch that would eliminate the Imbalance Energy requirement in all zones, subject to (b) below.

b) Inter-Zonal Interface constraints. These constraints shall limit the net active power flow on Inter-Zonal Interfaces at or below their transfer limits. For Inter-Zonal

Interfaces between the ISO Control Area and another control area, inter-zonal transfer capacity shall be reserved for awarded Ancillary Services from System Resources not already Dispatched.

2.5.22.6.3   Inter-hour Dispatch of Resources Without Real Time Energy Bids.

Real Time Dispatch Instructions shall be issued for each Dispatch Interval as needed to prescribe the ramp between a resource's Final Hour-Ahead Schedule in one hour to its Final Hour-Ahead Schedule in the immediately succeeding operating hour. Such Dispatch Instructions shall be based on the lesser of: 1) the applicable operational ramp rate as provided for in SBP Section 6.5 and 2) the ramp rate associated with the Standard Ramp. The Dispatch Instructions for ramping of Generating Units without Real Time Energy Bids in both operating hours shall begin 10 minutes prior to the start of each operating hour and shall end no sooner than 10 minutes after and no later than 50 minutes after the start of each operating hour. Energy resulting from the Standard Ramp shall be deemed Standard Ramping Energy and will be settled in accordance with SABP Appendix D-1 Section 2.1.2. Energy resulting from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be settled in accordance with SABP Appendix D-1 Section 2.1.2.

2.5.22.6.4   Inter-hour Dispatch of Resources With Real Time Energy Bids.

Real Time Dispatch Instructions associated with the ramp between a resource's Final Hour-Ahead Schedule in one hour to its Final Hour-Ahead Schedule in the immediately succeeding operating hour shall be determined optimally by the RTD Software if the ISO has bids for either or both relevant operating hours. For any operating hour(s) for which bids have been submitted, Dispatch Instructions will be optimized such that the Dispatch Operating Point is within the bid range(s). For any operating hour without submitted bids Dispatch Instructions will be optimized such that the Dispatch Operating Point conforms to the schedule within the operating hour. Energy resulting from the Standard Ramp shall be deemed Standard Ramping Energy and will be settled in accordance with SABP Appendix D Section 2.1.2. Energy resulting

from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be settled in accordance with SABP Appendix D Section 2.1.2. Energy delivered or consumed as a result of ISO Dispatch of a resource's Energy Bid in one operating hour to a Dispatch Operating Point such that the resource cannot return to its successive operating hour Final Hour-Ahead Schedule by the beginning of the next operating hour is Residual Energy and shall be settled as Instructed Imbalance Energy as provided for in SABP Appendix D Section 2.1.2 and also may be eligible for recovery of its applicable Energy Bid costs in accordance with Section 11.2.4.1.1.1. Similarly, Energy delivered or consumed as a result of ISO Dispatch of a resource's Energy Bid in a future operating hour to a Dispatch Operating Point different from its current operating hour Final Hour-Ahead Schedule prior to the end of the current operating hour is also considered Residual Energy and shall be settled as Instructed Imbalance Energy as provided for in SABP Appendix D Section 2.1.2 and also may be eligible for recovery of its applicable Energy Bid costs in accordance with Section 11.2.4.1.1.1. When Ramping Energy Deviation and Residual Energy coexist within a given Dispatch Interval, the Ramping Energy Deviation shall be the portion of Instructed Imbalance Energy that is produced or consumed within the schedule-change band defined by the Final Hour-Ahead Schedules of the two consecutive Settlement Periods; the Residual Energy shall be the portion of Instructed Imbalance Energy that is produced or consumed outside the schedule-change band.

2.5.22.7 Inter-Zonal Congestion. In the event of Inter-Zonal Congestion in real time, the ISO shall procure Imbalance Energy separately for each Zone, as described in Section 2.5.22.6.

2.5.22.8 Intra-Zonal Congestion. Except as provided in Section 5.2, in the event of Intra-Zonal Congestion in real time, the ISO shall adjust resources in accodance with Sections 7.2.6.1 and 7.2.6.2.

2.5.22.9 Replacement Recovery of Operating Reserve. If pre-arranged procured Operating Reserve is used to meet Imbalance Energy requirements, such Operating Reserve may be

replaced recovered by the ISO's replacing the associated Imbalance Energy through the Ddispatch of other additional Imbalance Energy Bids in merit order to allow the resources that were providing Energy from the procured Operating Reserve to return to their operating point before they provided the Energy from the Operating Reserves.through available Supplemental Energy Bids.

Any additional real-time Operating Reserve needs may also be met in the same way. Where the ISO elects to rely upon Supplemental Energy Bids, the ISO shall select the resources with the lowest incremental Energy price bids. Operating Reserve procured from Replacement Reserve shall not require replacement of utilized Replacement Reserve. through unloaded capacity from RMR resources.

2.5.22.10 Dispatch Instructions.

All Dispatch Iinstructions except those for the Dispatch of Regulation (which will be communicated by direct digital control signals to Generating Units and, for System Resources, through dedicated communication links which satisfy the ISO's standards for external imports of Regulation) will be communicated electronically, except that, at the ISO's discretion, Dispatch Iinstructions may be communicated by telephone, or fax. Except in the case of deteriorating system conditions or emergency, and except for instructions for the Dispatch of Regulation, the ISO will send all Dispatch Iinstructions to the Scheduling Coordinator for the Generating Unit, System Unit, Load or System Resource, which it wishes, to Dispatch. The recipient Scheduling Coordinator shall ensure that the Dispatch Iinstruction is communicated immediately to the operator of the Generating Unit, System Unit, external import of System Resources or Load concerned. The ISO may, with the prior permission of the Scheduling Coordinator concerned, communicate with and give Dispatch Iinstructions to the operators of Generating Units, System Units, external imports of System Resources and Loads directly without having to communicate through their appointed Scheduling Coordinator. The recipient of a Dispatch Iinstruction shall

confirm the Dispatch in accordance with DP 4.4. The ISO shall record the communications between the ISO and Scheduling Coordinators relating to Dispatch Iinstructions in a manner that permits auditing of the Dispatch Iinstructions, and of the response of Generating Units, System Units, external imports of System Resources and Loads to Dispatch Iinstructions.

The ISO Protocols govern the content, issue, receipt, confirmation and recording of Dispatch Iinstructions.

2.5.22.11 Failure to Conform to Dispatch Instructions. All Scheduling Coordinators, Participating Generators, owners or operators of Curtailable Demands and operators of System Resources providing Ancillary Services (whether self provided or procured by the ISO) or whose Supplemental Energy bids have been accepted by the ISO shall be obligated to respond or to secure response to the ISO's Dispatch Iinstructions in accordance with their terms, and to be available and capable of doing so, for the full duration of the Settlement Period. Dispatch Instructions will be deemed delivered and associated Energy will be settled as Instructed Imbalance Energy in accordance with Section 11.2.4.1.1. If a Generating Unit, Curtailable Demand or System Resource is unavailable or incapable of responding to a Dispatch Iinstruction, or fails to respond to a Dispatch Iinstruction in accordance with its terms, the Generating Unit, Curtailable Demand or System Resource:

(a)   shall be declared and labeled as non-conforming to the ISO's instructions unless it has notified the ISO of an event that prevents it from performing its obligations within 30 minutes of the onset of such event through a SLIC log entry. Notification of non-compliance via the Automated Dispatch System (ADS) will not supplant nor serve as the official notification mechanism to the ISO;

(b)   cannot set the BEEPDispatch Interval Ex Post Price pursuant to Section 2.5.23.2.1.2; and

(c) the Scheduling Coordinator for the Participating Generator, owner or operator of the

Curtailable Demand or System Resource concerned shall have Uninstructed Imbalance

Energy due to the difference between the Generating Unit's, Curtailable Demand's or

System Resource's instructed and actual output (or Demand). The Uninstructed

Imbalance Energy shall be subject to the settlement for Uninstructed Imbalance Energy

in accordance with Section 11.2.4.1 and the Uninstructed Deviation Penalty in

accordance with Section 11.2.4.1.2. This applies whether the Ancillary Services

concerned are contracted or self provided.

The ISO will develop additional mechanisms to deter Generating Units, Curtailable

Demand and System Resources from failing to perform according to Dispatch instructions, for

example reduction in payments to Scheduling Coordinators, or suspension of the Scheduling

Coordinator's Ancillary Services certificate for the Generating Unit, Curtailable Demand or

System Resource concerned.

2.5.23 Pricing Imbalance Energy.

2.5.23.1 General Principles. Instructed and Uninstructed Imbalance Energy shall be paid or

charged the applicable Resource-Specific Settlement Interval Ex Post Price or the Zonal

Settlement Interval Ex Post Price. These prices are determined ~~priced~~ using the ~~BEEP~~Dispatch

Interval Ex Post Prices. The Dispatch~~BEEP~~ Interval Ex Post Prices shall be based on the bid of

the marginal Generating Units, System Units, and ~~Loads~~ Curtailable Demand dispatched by the

ISO to increase or reduce Demand or Energy output in each ~~BEEP~~Dispatch Interval as provided

in Section 2.5.23.2.1.

The marginal bid is the highest bid that is accepted by the ISO's ~~BEEP~~RTD Software for

increased energy supply or the lowest bid that is accepted by the ISO's ~~BEEP~~RTD Software for

reduced energy supply. In the event the lowest price decremental bid accepted by the ISO is

greater and not equal to the highest priced incremental bid accepted, then the Dispatch~~BEEP~~

Interval Ex-Post Price shall be equal to the highest incremental bid accepted when there is a non-negative Imbalance Energy system requirement and equal to the lowest accepted decremental bid when there is a negative Imbalance Energy requirement.

When an Inter-Zonal Interface is operated at the capacity of the interface (whether due to scheduled uses of the interface, or decreases in the capacity of the interface), the marginal incremental or decremental bid prices in some Zones may differ from one another. In such cases, the ISO will determine separate Ex Post Prices for the Zones.

The ISO will respond to the Dispatch ~~l~~Instructions issued by the ~~BEEP~~RTD Software to the extent practical in the time available and acting in accordance with Good Utility Practice. The ISO will record the reasons for any variation from the Dispatch ~~l~~Instructions issued by the ~~BEEP~~RTD Software.

2.5.23.2   Determining Ex Post Prices.

2.5.23.2.1   ~~BEEP~~Dispatch Interval Ex Post Prices.

2.5.23.2.1.1   Computation.   For each ~~BEEP~~Dispatch Interval, the ISO will compute updated supply and demand curves, using the Generating Units, System Units, and Curtailable Demand ~~Loads~~ ~~d~~Dispatched according to the ISO's ~~BEEP~~RTD Software during that time period to meet Imbalance Energy requirements and to eliminate any Price Overlap. The Dispatch ~~BEEP~~ Interval Ex Post Price is equal to the bid price of the marginal resource accepted by the ISO for Dispatch, subject to any limitation applicable under Section 2.5.23.2.1.2~~5.23.3~~. In the event of Inter-Zonal Congestion, the ISO will determine separate Dispatch Interval Ex Post Prices for each Zone or groups of Zones on either side of the Congested interface.

2.5.23.2.1.2   Eligibility .   A resource constrained at an upper or lower operating limit, a boundary of a Forbidden Operating Region or dispatched for the maximum Energy deliverable based on its maximum applicable ramp rate cannot be marginal (*i.e.*, it cannot move in a

particular direction) and thus is not eligible to set the Dispatch Interval Ex Post Price. System

Resources are not eligible to set the Dispatch Interval Ex Post Price. A resource dispatched at

its lower operating limit, if otherwise eligible, will be eligible to set the Dispatch Interval Ex Post

Price if any portion of its Energy is necessary to serve Demand. A Dispatched resource must

perform within ten percent (10%) (*i.e.,* between 90% and 110%) of the relevant Dispatch

Operating Point to be eligible to set the Dispatch Interval Ex Post Price except 1) in those

Dispatch Intervals in which the ISO issues emergency Dispatch Instructions, or 2) where the

unpreventable loss of telemetry prevents the ISO from assessing the resource's performance.

For each BEEP Interval of the Settlement Period, BEEP will compute the Ex Post Price so that it

is:

(a)   greater than or equal to the prices of accepted incremental bids;

(b)   smaller than or equal to the prices of unaccepted incremental bids;

(c)   smaller than or equal to the prices of unaccepted incremental bids; and

(d)   greater than or equal to prices of unaccepted decremental bids.

         In the event of Inter-Zonal Congestion, the ISO will develop supply and demand

curves separately for each Zone separated by congestion.

2.5.23.2.2   Hourly Ex Post Price. The Hourly Ex Post Price in a Settlement Period t in

each Zone will equal the Energy absolute-value Energy-weighted average of the Dispatch BEEP

Interval Ex Post Prices in each Zone, where the weights are the system total Instructed

Imbalance energy, except Regulation Energy, for the Dispatch Interval. calculated as follows:

$$HP_{xt} = \frac{(\sum_{b} |Q_{bxt}| P_{bxt})}{\sum_{b} |Q_{bxt}|}$$

Where:

HP~x~ is the Hourly Ex Post Price in Zone x;

P~bx~ is the BEEP Interval Ex Post Price during BEEP Interval b in Zone x; and

*Q~bx~*t is the total Instructed Imbalance Energy during BEEP Interval b in Zone x.

If the ISO declares a System Emergency, e.g. during times of supply scarcity, and involuntary load shedding occurs during the real time Dispatch, the ISO shall set the Hourly Ex Post Price at the Administrative Price.

2.5.23.2.3 **Price for Uninstructed Deviations for Participating Intermittent Resources.** Deviations associated with each Participating Intermittent Resource in a Scheduling Coordinator's zonal portfolio shall be settled as provided in Section 11.2.4.5.1 at the monthly weighted average Dispatch Interval Ex Post Price, where the weights are the quantities of Instructed Imbalance Energy associated with each Dispatch Interval Ex Post Price.

2.5.23.3 **[Not Used]**

2.5.23.3.1 **[Not Used]**

2.5.23.3.1.1 **[Not Used]**

* * *

2.5.23.3.8.1 **[Not Used]**Hydro-Electric Resources within the ISO Control Area.

Hydro-electric resources within the ISO Control Area are not required to submit $0/MWh or other price-taker bids and are eligible to set a market clearing price.

* * *

2.5.26.2 **Rescission of Payments for Unavailability.** If capacity scheduled into the ISO's Ancillary Services markets from a Generating Unit, Curtailable Demand, System Unit or System Resource is unavailable during the relevant ~~BEEP~~Settlement Interval, then payments will be rescinded as described herein. For self-provided Ancillary Services, the payment obligation shall be equivalent to that which would arise if the Ancillary Services had been bid into each market in which they were scheduled.

2.5.26.2.1 If the ISO determines that a Scheduling Coordinator has supplied Uninstructed Imbalance Energy to the ISO during a ~~BEEP~~Settlement Interval from the capacity of a Generating Unit, System Unit or System Resource that is obligated to supply Spinning Reserve, Non-Spinning Reserve, or Replacement Reserve to the ISO during such ~~BEEP~~Settlement Interval, payments to the Scheduling Coordinator representing the Generating Unit, System Unit or System Resource for the Ancillary Service capacity used to supply Uninstructed Imbalance Energy shall be eliminated to the extent of the deficiency, except to the extent (i) the deficiency in the availability of Ancillary Service capacity from the Generating Unit, System Unit or System Resource is attributable to control exercised by the ISO in that ~~BEEP~~Settlement Interval through AGC operation, an RMR Dispatch Notice, or dispatch to avoid an intervention in Market operations or to prevent a System Emergency; or (ii) a penalty is imposed under Section 2.5.26.1 with respect to the deficiency.

2.5.26.2.2 If ~~the metered Demand of~~ a Curtailable Demand is insufficient to deliver the full amount of the Non-Spinning and Replacement Reserve to which that Curtailable Demand is obligated in that ~~BEEP~~Settlement Interval, then the related capacity payments will be rescinded to the extent of that deficiency as explained in Section 2.5.26.2.4 and 2.5.26.2.5, unless a penalty is imposed on that Curtailable Demand for that ~~BEEP~~Settlement Interval under Section 2.5.26.1.

2.5.26.2.3 ~~[Not Used]~~ <u>The ISO shall calculate the real-time ability of each Generating Unit and System Unit to deliver Energy from Ancillary Services capacity awarded or self-provided for each Settlement Interval based on its operational ramp rate as described in SBP Section 6.5, maximum operating capability, and actual telemetered output. If the Generating Unit or System Unit cannot deliver the full amount of Energy from the awarded or self-provided Spinning, Non-Spinning or Replacement reserve for a Settlement Interval then Ancillary Services capacity payments for the amount of Energy that cannot be delivered for the particular Settlement Interval shall be rescinded.</u>

2.5.26.2.4 This Section 2.5.26.2.4 shall not apply to the capacity payment for any particular Ancillary Service if the Zonal Market Clearing Price determined in accordance with Sections 2.5.15, 2.5.16 or 2.5.17 is less than or equal to zero. For those Ancillary Services for which such Zonal Market Clearing Prices are greater than zero, the payment for Ancillary Service capacity otherwise payable under Section 2.5.27.2, 2.5.27.3, and/or 2.5.27.4 shall be reduced by one sixth of the product of the applicable prices and the amount of Ancillary Service capacity from which the Generating Unit, Curtailable Demand, System Unit or System Resource has supplied Uninstructed Imbalance Energy in a ~~BEEP~~<u>Settlement</u> Interval. If a Scheduling Coordinator schedules Ancillary Services through both the Day-Ahead and Hour-Ahead Markets, capacity payments due the Scheduling Coordinator from each market will be rescinded in proportion to the amount of capacity sold to the ISO in each market. ~~The amount of capacity for which payments will be rescinded shall equal the value $UnavailAncServMW_{i,t}$, as defined in Section 11.2.4.1, applied to each Generating Unit, System Unit and System Resource supplying the Ancillary Service or the value $UnavailDispLoadMW_{i,t}$, as also defined in Section 11.2.4.1, applied to the Curtailable Demand supplying the Ancillary Service.~~

2.5.26.2.5 Payment shall be eliminated first for any <u>Replacement</u> ~~Spinning~~ Reserve capacity for which the Generating Unit, Curtailable Demand, System Unit or System Resource

would otherwise be entitled to payment. If the amount of Ancillary Service capacity from which the Generating Unit, System Unit or System Resource has supplied Uninstructed Imbalance Energy exceeds the amount of ~~Spinning~~ Replacement Reserve capacity for which it would otherwise be entitled to receive payment, payment shall be eliminated for Non-Spinning Reserve capacity, and then for ~~Replacement~~ Spinning Reserve capacity, until payment has been withheld for the full amount of Ancillary Service capacity from which the Generating Unit, Curtailable Demand, System Unit or System Resource supplied Uninstructed Imbalance Energy.

2.5.26.2.6   For each ~~BEEP~~Settlement Interval in which a Generating Unit, Curtailable Demand, System Unit or System Resource fails to actually supply Energy from Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity in accordance with a Dispatch instruction, or supplies only a portion of the Energy specified in the Dispatch Instruction, the capacity payment will be pro-rated to reflect the unavailability in that ~~BEEP~~Settlement Interval of the difference between (1) the total MW of the particular Ancillary Service scheduled in that Settlement Period and (2) the amount of Energy, if any, supplied in response to the Dispatch Iinstruction in that ~~BEEP~~Settlement Interval.

2.5.26.3   Rescission of Payments When Dispatch Instruction is Not Followed

If the total metered output of a Generating Unit, Curtailable Demand, System Unit or System Resource is insufficient to supply the amount of Instructed Imbalance Energy associated with a Dispatch instruction issued in accordance with a bid on Spinning Reserve, Non-Spinning Reserve, or Replacement Reserve in any ~~BEEP~~Settlement Interval, then the capacity payment associated with the difference between the total scheduled amount of each Ancillary Service for which Insufficient Energy was delivered, and the actual output attributed to the response to the Dispatch instruction on each Ancillary Service, shall be rescinded. However, no capacity payment shall be rescinded if the shortfall in the metered output of the Generating Unit, Curtailable Demand, System Unit, or System Resource is less than a deadband amount

published by ISO on the ISO Home Page at least twenty-four hours prior to the ~~BEEP~~Settlement

Interval. For any ~~BEEP~~Settlement Interval with respect to which no deadband amount has been

published by the ISO, the deadband amount shall be zero MWH. If the Generating Unit,

Curtailable Demand, System Unit or System Resource is scheduled to provide more than one

Ancillary Service in the Settlement Period, then the actual output will be attributed first to

Replacement Reserve, then to Non-Spinning Reserve, and finally to Spinning Reserve, and the

capacity payments associated with the balance of each Ancillary Service shall be rescinded. If

the same Ancillary Service is scheduled in both the Day Ahead and Hour Ahead Markets, then

payments shall be rescinded in proportion to the amount of each Ancillary Service scheduled in

each market.

2.5.26.4 Penalties applied pursuant to Section 2.5.26.1, and payments rescinded pursuant to

Section 2.5.26.2 and 2.5.26.3 shall be redistributed to Scheduling Coordinators in proportion to

ISO Control Area metered Demand and scheduled exports for the same Trading Day.

2.5.26.5 If the ISO determines that non-compliance of a Load, Generating Unit, System Unit or

System Resource, with an operating order or Dispatch ḷinstruction from the ISO, or with any

other applicable technical standard under the ISO Tariff, causes or exacerbates system

conditions for which the WSCC imposes a penalty on the ISO, then the Scheduling Coordinator

of such Load, Generating Unit, System Unit or System Resource shall be assigned that portion

of the WSCC penalty which the ISO reasonably determines is attributable to such non-

compliance, in addition to any other penalties or sanctions applicable under the ISO Tariff.

2.5.26.6 Temporary Exemption from Rescission of Energy Payments Any Participating

Load that has entered into a Participating Load Agreement and has responded to a Dispatch

ḷinstruction will be exempt from the requirements of Section 2.5.26.2.3 in the hour of the

Dispatch and for the following two (2) hours during the period beginning on June 15, 2000 and

ending on the date specified in a notice ("Notice Terminating Temporary Exemption") to be

issued by the ISO. Such notice shall be posted on the ISO Home Page and distributed to Market Participants via e-mail at least seven (7) calendar days in advance of the termination of this temporary exemption.

<p align="center">* * *</p>

2.5.27.1 Regulation.

Regulation Up and Regulation Down payments shall be calculated separately.

Quantities. The following quantity definitions shall be used for each Scheduling Coordinator in the settlement process:

$AGCUpQDA_{xt}$ = the Scheduling Coordinator's total quantity of Regulation Up capacity in Zone X sold through the ISO auction at bids at or below the level specified in Section 2.5.27.7, and scheduled Day-Ahead j for Settlement Period t.

$AGCDownQDA_{xt}$ = the Scheduling Coordinator's total quantity of Regulation Down capacity in Zone X sold through the ISO auction at bids at or below the level specified in Section 2.5.27.7, and scheduled Day-Ahead j for Settlement Period t.

$EnQInst_{xt}$ = Instructed Imbalance Energy increase or decrease in Zone X in real time Dispatch for each ~~BEEP~~Dispatch Interval b of Settlement Period t, determined in accordance with the ISO Protocols.

Prices. The prices in the Settlement process for Regulation Up and Regulation Down shall be those determined in Section 2.5.14 for bids at or below the level specified in Section 2.5.27.7 and prices determined in accordance with Section 2.5.27.7 for bids above that level.

Adjustment: penalty described in Section 2.5.26.1.

$PAGCUpDA_{xt}$ = the market clearing price, PAGC, in Zone X for Regulation Up capacity in the Day-Ahead market for Settlement Period t.

$PAGCDownDA_{xt}$ = the market clearing price, PAGC, in Zone X for Regulation Down capacity in the Day-Ahead market for Settlement Period t.

Payments. Scheduling Coordinators for Generating Units providing Regulation Up capacity through the ISO auction shall receive the following payments for Regulation Up:

$AGCUpPay_{xt} = AGCUpQDA_{xt} *PAGCUpDA_{xt} - Adjustment$

Scheduling Coordinators for Generating Units providing Regulation Down capacity through the ISO auction shall receive the following payments for Regulation Down:

$AGCDownPay_{xt} = AGCDownQDA_{xt} *PAGCDownDA_{xt} - Adjustment$

Scheduling Coordinators for Generating Units shall receive the following payment for Energy output from Regulation in accordance with the settlement for Instructed Imbalance Energy under Section 11.2.4.1:

$$\sum_{i} [(EnQInst_{ixt} * Zonal\ Settlement\ IntervalExPostPriceinZoneX) + REPA_{ixt}]$$

$REPA_{ixt}$ = the Regulation Energy Payment Adjustment for Generating Unit i in Zone X for Settlement Period t calculated as follows:

$[(R_{UPixt} * C_{UP}) + (R_{DNixt} * C_{DN})] * max\ (\$20/MWh, P_{xt})$

Where

R_{UPixt} = the upward range of generating capacity for the provision of Regulation from Generating Unit i in Zone X included in the bid accepted by the ISO for Generating Unit i for Settlement Period t, weighted in proportion to the ISO's need for upward Regulation. The weighting factors will be specified within a range from 0-100 percent.

The weighting factors will be set at the discretion of the ISO based on system conditions, and will be set at a level that will provide sufficient incentive to the market to supply upward Regulation for the ISO's purposes of satisfying WSCC criteria and NERC control performance standards. The ISO shall post the weighting factors consistent with the ISO Weighting Procedure, posted on the ISO website.

R_{DNixt} = the downward range of generating capacity for the provision of Regulation for Generating Unit i in Zone X included in the bid accepted by the ISO for Generating Unit i for Settlement Period t, weighted in proportion to the ISO's need for downward Regulation. The weighting factors will be specified within a range from 0-100 percent. The weighting factors will be set at the discretion of the ISO based on system conditions, and will be set at a level that will provide sufficient incentive to the market to supply downward Regulation for the ISO's purposes of satisfying WSCC criteria and NERC control performance standards. The ISO shall post the weighting factors consistent with the ISO Weighting Procedure, posted on the ISO website.

C_{UP} = 0 to 1

C_{DN} = 0 to 1

P_{xt} = the Hourly Ex Post Price for Zone X in Settlement Period t.

The ISO may modify the value of the constants C_{UP} or C_{DN} within a range of 0-1 either generally in regard to all hours or specifically in regard to particular times of the day, after the ISO Governing Board approves such modification, by a notice issued by the Chief Executive Officer of the ISO and posted on the ISO Internet "Home Page," at http//www.caiso.com, or such other Internet address as the ISO may publish from time to time, specifying the date and time from

which the modification shall take effect, which shall be not less than seven (7) days after the Notice is issued.

REPA shall not be payable unless the Generating Unit is available and capable of being controlled and monitored by the ISO Energy Management System over the full range of its Scheduled Regulation capacity for the entire Settlement Period at least the ramp rates (increase and decrease in MW/minute) stated in its bid. In addition, the total Energy available (R_{UP} plus R_{DN}) may be adjusted to be only R_{UP} or only R_{DN}, a percentage of R_{UP} or R_{DN}, or the sum of R_{UP} and R_{DN}, depending on the needs of the ISO for each direction of Regulation service.

2.5.27.2   Spinning Reserve.

Quantities. The following quantity definitions shall be used for each Scheduling Coordinator in the Settlement process:

$SpinQDA_{xt}$ = the Scheduling Coordinator's total quantity of Spinning Reserve capacity in Zone X sold through the ISO auction at bids at or below the level specified in Section 2.5.27.7, and scheduled Day-Ahead for Settlement Period t.

$EnQInst_{xt}$ = Instructed Imbalance Energy output in Zone X in real time Dispatch for Settlement Period t, supplied in accordance with the ISO protocols.

Prices. The prices in the Settlement process for Spinning Reserve shall be those determined in Section 2.5.15 for bids at or below the level specified in Section 2.5.27.7 and prices determined in accordance with Section 2.5.27.7 for bids above that level.

$Adjustment$ = penalty described in Section 2.5.26.1, or rescinded capacity payments described in Section 2.5.26.2 or 2.5.26.3.

$PspDA_{xt}$ = market clearing price, Psp, in Zone X for Spinning Reserve capacity in the Day-Ahead Market for Settlement Period t.

Payments. Scheduling Coordinators for Generating Units, System Units, or System Resources providing Spinning Reserve capacity through the ISO auction shall receive the following payments for Spinning Reserve capacity:

$$SpinPay_{xt} = SpinQDA_{xt} * PspDA_{xt\,-Adjustment}$$

Scheduling Coordinators for Generating Units, System Units, or System Resources shall receive the following payments for Energy output from Spinning Reserve capacity:

$$EnQInst_{xt} * \text{~~BEEP~~}\underline{Resource\text{-}Specific}\ \textit{Settlement Interval Ex Post Price}_{xt}$$

2.5.27.3 Non-Spinning Reserve.

Quantities. The following quantity definitions shall be used for each Scheduling Coordinator in the settlement process:

$NonSpinQDA_{xt}$ = the Scheduling Coordinator's total Quantity of Non-Spinning Reserve capacity in Zone X sold through the ISO's auction at bids at or below the level specified in Section 2.5.27.7, and scheduled Day-Ahead for Settlement Period t.

$EnQInst_{xt}$ = Instructed Imbalance Energy output or Demand reduction in Zone X in real time Dispatch for Settlement Period t, supplied in accordance with the ISO protocols.

Prices. The prices in the Settlement process for Non-Spinning Reserve shall be those determined in Section 2.5.16 for bids at or below the level specified in Section 2.5.27.7 and prices determined in accordance with Section 2.5.27.7 for bids above that level.

$Adjustment$ = penalty described in section 2.5.26.1, or rescinded capacity payments described in Section 2.5.26.2 or 2.5.26.3.

$PnonspDA_{xt}$ = market clearing price, Pnonsp, in Zone X for Non-Spinning Reserve capacity in the Day-Ahead Market for Settlement Period t.

Payments. Scheduling Coordinators for Generating Units, System Units, System Resources, or Loads supplying Non-Spinning Reserve capacity through the ISO auction shall be paid the following for the Non-Spinning Reserve capacity:

$NonspPay_{xt} = NonSpinQDA_{xt} * PnonspDAxt - Adjustment$

Scheduling Coordinators for Generating Units, System Units, System Resources or Loads shall receive the following payments for Energy output from Non-Spinning Reserve capacity:

$EnQInst_{xt} *$ ~~BEEP~~$\underline{Resource\text{-}Specific\ Settlement}\ Interval\ Ex\ Post\ Price_{xt}$

2.5.27.4 Replacement Reserve.

Quantities. The following quantity definitions shall be used for each Scheduling Coordinator in the settlement process:

$RepResQDA_{xt}$ = the Scheduling Coordinator's total quantity of Replacement Reserve capacity in Zone X sold through the ISO auction at bids at or below the level specified in Section 2.5.27.7, scheduled Day-Ahead for Settlement Period t, and from which Energy has not been generated.

$EnQInst_{xt}$ = Instructed Imbalance Energy output or Demand reduction in Zone X in real time Dispatch for Settlement Period t, suppplied in accordance with the ISO protocols.

Prices. The prices in the settlement process for Replacement Reserve shall be those determined in section 2.5.17 for bids at or below the level specified in Section 2.5.27.7 and prices determined in accordance with Section 2.5.27.7 for bids above that level.

$Adjustment$ = penalty described in section 2.5.26.1, or rescinded capacity payments described in Section 2.5.26.2 or 2.5.26.3.

$PRepResDA_{xt}$ = market clearing price, PRepRes, in Zone X for Replacement Reserve capacity in the Day-Ahead Market for Settlement Period t.

Payments. Scheduling Coordinators for Generating Units, System Units, System Resources, or Loads providing Replacement Reserve capacity through the ISO auction shall receive the following payments for the portion of a Scheduling Coordinator's Replacement Reserve capacity from which Energy has not been generated:

$$RepResPay_{ijt} = (RepResQDA_{xt} -) * PRepResDA_{xt\text{-}Adjustment}$$

Scheduling Coordinators shall not receive capacity payments for the portion of a Scheduling Coordinator's Replacement Reserve capacity from which Energy has been generated. The payments for Energy output from Replacement Reserve capacity are calculated as follows:

$$EnQInst_{ijt} * \sout{BEEP }\underline{Resource\text{-}Specific\ Settlement}\ Interval\ Ex\ Post\ Price_{xt}$$

* * *

5.2.7.2 The RMR Owner shall, to the extent set forth herein, be a third party beneficiary of, and have all rights that the ISO has under the ISO Tariff, at law, in equity or otherwise, to enforce the Responsible Utility's obligation to pay all sums invoiced to it in the Responsible Utility invoices but not paid by the Responsible Utility, to the extent that, as a result of the Responsible Utility's failure to pay, the ISO does not Pay the RMR Owner on a timely basis amounts due under the Reliability Must-Run Contract. The RMR Owner's rights as a third party beneficiary shall be no greater than the ISO's rights and shall be subject to the dispute resolution process specified in the relevant RMR Contract. Either the ISO or the RMR Owner (but not both) will be entitled to enforce any claim arising from an unpaid Responsible Utility invoice, and only one party will be a "disputing party" under the dispute ~~resoultion~~resolution process specified in the relevant RMR Contract with respect to such claim so that the Responsible Utility will not be subject to duplicative claims or recoveries. The RMR Owner shall have the right to control the disposition of claims against the Responsible Utility for non-payments that result in payment defaults by the ISO under a Reliability Must-Run Contract. To that end, in the event of non-payment by the Responsible Utility of amounts due under the Responsible Utility invoice, the ISO will not take any action to enforce its rights against the Responsible Utility unless the ISO is requested to do so by the RMR Owner. The ISO shall cooperate with the RMR Owner in a timely manner as necessary or appropriate to most fully effectuate the RMR Owner's rights related to such enforcement, including using its best efforts to enforce the Responsible Utility's payment obligations if, as, to the extent, and within the time frame, requested by the RMR Owner. The ISO shall intervene and participate where procedurally necessary to the assertion of a claim by the RMR Owner.

* * *

5.11.5 Submission of Bids and Applicability of the Proxy Price

For each Operating Hour, Must-Offer Generators shall submit Supplemental Energy bids for all of their Available Generation to the ISO in accordance with Section 2.5.22.4. In addition, the ISO shall calculate for each gas-fired Must-Offer Generator, in accordance with Section 2.5.23, a Proxy Price for Energy.

If a Must-Offer Generator fails to submit a Supplemental Energy bid for any portion of its Available Generation for any BEEPDispatch Interval, the unbid quantity of the Must-Offer Generator's Available Generation will be deemed by the ISO to be bid at the Must-Offer Generator's Proxy Price for that hour if: (i) the applicable Generating Unit is a gas-fired unit and (ii) the Must-Offer Generator has provided the ISO with adequate data in compliance with Sections 2.5.23.3.3 and 5.11.3 for the applicable Generating Unit. For all other Generating Units owned or controlled by a Must-Offer Generator, the unbid quantity of the Must-Offer Generator's Available Generation will be deemed by the ISO to be bid and settled in accordance with Section 11.2.to receive the BEEP Interval Ex Post Price. In order to dispatch resources providing Imbalance Energy in proper merit order, the ISO will insert this unbid quantity into the Must-Offer Generator's Supplemental Energy bid curve above any lower-priced segments of the bid curve and below any higher-priced segments of the bid curve as necessary to maintain a non-decreasing bid curve over the entire range of the Must-Offer Generator's Available Generation.

* * *

5.11.6.1   Recovery of Minimum Load Costs By Must-Offer Generators
5.11.6.1.1 Eligibility

Units from Must-Offer Generators that incur Minimum Load Costs during Self-Commitment Periods or during hours for which the ISO has granted to them a waiver shall not be eligible to recover such costs for such hours. When a Must-Offer Generator is awarded Ancillary Services in the Hour-Ahead market or has a Final Hour-Ahead Schedule, the Must-Offer Generator shall not be eligible to recover Minimum Load Costs for any such hours within a Waiver Denial Period.

When, on an hourly 10-minute Settlement Interval basis, a Must-Offer Generator generating at

Minimum Load in compliance with the Must-Offer Obligation, produces a quantity of Energy that

varies by more than the Tolerance Bandgreater of: (i) five (5) MWh or (ii) an hourly Energy

amount equal to three (3) percent (%) of the unit's maximum operating output, the Must-Offer

Generator shall not be eligible to recover Minimum Load Costs for any such Settlement Intervals

during hours within a Waiver Denial Period. When, on an hourly Settlement Interval basis, a

Must-Offer Generator generating at above Minimum Load in compliance with an ISO Dispatch

Instruction, produces a quantity of Energy that varies from the total expected hourly Energy

output by more than the Tolerance Bandgreater of: (i) five (5) MWh or (ii) an hourly Energy

amount equal to three (3) percent (%) of the unit's maximum operating output, the Must-Offer

Generator shall not be eligible to recover either of its Minimum Load Costs or its bid costs, as

set forth in Section 11.2.4.1.1.1, for any such Settlement Intervals during hours within a Waiver

Denial Period. Subject to the foregoing eligibility restrictions set forth in this section, the ISO

shall pay to guarantee recovery of the Minimum Load Costs of an otherwise eligible Must-Offer

Generator the Minimum Load Costs for each Settlement Interval during hours within a Waiver

Denial Period that the generating unit runs at Minimum Load in compliance with the Must-Offer

Obligation and for each hour that an otherwise eligible Must-Offer Generator generates in

compliance with an ISO Dispatch Instructionas follows: (1) First, ISO will pre-dispatch for Real-

time the Minimum Load Energy from Must-Offer Generators that have been denied waivers for

each hour within a Waiver Denial Period; (2) This Minimum Load Energy will be accounted as

Instructed Imbalance Energy for each Settlement Interval within the relevant hour and be settled

at the Resource-Specific Settlement Interval Ex Post price; (3) To the extent the Instructed

Imbalance Energy payments are not sufficient to cover the generator's Minimum Load Cost for

the hour as defined in Section 5.11.6.1.2 of this Tariff, the generator will also receive an uplift

payment for its Minimum Load Cost Compensation for the relevant eligible Settlement Intervals

of hours during the Waiver Denial Period that the generating unit runs at Minimum Load in

compliance with the Must-Offer Obligation; and (4) To the extent the Generator is dispatched

for Real-time Imbalance Energy above its minimum load for any Dispatch Interval within an hour during the Waiver Denial Period, the Generator will be eligible for Bid Cost Recovery, as set forth in Section 11.2.4.1.1.1 subject to performance within its relevant Tolerance Band.

5.11.6.1.2   Minimum Load Costs

The Minimum Load Costs shall be calculated as the sum, for all eligible hours in the Waiver Denial Period and Settlement Periods in which the unit generated in response to an ISO Dispatch Instruction, of: 1) the product of the unit's average heat rate (as determined by the ISO from the data provided in accordance with Section 2.5.23.3.3) at the unit's relevant minimum operating level or Dispatchable minimum operating level as set forth in the ISO Master File or as amended through notification to the ISO via SLIC Schedule 1 of the Generating Unit's Participating Generator Agreement and the proxy figure for natural gas costs posted in the ISO Home Page in effect at the time, and the unit's relevant minimum operating level or Dispatchable minimum operating level as set forth in the ISO Master File or as amended through notification to the ISO via SLIC;Schedule 1 of the Generating Unit's Participating Generator Agreement and 2) the product of the unit's relevant minimum operating level or Dispatchable minimum operating level as set forth in the ISO Master File or as amended through notification to the ISO via SLIC; in Schedule 1 of the Generating Unit's Participating Generator Agreement and the FERC-approved Operations and Maintenance adder ($/MWh) in effect at the time.

<p align="center">* * *</p>

5.13.1   Energy Bid Definition.

A single Energy Bid curve per resource per hour shall be used in: (a) the Real-Time Hourly Pre-Dispatch as set forth in Dispatch Protocol 8.6.3, and (b) Dispatch in the Real-Time Economic Real Time Markets. A corresponding operational ramp rate as provided for in SBP Section 6.5 shall be submitted along with the single Energy Bid curve and shall be used in determination of Dispatch Instructions pursuant to Section 2.5.22.6.1(c). Dispatch (10-minute Imbalance Energy

market).—The Energy Bid shall be a staircase price ($/MWh) versus quantity (MW) curve of up to 10 segments. The Energy Bid shall be submitted to the Real Time Imbalance Energy Market using the Supplemental Energy Bid template. The Energy Bid curve shall be monotonically increasing, i.e., the price of a subsequent segment shall be greater than the price of a previous segment. Subject to the foregoing, sellers may increase or decrease bids in the ISO Real Time Market for capacity associated with those parts of the bid curve that were not accepted in or before the Hour-Ahead Market. For capacity associated with those parts of the bid curve previously accepted in or before the Hour-Ahead Market, sellers may only submit lower bids in subsequent markets. Each Forbidden Operating Region must be represented by only one bid segment.

* * *

7.2.1.5   Elimination of Real Time Inter-Zonal Congestion. In its management of Inter-Zonal Congestion in real time, the ISO will make the minimum amount of issue Dispatch Instructions asadjustment necessary to relieve Inter-Zonal Congestion by incrementing or decrementingDispatching Generation or Demand, as necessary, based on the Energy Bidsmerit order stack in accordance with Dispatch Protocol Section 8.3.

* * *

7.2.4.1.4 The ISO shall also use incremental Energy BidsAdjustment Bids from Generating Units and Adjustment Bids from other resources in the ISO's real time system operation, for increasing resources' output for Intra-Zonal Congestion Management and to decrement Generation in order to accommodate Overgeneration conditions, including Reliability Must-Run Generation which the ISO requests under Reliability Must-Run Contracts.

* * *

7.2.6.2   Incremental Bids. With regard to incremental bids, except as provided in Sections 5.2, 7.2.6.1, and 11.2.4.2, the ISO will perform Intra-Zonal Congestion Management in real time

using available ~~Adjustment Bids and~~ Imbalance Energy bids, based on their effectiveness and in merit order, to minimize the cost of alleviating Congestion. In the event no ~~Adjustment Bids or~~ Imbalance Energy bids are available, the ISO will exercise its authority to direct the resdispatch of resources as allowed under the Tariff, including Section 2.4.2 and 2.4.4.

* * *

7.4   Transmission Losses.

7.4.1   Obligation to Provide for Transmission Losses.

~~Each Scheduling Coordinator shall ensure that it schedules sufficient Generation to meet both its Demand and Transmission Losses responsibilities as determined in accordance with this Section 7.4.~~ Scheduling Coordinators for Generators, System Units and System Resources are responsible for their respective proportion of transmission losses as determined in accordance with Section 7.4.2. For each Final Hour-Ahead Schedule, each Scheduling Coordinator representing Generators or System Units shall elect through the flag described in SBP Section 2.1.1 to either: 1) generate sufficient additional energy to meet its respective transmission losses or 2) be financially responsible for its respective transmission loss obligation based on the Imbalance Energy procured on its behalf by the ISO. In the ISO Imbalance Energy Market, all Scheduling Coordinators for Generators and System Units must be financially responsible for all respective transmission losses associated with their respective Imbalance Energy Dispatch Instructions in Real Time, based on the Imbalance Energy procured on their behalf by the ISO. Scheduling Coordinators for System Resources, other than dynamically scheduled System Resources, shall be financially responsible for their respective proportion of transmission losses associated with Final Hour-Ahead schedules. A Scheduling Coordinator for an MSS Operator that has elected to follow Load will be responsible for its transmission loss obligation pursuant to Sections 23.12.1 and 23.16.4.

7.4.1.1 Settlement of Transmission Loss Obligations.

For a Scheduling Coordinator that elects to not or may not, self-provide for its transmission loss obligation, the ISO will procure Imbalance Energy on the Scheduling Coordinator's behalf for each relevant Dispatch Interval and explicitly settle its transmission loss obligation for each applicable Settlement Interval. For a resource under an ISO Dispatch Instruction for Imbalance Energy, transmission loss obligations shall be settled at the Resource-Specific Settlement Interval Ex Post Price. For a resource not under an ISO Dispatch Instruction for Imbalance Energy, transmission loss obligations shall be settled at the simple average of the two applicable Dispatch Interval Ex Post Prices as defined in Section 2.5.23.2.1. Allocation of transmission loss obligation settlement shall be treated consistent with Instructed Imbalance Energy pursuant to Section 11.2.4.2.1.

11.2.4 Imbalance Energy.

The ISO shall calculate, Dispatch and account for Imbalance Energy for each Dispatch Interval and settle Imbalance Energy in the Real Time Market for each BEEP Settlement Interval Period for the relevant Zone or Scheduling Point within the ISO Controlled Grid. Imbalance Energy is the difference between the Metered Quantity and the Energy that corresponds to the final Hour-Ahead Schedule. Instructed Imbalance Energy is the portion of Imbalance Energy that is produced or consumed due to Dispatch instructions. The Instructed Imbalance Energy will be calculated based on all Dispatch instructions taking into account applicable ramp rates and time delays. All Dispatch instructions shall be deemed delivered. The remaining Imbalance Energy constitutes Uninstructed Imbalance Energy, and will be calculated based on the difference between the Metered Quantity and the Generator's Dispatched Operating Point.

11.2.4.1   Net Settlements for Uninstructed Imbalance Energy.

Uninstructed Imbalance Energy attributable to each Demand Take-Out Point, Generating Unit, System Unit or System Resource for which a Scheduling Coordinator has a Final Hour-Ahead Schedule or Metered Quantity, for each Settlement Interval Period, in the relevant Zone shall be deemed to be sold or purchased, as the case may be, by the ISO and charges or payments for Uninstructed Imbalance Energy shall be settled by debiting or crediting, as the case may be, the Scheduling Coordinator with an amount for each BEEPSettlement Interval in accordance with Section 2.5.23.2.1. Positive or negative Uninstructed Imbalance Energy as described in SABP Appendix D, Section 2.1.1 shall be paid or charged the Resource-Specific Settlement Interval Ex Post Price or the Zonal Settlement Interval Ex Post Price, as the case may be.

Not withstanding the foregoing or any other provision in this Tariff, Uninstructed Imbalance Energy attributable to any Scheduling Coordinator for any System Resource Dispatched by the ISO shall be settled at the appropriate Instructed Imbalance Energy BEEP Interval Ex Post Price determined in accordance with Section 2.5.23.2.1.

11.2.4.1.1   Settlement for Instructed Imbalance Energy

Instructed Imbalance Energy attributable to each Scheduling Coordinator in each
~~BEEP~~Settlement Interval shall be deemed to be sold or purchased, as the case may be, by the
ISO and charges or payments for Instructed Imbalance Energy shall be settled by debiting or
crediting, as the case may be, the Scheduling Coordinator with an amount for each
~~BEEP~~Settlement Interval in accordance with Section 2.5.23.

11.2.4.1.1.1   Bid Cost Recovery for Generating Units, System Units and Curtailable Demand

The ISO shall determine, for each Trading Day, for each Generating Unit, System Unit and
Curtailable Load, Dispatched in the Real-Time Market pursuant to Section 2.5.22, whether there
exists a surplus or deficit in that resource's recovery of its Energy Bid costs, that are less than or
equal to the Maximum Bid Level, through Instructed Imbalance Energy credits, as set forth in
Section 11.2.4.1.1. This determination of market revenue surplus or deficit shall be calculated
as the difference between: 1) the Instructed Imbalance Energy payment as based on the
relevant Resource-Specific Settlement Interval Ex Post Price and 2) the resource's Energy Bid
cost for each Settlement Interval. Bid cost recovery payment will be based on Settlement
Intervals in which the resource did not: 1) recover its Energy Bid costs, and 2) generated or
consumed an amount of Energy equal to its schedule, any Dispatch Instructions and its
applicable Tolerance Band. These Settlement Intervals will be netted against all Settlement
Intervals in which the Instructed Imbalance Energy payments to the resource exceeded its
Energy Bid costs.   The resulting total bid cost recovery payment is then divided equally amongst
the same Settlement Intervals to yield a per-Settlement Interval bid cost recovery payment.
This per-Settlement Interval bid cost recovery payment shall then be paid to each Settlement
Interval in which the resource generated or consumed an amount of Energy equal to its
schedule, any Dispatch Instructions and its applicable Tolerance Band. Payments for un-

recovered bid costs for portions of Energy associated with bids above the Maximum Bid Level will not be netted with other surpluses or deficits and are subject to recall if the such bids above have not been adequately justified pursuant to Section 28.1.2. Energy Bid cost recovery associated with Residual Energy as provided for in Section 2.5.22.6.4 shall be based on the Energy Bids for the previous or next operating hour, whichever the case may be, upon which the Dispatch Instruction was based.

11.2.4.1.1.2   Bid Cost Recovery for System Resources

The ISO shall determine, for each Settlement Period, for each System Resource submitting bids in the Real-Time Market pursuant to Section 2.5.22, whether there exists a surplus or deficit in that resource's recovery of its Energy Bid costs. This determination of market revenue surplus or deficit shall be calculated as the difference between: 1) the Instructed Imbalance Energy payment as based on the simple average of the relevant Dispatch Interval Ex Post Prices for each Settlement Period and 2) the resource's Energy Bid cost for each Settlement Period. An uplift payment will be made as necessary for each Settlement Period to assure that the System Resource recovers its Energy Bid costs for the quantity of Energy delivered. Payments for un-recovered bid costs for portions of Energy associated with bids above the Maximum Bid Level are subject to recall if such bids have not been adequately justified pursuant to Section 28.1.2.

11.2.4.1.2   Penalties for Uninstructed Imbalance Energy

The ISO shall charge Scheduling Coordinators Uninstructed Deviation Penalties for Uninstructed Imbalance Energy resulting from resource deviations outside a Ttolerance Bband from their Dispatch Operating Point, for dispatched resources, or their final Hour-Ahead Schedule otherwise. The Dispatch Operating Point will take into account the expected ramping of a resource as it moves to a new Hour-Ahead Schedule at the top of each hour and as it responds to Dispatch Instructions. The Uninstructed Deviation Penalty will be applied as follows:

a) The Uninstructed Deviation Penalty for negative Uninstructed Imbalance Energy will be calculated and assessed in each ~~BEEP~~Settlement Interval ~~that Section 5.6.3 is in effect;~~. The Uninstructed Deviation Penalty for positive Uninstructed Imbalance Energy will be calculated and assessed in each Settlement Interval in which the ISO has not declared a Staged System Emergency; ~~the ISO has not declared a Staged System Emergency;~~

b) The Uninstructed Deviation Penalty will apply to Pre-Dispatched bids from non-dynamically scheduled System Resources identified, when such a Pre-Dispatch Instruction is issued more than 40 minutes prior to the relevant Operating Hour, subject to the following conditions: i) The Uninstructed Deviation Penalty will only apply to the Pre-Dispatched amount of the bid that is declined or not delivered, ii) the Uninstructed Deviation Penalty will not apply to a portion of a Pre-Dispatched bid that is subsequently not delivered at the direction of a Control Area, including the ISO, due to a curtailment of transmission capability or to prevent curtailment of native firm load occurring subsequent to issuing the Pre-Dispatch Instruction, iii) the Uninstructed Deviation Penalty will not apply to uninstructed energy resulting from declining subsequent intra-hour Dispatch Instructions. ~~Interconnection Schedules if a pre-dispatch instruction is declined or not delivered. However, uninstructed energy resulting from declining Intra-hour instructions will not be subject Uninstructed Deviation Penalty.~~ Dynamic-ally ~~Interconnection Schedules~~scheduled System Resources, to the extent they deviate from their Final Hour-Ahead Schedule plus any real-time Dispatch Instructions, will be subject to the Uninstructed Deviation Penalty;

c) The Uninstructed Deviation Penalty will not apply to Load or Curtailable Demand; ~~other than Participating Load; for Participating Load, the Uninstructed Deviation Penalty will not apply for the duration of the relevant Minimum Down Time;~~

d) [Not Used]~~The Uninstructed Deviation Penalty will not apply to constrained resources for the duration of the relevant startup/shutdown and Minimum Up/Down Times;~~

e) The Uninstructed Deviation Penalty will not apply to Regulatory Must-Run Generation or Participating Intermittent Resources that meet the scheduling obligations established in the Eligible Intermittent Resources Protocol.~~technical standards for Participating Intermittent Resources adopted by the ISO and published on the ISO Home Page or Regulatory Must-Run Generation.~~ No other applicable charges will be affected by this exemption. The Uninstructed Deviation Penalty also will not apply to Qualifying Facilities that have not executed a Participating Generator Agreement (PGA), pending resolution of QF-PGA issues at the Commission;

f) For ~~Metered Subsystems (MSS)~~the Scheduling Coordinator of an MSS that has elected to follow the MSS Load and associated transmission losses pursuant to Section 23.12, the ~~Uninstructed~~ Deviation ~~Penalty~~ Penalties in Sections 23.12.2.1 and 23.12.2.2 will apply~~.~~ ~~to the net injection (System Unit generation plus import minus MSS load and export) into the ISO Controlled Grid~~For the Scheduling Coordinator of an MSS that has not elected to follow the MSS Load, the Uninstructed Deviation Penalties in this Section 11.2.4.1.2 will apply;

g) The Uninstructed Deviation Penalty will ~~not~~ apply to ~~Generators~~ Generating Units providing Regulation and dynamically scheduled System Resources providing Regulation to the extent that Uninstructed Deviations from such resources ~~the Generators' Uninstructed Deviations~~ exceed ~~are within the range of their~~ each resource's actual Regulation range plus the applicable Tolerance Band. Resources providing Regulation and generating within their relevant Regulating range will be deemed to have zero deviations for purposes of the Uninstructed Deviation Penalty.

h)   The Uninstructed Deviation Penalty will be calculated and assessed for each resource ~~separately~~individually, ~~however,~~ except that as specified in this Section, Uninstructed Deviations from individual resources may be aggregated.   Uninstructed Deviations can be aggregated for resources that: 1) are represented by the same Scheduling Coordinator, 2) ~~and~~ are connected to the same ISO Controlled Grid bus and voltage level, and 3) are not Reliability Must Run Condition 2 resources.   ~~can be aggregated for purposes of Uninstructed Deviation Penalty determination.   Other levels of aggregation for purposes of the Uninstructed Deviation Penalty will be considered~~ The ISO will consider, on a case-by-case basis, requests to aggregate Uninstructed Deviations amongst resources represented by the same Scheduling Coordinator based on an ISO review of impact on the ISO Controlled Grid. The ISO may temporarily suspend any aggregation as needed to ensure reliability. The applicable Pmax of aggregated groups of resources will exclude units that are not operating;

i)   [Not Used]~~The tolerance band for the application of the Uninstructed Deviation Penalties to generating units or aggregated groups of generating units initially will be the Energy produced in a BEEP Interval by the greater of five (5) MW or three percent (3%) of the relevant generating unit's maximum output (P_{max}), as registered in the Master File;~~

j)   [Not Used]~~The tolerance band for the application of the Uninstructed Deviation Penalties to Participating Loads initially will be equal to the Energy produced in a BEEP Interval by the greater of five (5) MW or three percent (3%) of the relevant final Hour-Ahead Schedule;~~

k)   The Uninstructed Deviation Penalty will not apply when the ~~BEEP~~Zonal Settlement Interval Ex Post Price is negative or zero;

l)   The Uninstructed Deviation Penalty for positive Uninstructed Imbalance Energy will be the amount of the Uninstructed Imbalance Energy in excess of the ~~T~~tolerance ~~B~~band

multiplied by a price ~~that initially will be~~ equal to 100% of the corresponding ~~BEEP~~Zonal Settlement Interval Ex Post Price. ~~; and T~~the net effect of the Uninstructed Deviation Penalty and the Settlement for positive Uninstructed Imbalance Energy beyond the ~~T~~tolerance ~~B~~band will be that the ISO will not pay for such Energy;

m) The Uninstructed Deviation Penalty for negative Uninstructed Imbalance Energy will be the amount of the Uninstructed Imbalance Energy in excess of the ~~T~~tolerance ~~B~~band multiplied by a price ~~that initially will be initially~~ equal to 50% of the corresponding ~~BEEP~~Zonal Settlement Interval Ex Post Price; ~~and the net effect of the Uninstructed Deviation Penalty and Uninstructed Imbalance Energy settlement initially will be that any such Energy will be charged at 150% of the corresponding BEEP Interval Ex Post Price;~~

n) The Uninstructed Deviation Penalty will not apply to deviations from Energy delivered as part of a scheduled test so long as the test has been scheduled by the Scheduling Coordinator with the ISO or the ISO has initiated the test for the purposes of validating unit performance;

o) The Uninstructed Deviation Penalty will apply to Out of Market (OOM) transactions;

p) Generating Units~~, Curtailable Demands and dispatchable Interconnection resources~~ with ~~negative~~ Uninstructed Imbalance Energy will be exempted from the Uninstructed Deviation Penalty if the Generating Unit~~, Curtailable Demand or dispatchable Interconnection resource~~ was physically incapable of delivering the expected Energy, provided that the Generating Unit~~, Curtailable Demand or dispatchable Interconnection resource~~ had notified the ISO within 30 minutes of the onset of an event that prevents the resource from performing its obligations. A Generating Unit~~, Curtailable Demand or dispatchable Interconnection resource~~ must notify ISO operations staff of its reasons for failing to deliver the expected Energy in accordance with Section 2.3.3.9.2 and must provide information to the ISO that verifies the reason the resource failed to comply with

the Dispatch instruction within 72 hours of the operating hour in which the instruction is issued;-and

q) Adjustments to any Generating Unit, Curtailable Demand and System Resource Final Hour-Ahead Schedules made in accordance with the terms of Existing Transmission Contracts shall not be subject to Uninstructed Deviation Penalties.

r) Any changes made to Schedules prior to the ISO issuing Final Hour-Ahead Schedules shall not be subject to Uninstructed Deviation Penalties.

s) Uninstructed Deviation Penalties shall not be charged to any deviation from a Dispatch Instruction that does not comply with the requirements set forth in the Dispatch Protocol.

t) Amounts collected as Uninstructed Deviation Penalties shall first be assigned to reduce the portion of above-MCP costs that would otherwise be assigned pro rata to all Scheduling Coordinators in that BEEPSettlement Interval pursuant to Section 11.2.4.2.2. Any remaining portion of amounts collected as Uninstructed Deviation Penalties after satisfying these sequential commitments shall be treated in accordance with SABP 6.5.2.

* * *

11.2.4.2.1 Allocation of Costs Resulting From Dispatch Instructions

Pursuant to Section 11.2.4.1, the ISO may, at its discretion, Dispatch any Participating Generator, Participating Load and dispatchable Interconnection System Rresource that has not bid into the Imbalance Energy or Ancillary Services markets, to avoid an intervention in market operations or to prevent or relieve a System Emergency. Such Dispatch may result from, among other things, planned and unplanned transmission facility outages; bid insufficiency in the Ancillary Services and Real-Time Energy markets; and location-specific requirements of the ISO. The cost associated with each Dispatch instruction is broken into two components:

a)   the portion of the Energy payment at or below the Market Clearing Price ("MCP") for the ~~BEEP~~Settlement Interval, and

b)   the portion of the Energy payment above the MCP, if any, for the ~~BEEP~~Settlement Interval.

For each ~~BEEP~~Settlement Interval, costs above the MCP incurred by the ISO for such Dispatch instructions necessary as a result of a transmission facility outage or in order to satisfy a location-specific requirement in that ~~BEEP~~Settlement Interval shall be payable to the ISO by the Participating Transmission Owner in whose Service Area the transmission facility is located or the location-specific requirement arose. The costs incurred by the ISO for such Dispatch instructions for reasons other than for a transmission facility outage or a location-specific requirement will be recovered in the same way as for Instructed Imbalance energy.

11.2.4.2.2   Allocation of Above-MCP Costs For Accepted Bids

For each Settlement Interval, the at or below-MCP costs incurred as a result of accepted bids in the ISO Imbalance Energy Markets shall be allocated in accordance with 11.2.4.1. Allocation of above-MCP costs for accepted bids in the ISO Imbalance Energy Markets shall be in accordance with this Section 11.2.4.2.2 as follows.

11.2.4.2.2.1   Allocation of Bid Costs Above the Maximum Bid Level

For each ~~BEEP~~Settlement Interval, costs that are both ~~the~~above- the MCP and above the Maximum Bid Level,~~costs~~ incurred by the ISO as a result of Instructed Imbalance Energy and Dispatch instructions for reasons other than for a transmission facility outage or a location-specific requirement shall be charged to Scheduling Coordinators as follows in a three-step process. First, ~~E~~each Scheduling Coordinator's charge shall be the lesser of:

(a)   the pro rata share of the total costs that are both above the MCP and above the Maximum Bid Level ~~above-MCP costs~~ based upon the ratio of each Scheduling

Coordinator's Net Negative Uninstructed Deviations to the total System Net Negative Uninstructed Deviations; or

(b)   the amount obtained by multiplying the Scheduling Coordinator's Net Negative Uninstructed Deviation for each ~~BEEP~~Settlement Interval and a weighted average price. The weighted average price is equal to the total costs that are both above the MCP and above the Maximum Bid Level ~~above-MCP costs~~ divided by the MWh delivered as a result of ISO instructions with a cost component above the MCP.

Second, any remaining unallocated costs ~~The difference between ISO charges to Scheduling Coordinators with Net Negative Uninstructed Deviations and the total above-MCP costs incurred by the ISO due to Instructed Imbalance Energy and Dispatch instructions for reasons other than for a transmission facility outage or a location-specific requirement,~~ shall be ~~as such difference is~~ reduced pursuant to Section 11.2.4.1.2.

Third, any remaining unallocated costs~~,~~ shall be allocated amongst all Scheduling Coordinators in that ~~BEEP~~Settlement Interval pro rata based on their metered Demand, including Exports.

~~The~~ A Scheduling Coordinator shall be exempt from the first allocation step of costs that are both above the MCP and above the Maximum Bid Level ~~above-MCP costs~~ in a ~~BEEP~~ Settlement ~~I~~interval if the Scheduling Coordinator has sufficient incremental Energy bids from physically available resources in the Imbalance Energy market to cover ~~their~~ its net negative Uninstructed Deviation in the given Settlement ~~I~~interval and the prices of ~~these~~such Energy bids do not exceed the applicable ~~M~~maximum ~~B~~bid ~~L~~level as set forth in Section 28.1.2 of this Tariff.

11.2.4.2.2.2   **Allocation of Bid Costs Above-MCP and Below the Maximum Bid Level**

For each Settlement Interval, the total unrecovered costs pursuant to Section 11.2.4.1.1.1 that are above the MCP and below the Maximum Bid Level for each Trading Day will be allocated pro-rata to each Scheduling Coordinator based on its metered Demand. For a Scheduling

Coordinator of an MSS Operator that has elected to follow Load, allocation of such unrecovered costs will be based on net metered Demand.

11.2.4.3   Unaccounted For Energy (UFE)

For settlement purposes, UFE is treated as Imbalance Energy. For each BEEPSettlement Interval, the ISO will calculate UFE on the ISO Controlled Grid, for each utility Service Area for which separate UFE calculation is performed. The UFE will be settled as Imbalance Energy at the BEEPZonal Settlement Interval Ex Post Price. UFE attributable to meter measurement errors, load profile errors, Energy theft, and distribution loss deviations will be allocated to each Scheduling Coordinator based on the ratio of their metered Demand (including exports to neighboring Control Areas) within the relevant utility Service Area to total metered Demand within the utility Service Area.

11.2.4.4   High Voltage Access Charges and Transition Charges will be levied in accordance with Section 7.1 of this ISO Tariff and Appendix F, Schedule 3.

11.2.4.5   Participating Intermittent Resources

11.2.4.5.1   Uninstructed Energy and Transmission Losses by Participating Intermittent Resources

Uninstructed Imbalance Energy associated with deviations by a Participating Intermittent Resource and transmission losses shall be settled as provided in this Section 11.2.4.5.1 for every Settlement Period in which such Participating Intermittent Resource meets the scheduling requirements established in the ISO Protocols. In each Settlement Period such requirements are met, the Participating Intermittent Resource shall be exempt from the charges (payments) for Uninstructed Imbalance Energy. Instead, the net Uninstructed Imbalance Energy in each BEEPSettlement Interval, together with the transmission loss obligation calculated in accordance with Section 7.4.1.1, shall be assigned to a deviation account specific to each Participating Intermittent Resource. The net balance in each deviation account at the end of

each calendar month shall be paid (or charged) to the Scheduling Coordinator for the associated

Participating Intermittent Resource at the average price specified in Section 2.5.23.2.3 of the

ISO Tariff. If the above- referenced scheduling requirements for Participating Intermittent

Resources are not met, then charges (payments) for Uninstructed Imbalance Energy during

such Settlement Periods shall be determined in accordance with Section 11.2.4.1.

11.2.4.5.2 Adjustment of Other Charges Related to Participating Intermittent Resources

Charges pursuant to Section 2.5.28.4 or Section 11.2.4.2.2 to Scheduling Coordinators

representing Participating Intermittent Resources shall exclude the effect of uninstructed

deviations by Participating Intermittent Resources that have scheduled in accordance with the

ISO Protocols. The amount of such adjustments shall be accumulated and settled as provided

in Section 11.2.4.5.3.

11.2.4.5.3 Allocation of Costs From Participating Intermittent Resources

The charges (payments) for Uninstructed Imbalance Energy that would have been calculated if

the ~~BEEP~~Settlement Interval deviations by each Participating Intermittent Resource were priced

at the appropriate ~~BEEP~~Settlement Interval Ex Post Price specified in Section 2.5.23.2.1 shall be

assigned to a monthly balancing account for all Participating Intermittent Resources in the ISO

Control Area. The balance in such account at the end of each month shall be netted against the

aggregate payments (charges) by Scheduling Coordinators on behalf of Participating

Intermittent Resources pursuant to Section 11.2.4.5.1. The resulting balance, together with the

adjustments to charges in each ~~BEEP~~Settlement Interval or Settlement Period pursuant to

Section 11.2.4.5.2 shall be assigned to each Scheduling Coordinator in the same proportion that

such Scheduling Coordinator's aggregate Net Negative Uninstructed Deviations in that month

bears to the aggregate Net Negative Uninstructed Deviations for all Scheduling Coordinators in

the Control Area in that month.

23.16   **MSS Settlements**

* * *

23.16.3   If the ISO is compensating Generating Units for eEmissions Costs, and sStart-uUp Fuel eCosts and Minimum Load Costs, and if MSS Operator charges the ISO for the eEmissions Costs, and sStart-uUp Fuel eCosts and Minimum Load Costs, of the Generating Units serving the Load of the MSS, then the Scheduling Coordinator for the MSS shall bear its proportionate share of the total amount of those costs incurred by the ISO based on the MSS gross metered Demand and exports and the Generating Units shall be made available to the ISO through the submittal of Supplemental Energy bids. If the MSS Operator chooses not to charge the ISO for the eEmissions Costs, and sStart-uUp Fuel eCosts and Minimum Load Costs of the Generating Units serving the Load of the MSS, then the Scheduling Coordinator for the MSS shall bear its proportionate share of the total amount of those costs incurred by the ISO based on the MSS's net metered Demand and exports. The MSS Operator shall make the election whether to charge the ISO for these costs on an annual basis on November 1 for the following calendar year.

* * *

23.16.5   If the MSS Operator has elected to follow its Load in accordance with Section 23.12, then the MSS is not eligible to receive bid cost recovery as provided for in Section 11.2.4.1.1.1 and the Scheduling Coordinator for the MSS shall be allocated costs associated with bid cost recovery on a net metered Demand basis. If the MSS Operator has elected to not follow its Load in accordance with Section 23.12, then the MSS is eligible to receive bid cost recovery as provided for in Section 11.2.4.1.1.1, if applicable, subject to resource-specific performance review, and the Scheduling Coordinator for the MSS shall be allocated costs associated with bid cost recovery on a gross metered Demand basis.

* * *

AGC (Automatic Generation Control)	Generation equipment that automatically responds to signals from the ISO's EMS control in real time to control the power output of electric generators within a prescribed area in response to a change in system frequency, tie-line loading, or the relation of these to each other, so as to maintain the target system frequency and/or the established interchange with other areas within the predetermined limits. * * *
Automatic Mitigation Procedure (AMP)	The market power mitigation procedure described in MMIP 3. * * *
~~**BEEP Interval**~~	~~The time period, which may range between five (5) and thirty (30) minutes, over which the ISO's BEEP Software measures deviations in Generation and Demand, and selects Ancillary Service and Supplemental Energy resources to provide balancing Energy in response to such deviations. As of the ISO Operations Date, the BEEP Interval shall be ten (10) minutes. Following a decision, by the ISO Governing Board, the ISO may, by seven (7) days' notice published on the ISO's Home Page, at http://www.caiso.com (or such other internet address as the ISO may publish from time to time), increase or decrease the BEEP Interval within the range of five (5) to thirty (30) minutes.~~
~~**BEEP Interval Ex Post Prices**~~	~~The prices charged to or paid by Scheduling Coordinators for Imbalance Energy in each Zone in each BEEP Interval.~~
~~**BEEP Software**~~	~~The balancing energy and ex post pricing software which is used by the ISO to determine which Ancillary Service and Supplemental Energy resources to Dispatch and to calculate the Ex Post Prices.~~

Day-Ahead Market The forward market for Energy and Ancillary Services to be supplied during the Settlement Periods of a particular Trading Day that is conducted by the ISO, the PX and other Scheduling Coordinators and which closes with the ISO's acceptance of the Final Day-Ahead Schedule.

Dispatch Interval The time period, which may range between five (5) and thirty (30) minutes, over which the ISO's RTD Software measures deviations in Generation and Demand, and selects Ancillary Service and Supplemental Energy resources to provide balancing Energy in response to such deviations. The Dispatch Interval shall be five (5) minutes. Following a decision by the ISO Governing Board, the ISO may, by seven (7) days' notice published on the ISO's Home Page, at http://www.caiso.com (or such other internet address as the ISO may publish from time to time), increase or decrease the Dispatch Interval within the range of five (5) to thirty (30) minutes.

Dispatch Interval Ex Post Prices The price of Imbalance Energy determined each Dispatch Interval based on 1) the Imbalance Energy requirements in that Dispatch Interval, and 2) the Energy Bid price of the resource eligible to set the price. The Dispatch Interval Ex Post Price is used to determine other prices used to settle Imbalance Energy.

Effective Price The price, applied to undelivered Instructed Imbalance Energy, calculated by dividing the absolute value of the total payment

or charge for Instructed Imbalance Energy by the absolute value of the total Instructed Imbalance Energy, for the Settlement Period; provided that, if both the total payment or charge and quantity of Instructed Imbalance Energy for the Settlement Period are negative, the Effective Price shall be multiplied by -1.0 (minus one).

* * *

Ex Post Price

The Hourly Ex Post Price or, the BEEP Dispatch Interval Ex Post Price, the Resource-Specific Settlement Interval Ex Post Price, or the Zonal Settlement Interval Ex Post Price.

* * *

Forbidden Operating Region

The operating region of a resource wherein the resource can not operate in a stable manner and must ramp through at maximum ramp capacity.

* * *

Hourly Ex Post Price

The Energy-weighted average of the Dispatch BEEP Interval Ex Post Prices in each Zone during each settlement period. The Hourly Ex Post Price will vary between Zones if when Congestion is present. This price is used in the Regulation Energy Payment Adjustment and in RMR settlements.

Hourly Pre-Dispatch

The process in which the ISO Dispatches Energy Bids from System Resources before the start of the next Settlement Period for the entire duration of that Settlement Period.

* * *

Net Negative Uninstructed Deviation

The real time change in Generation or Demand associated with underscheduled Load (i.e., Load that appears unscheduled in real time) and overscheduled Generation (i.e., Generation that is scheduled in forward markets and does not appear in real

time). Deviations are netted for each Settlement BEEP

Interval, apply to a Scheduling Coordinator's entire portfolio,

and include Load, Generation, Imports and Exports.

* * *

Outage

Disconnection, or separation, or reduction in capacity planned or

forced, of one or more elements of an electric system.

* * *

Participating Seller or
Participating Generator

A Generator or other seller of Energy or Ancillary Services

through a Scheduling Coordinator over the ISO Controlled Grid

from a Generating Unit with a rated capacity of 1 MW or greater,

or from a Generating Unit providing Ancillary Services and/or

Imabalance Energy through an aggregation arrangement

approved by the ISO, which has undertaken to be bound by the

terms of the ISO Tariff, in the case of a Generator through a

Participating Generator Agreement.

* * *

Price Overlap

The price range of bids for Supplemental Energy or Energy

associated with Ancillary Services bids for any Dispatch BEEP

Interval that includes decremental and incremental Energy Bids

where the price of the decremental Energy Bids exceeds the

price of the incremental Energy Bids.

* * *

Resource-Specific

Settlement Interva! Ex

Post Price

The Resource-Specific Settlement Interval Ex Post Price will

equal the Energy-weighted average of the applicable Dispatch

Interval Ex Post Prices for each Settlement Interval taking into

account each resource's Instructed Imbalance Energy, except

Regulation Energy. The Resource-Specific Settlement Interval Ex Post Price shall apply to those resources that are capable of responding to ISO Dispatch Instructions.

Real-Time Dispatch ("RTD") Software

The security constrained optimal dispatch and ex post pricing software used by the ISO to determine which Ancillary Service and Supplemental Energy resources to Dispatch and to calculate the Ex Post Prices.

* * *

Settlement Interval

The time period, which is equal to or a multiple of the Dispatch Interval, over which the ISO settles deviations in Generation and Demand from Final Hour-Ahead Schedules.

* * *

Scheduling and Logging system for the ISO of California (SLIC)

A logging application that allows Market Participants to notify the ISO when a unit's properties change due to physical problems. Users can modify the maximum and minimum output of a unit, as well as the ramping capability of the unit.

* * *

Standard Ramp (ing)

A ramp calculated from two consecutive Final Hour Ahead Schedules that results in a straight trajectory between 10 minutes before the start of an operating hour to 10 minutes after the start of the operating hour.

* * *

Start-Up Fuel Costs

The cost of the fuel consumed by a particular generating unit from the time of first fire, the time of receipt of an ISO Dispatch instruction, or the time the unit was last ~~synchornized~~synchronized to the grid, whichever is later, until the time the generating unit is synchronized or re-synchronized

to the grid and producing Energy. Start-Up Fuel Costs are determined by multiplying the actual amount of fuel consumed by the proxy gas price as determined in accordance with Section 2.5.23.3.4 at the time the fuel is consumed.

* * *

Tolerance Band

The tolerance band expressed in terms of Energy (MWh) for the performance requirement for Generating Units and System Units for each Settlement Interval will equal the greater of the absolute value of: 1) 5 MW divided by number of Settlement Intervals per Settlement Period or 2) three percent (3%) of the relevant Generating Unit's or System Unit's maximum output (Pmax), as registered in the Master File, divided by number of Settlement Intervals per Settlement Period.

The tolerance band expressed in terms of Energy (MWh) for the performance requirement for Participating Loads for each Settlement Interval will equal the greater of the absolute value of: 1) 5 MW divided by number of Settlement Intervals per Settlement Period or 2) three percent (3%) of the applicable Final Hour-Ahead Schedule or ISO Dispatch amount divided by number of Settlement Intervals per Settlement Period.

* * *

Zonal Settlement Interval Ex Post Price

The Zonal Settlement Interval Ex Post Price in a Settlement Interval in each Zone will equal the absolute-value Energy-weighted average of the Dispatch Interval Ex Post Prices in each Zone, where the weights are the system total Instructed Imbalance Energy, except Regulation Energy, for the Dispatch

Interval.

DISPATCH PROTOCOL

* * *

DP 1.2.2   **Special Definitions for this Protocol**

In this Protocol, the following words and expressions shall have the meanings set opposite them:

"Backup ISO Control Center" means the ISO Control Center located in Alhambra, California.

~~**"BEEP"** means the Balancing Energy and Ex-Post Pricing software referred to in SP 11.2 which is used to determine the merit order stack.~~

"Control Area Operator" means the person responsible for managing the real time operations of a Control Area.

"Dispatch Instruction" means an operating order that is issued by the ISO to a Participant pertaining to real time operations.

"GCC" means the single point of contact at the grid control center of Southern California Edison Company.

"ISO Home Page" means the ISO internet home page at http://www.caiso.com or such other internet address as the ISO shall publish from time to time.

"Primary ISO Control Center" means the ISO Control Center located in Folsom, California.

"Participant" means any of those entities referred to in DP 1.3.1(a)-(f).

"Power System Stabilizer (PSS)" means an electronic control system applied on a Generating Unit that helps to damp out dynamic oscillations on a power system. The PSS senses Generator variables, such as voltage, current and shaft speed, processes this information and sends control signals to the Generator voltage regulator.

"Qualifying Facility" means a qualifying co-generation or small power production facility recognized by FERC.

"Security Coordinator" means the person responsible for Security Monitoring in real time for the California Area.

"TOC" means the single point of contact at the transmission operations center of Pacific Gas & Electric Company.

"Total Transfer Capability (TTC)" means the amount of power that can be transferred over an interconnected transmission network in a reliable manner while meeting all of a specific set of defined pre-contingency and post-contingency system conditions.

"Western Interconnection" means a network of transmission lines embodied within the WSCC Region.

* * *

DP 3.2 **Supplemental Energy**

In addition to the Final Schedules, Supplemental Energy bids will be available to the ISO real time dispatchers, as described in the SBP, by ~~forty-five~~sixty (4560) minutes prior to the start of the Settlement Period to which such Supplemental Energy bids apply.

* * *

DP 3.4.3 **Verbal and Electronic Communication with Generators**

Normal verbal and electronic communication of Dispatch Instructions between the ISO and Generators will be via the relevant SC. Each SC must immediately pass on to the Generator concerned any ~~verbal~~ communication for the Generator which it receives from the ISO. If the ISO considers that there has been a failure at a particular point in time or inadequate response over a particular period of time by the Generating Units to the Dispatch Instruction, the ISO will notify the relevant SC. The ISO may, with the prior permissions of the Scheduling Coordinator concerned, communicate with and give Dispatch Instructions to the operators of Generating Units and Loads directly without having to communicate through their appointed Scheduling Coordinator. In situations of deteriorating system conditions or emergency, the ISO reserves the right to communicate directly with the Generator(s) as required to ensure System Reliability.

* * *

DP 4.3 **Contents of Dispatch Instructions**

Dispatch Instructions shall include the following information as appropriate:

(a) exchange of operator names;

(b) specific resource being ~~d~~Dispatched;

(c) specific MW value and price point of the resource being ~~d~~Dispatched;

(d) specific type of instruction (action required);

(e) time the resource is required to begin initiating the Dispatch Instruction;

(f) time the resource is required to achieve the Dispatch Instruction;

(g) time of notification of the Dispatch Instruction; and

(h) any other information which the ISO considers relevant.

DP 4.4   **Acknowledgement of Dispatch Instructions**

The recipient of a Dispatch Instruction shall confirm the Dispatch Instruction. Dispatch Instructions communicated by the ISO either electronically or by fax shall be confirmed electronically in accordance with ISO procedures. Dispatch instructions communicated verbally shall be confirmed by repeating the Dispatch instructions to the ISO. ~~Dispatch Instructions of Imbalance Energy will be deemed delivered and settled as such.~~

* * *

DP 6.9.2   **Authority of WSCC Security Coordinators**

(a)   The Security Coordinator has the final authority to direct operations before, during and after problems or disturbances that have regional impacts. The WSCC security monitoring plans include collaboration with sub-regional Security Coordinators and control area operators to determine actions for anticipated problems. If there is insufficient time, or mutual concurrence is not reached, the Security Coordinator is authorized to direct actions and the control area operators must comply.

(b)   In the event of any situation occurring which is outside those problems already identified in the list of known problems, the Security Coordinator shall have the responsibility and authority to implement whatever measures are necessary to maintain system reliability. Those actions include but are not limited to; interchange curtailment, generation ~~d~~Dispatch adjustment (real power, reactive power and voltage), transmission configuration adjustments, special protection activation, load curtailment and any other action deemed necessary to maintain system reliability.

* * *

DP 7.3   **Supplemental Energy Bids**

Supplemental Energy bids may be submitted to the ISO no later than sixty (60) minutes prior to the beginning of the Settlement Period in accordance with the format and content requirements of the SBP. These Supplemental Energy bids cannot be withdrawn after sixty (60) minutes prior to the beginning of the Settlement Period. <u>A System Resource that identifies its bid as a Hourly Pre-Dispatch bid will only be pre-dispatched and will not be subject to any intra-hour Redispatch except as necessary to maintain inter-Control Area transmission reliability.</u>~~, except that a bid from a System Resource may specify that any portion of the bid that is not called prior to the beginning of the Settlement Period shall not be called after the beginning of the Settlement Period. The ISO may Dispatch the associated resource at any time during the Settlement Period.~~

* * *

DP 8   **REAL TIME OPERATIONAL ACTIVITIES –**
THE SETTLEMENT PERIOD

DP 8.1   **Settlement Period**

DP 8.1.1   **Responsibility of the ISO in Real Time Dispatch**

During ~~R~~real ~~T~~time Dispatch, the ISO, using RTD Software will be responsible for ~~d~~Dispatching Generating Units, Curtailable Demands and Interconnection schedules to meet real time imbalances between actual and scheduled Demand and Generation and to relieve Congestion, if necessary, to ensure System Reliability and to maintain Applicable Reliability Criteria.

DP 8.1.2   **[Not Used]~~Utilization of BEEP~~**

~~To achieve this, the ISO Control Center will utilize the merit order stack of available resources prepared pursuant to the SP through BEEP.~~

DP 8.2   **Generating Units, Loads and Interconnection Schedules Dispatched for Congestion**

~~If there is Inter-Zonal Congestion in real time,~~ ~~T~~the ISO will use the ~~merit order stack produced by BEEP~~RTD Software to alleviate Inter-Zonal Congestion as described in DP 8.3. The ISO will manage Intra-Zonal Congestion in real-time as set forth in Section 7.2.6.

DP 8.3   **Inter-Zonal Congestion**

DP 8.3.1   **Treatment by Zone**

If there is Inter-Zonal Congestion in real time, the ISO 's RTD software shall increase Generation and/or reduce Demand separately for each Zone to optimally Dispatch available resources to resolve the Congestion.

DP 8.3.2   **Selection of Generating Unit or Load to Increase Generation or Reduce Demand**

Where the ISO determines that it is necessary to increase Generation or reduce Demand in a Zone in order to relieve Inter-Zonal Congestion the ISO shall select ~~from the~~in merit order, ~~stack~~ the Generating Unit within the Zone (or the Interconnection schedule in a Control Area adjacent to the Zone) with a non-zero capacity remaining to increment which has the lowest incremental bid price ($/MWh) or the Curtailable Demand located within the Zone (or the Interconnection schedule in a Control Area adjacent to the Zone) with a non-zero capacity remaining to reduce which has the lowest Demand reduction bid price.

DP 8.3.3   **Selection of Generating Unit to Reduce Generation**

Where the ISO determines that it is necessary to reduce Generation in a Zone in order to relieve Inter-Zonal Congestion, the ISO shall select ~~from the~~in merit order ~~stack~~ the Generating Unit within the Zone with a non-zero capacity remaining to decrement which has the highest decremental bid price.

[NOTE: Section DP 8.4 incorporates changes made in the
Amendment 50 tariff filing.]

DP 8.4   **Intra-Zonal Congestion**

Except as provided in Section 5.2 of the ISO Tariff, in the event of Intra-
Zonal Congestion, the ISO shall adjust Generating Units and Curtailable
Demands (or Interconnection schedules of System Resources in the
Control Areas) to alleviate the constraints as described in Section 7.2.6.

* * *

DP 8.6.1   **Real Time Dispatch**

During real time, the ISO shall dDispatch Generating Units, Curtailable |
Demands and Interconnection schedules to meet imbalances between
actual and scheduled Demand and Generation.

In addition, the ISO may need to purchase additional Ancillary Services
if Ancillary Services arranged in advance are used to provide balancing
Energy, and such depletion needs to be recovered to meet System
Reliability contingency requirements.

DP 8.6.2   **Utilization of the Energy Bids Merit Order Stack** |

The ISO will use the Energy Bids merit order stack as produced by
BEEP, consisting of allto Dispatch the Supplemental Energy and
Ancillary Services Energy bids as described in the SP to procure |
balancing Energy for:

(a)   satisfying needs for Imbalance Energy;

(b)   mitigating Inter-Zonal Congestion;

(c)   allowing resources providing Regulation service to return to the
        mid-preferred operating point of within their regulating ranges; |

(d)   allowing recovery of Operating Reserves utilized in real time
        operations;

(e)   procuring additional Voltage Support required from resources
        beyond their power factor ranges in real time; and

(f)   Dispatching System Resources and Dispatchable Loads and
        increasing Generating Units' output to manage Intra-Zonal
        Congestion in real time using Energy Bids Dispatched out of |
        sequence.

DP 8.6.3   **Basis for Real Time Dispatch**

The ISO shall base real time Dispatch of Generating Units, Curtailable
Demands and Interconnection schedules on the following principles:

(a)   the ISO shall dDispatch Generating Units and dDispatchable |
        Interconnection schedules providing Regulation service to meet
        WSCC and NERC Area Control Error (ACE) performance
        criteria;

(b)   in each BEEP Dispatch Interval, following the loss of a resource |
        and once ACE has returned to zero, the ISO shall determine if

the Regulation Generating Units and ~~d~~Dispatchable Interconnection schedules are operating at a point away from their Set Point. The ISO shall then adjust the output of Generating Units, Curtailable Demands, and ~~d~~Dispatchable Interconnection schedules (either providing Spinning Reserve, Non-Spinning Reserve, Replacement Reserve, or Supplemental Energy) to return the Regulation Generating Units and ~~d~~Dispatchable Interconnection schedules to their Set Points to restore their full regulating margin;

(c)   in each <u>Dispatch</u> ~~BEEP~~ Interval, the ISO shall ~~d~~Dispatch Generating Units, Curtailable Demands and ~~d~~Dispatchable Interconnection schedules to meet its balancing Energy requirements and eliminate any Price Overlap between ~~decremental and incremental~~ Energy Bids, thereby, ~~d~~Dispatching the relevant resources in real time for economic trades either between SCs or within a SC's portfolio;

(d)   the ISO shall select the Generating Units, Curtailable Demands and ~~d~~Dispatchable Interconnection schedules to be ~~d~~Dispatched to meet its balancing Energy requirements ~~based on the~~<u>in</u> merit order ~~stack of~~<u>according to their</u> Energy ~~B~~<u>b</u>ids ~~prices produced by BEEP~~;

(e)   the ISO shall not discriminate between Generating Units, Curtailable Demands and ~~d~~Dispatchable Interconnection schedules other than based on price, and the effectiveness (location and ramp rate) of the resource concerned to respond to the fluctuation in Demand or Generation<u>, or to resolve Inter-Zonal Congestion</u>;

(f)   Generating Units, Curtailable Demands or ~~d~~Dispatchable Interconnection schedules shall be ~~d~~Dispatched during the Settlement Period only until the next variation in Generation or Demand or the end of the Settlement Period, whichever is sooner. In ~~d~~Dispatching such resources, the ISO ~~is not~~<u>may</u> mak~~eing~~<u>ing</u> ~~any~~ commitment<u>s</u> beyond the<u> current</u> Settlement Period~~;, as to the duration of their operation, nor the level of their output or Demand~~;

(g)   The ISO will not differentiate between Ancillary Services procured by the ISO and Ancillary Services which are being self-provided;

(h)   <u>[Not Used]</u>~~Within BEEP, once a decremental bid has been used by the ISO, it will then be included in the incremental part of the database with its incremental bid equal to its decremental price bid. Once an incremental bid has been used by the ISO it will then be included in the decremental part of the database with a decremental bid equal to its incremental price~~;

(i)   The ~~bid~~<u>operational</u> ramp rate<u>(s)</u> of a resource will be considered by the ~~BEEP~~<u>RTD</u> software in determining the amount of Instructed Imbalance Energy by ~~BEEP~~<u>Dispatch</u> Interval, and such consideration may result in Instructed

Imbalance Energy in Dispatch~~BEEP~~ Intervals prior to or subsequent to the Dispatch~~BEEP~~ Interval to which the Dispatch Instruction applies;

~~(j)~~(i) System Resources identified as Dispatchable within the operating hour pursuant to SBP Section 6.1.3 shall be Dispatched optimally through the RTD Software. Such bids will be settled pursuant to Section 11.2.4.1.1.2;~~Between 10 minutes and 45 minutes prior to the beginning of the operating hour, the ISO shall estimate the interchange bids that need to be dispatched prior to the beginning of the operating hour to: a) ensure resources that require advance notice are provided such notice prior requiring their energy, b) instruct interchange bids far enough in advance to allow the interchange bid to be arranged with external control areas and c) allow resources that have been dispatched in the previous operating hour and are determined to be economic in the upcoming operating hour to maintain their instructed level. During this pre-dispatch evaluation process, any Price Overlap will be economically dispatched. The pre-dispatch evaluation process will consider the forecast Imbalance Energy requirements of the first interval of the upcoming operating hour to determine the amount of energy from dispatchable resources. This pre-dispatch process will also consider the forecast imbalance energy requirement for the each interval of the upcoming operating hour to determine the amount of Energy to be dispatched for hourly resources such as interchange bids.~~

(k) The ISO will pre-dispatch Energy Bids from ~~Interconnection schedules~~System Resources, subject to ~~H~~hourly ~~P~~pre-~~D~~dispatch as indicated in SBP 6.1.3, prior to the beginning of each hour consistent with applicable WSCC interchange scheduling practices, assuring that any Price Overlap between such decremental and incremental Energy Bids will be eliminated. Such bids will be settled pursuant to Section 11.2.4.1.1.2. ~~Instructed Imbalance Energy from hourly pre-dispatched bids will be paid or charged the simple average of BEEP Interval Ex Post Prices for the hour. To the extent the settlement of the of the pre-dispatched interchange does not allow the interchange bid to recover its bid, an additional settlement will be made to compensate the interchange for un-recovered costs for the hour in which it was dispatched.~~

DP 8.7   **Ancillary Services Requirements**

The following requirements apply to the Dispatch of Ancillary Services in real time:

DP 8.7.1   **Regulation**

(a) Regulation provided from Generating Units or System Resources must meet the standards specified in the ASRP;

(b)   the ISO will dDispatch Regulation in merit order of Energy bid prices as determined by the EMS;

(c)   in the event of an unscheduled increase in system Demand or a shortfall in Generation output and Regulation margin drops below a predetermined value, the ISO will use scheduled Operating Reserve, Replacement Reserve or Supplemental Energy to restore Regulation margin; and

(d)   when scheduled Operating Reserve is used for restoration of Regulation reserve, the ISO shall arrange for the replacement of that Operating Reserve (see DP 8.7.4);

DP 8.7.2   **Operating Reserve**

(a)   Spinning Reserve:

    (i)   Spinning Reserve provided from Generating Units and Interconnection schedules must meet the standards specified in the ASRP;

    (ii)   the ISO will dDispatch Spinning Reserve as may be required to meet the Applicable Reliability Criteria;

    (iii)   the ISO may dDispatch Spinning Reserve as balancing Energy to return Regulation Generating Units to their Set Points and restore full Regulation margin; and

    (iv)   the ISO will dDispatch Spinning Reserve in merit order of Energy bid prices as determined by BEEPthe RTD Software;

(b)   Non-Spinning Reserve:

    (i)   Non-Spinning Reserve provided from Generating Units, Demands, and external imports of System Resources must meet the standards specified in the ASRP;

    (ii)   the ISO may dDispatch Non-Spinning Reserve in place of Spinning Reserve to meet Applicable Reliability Criteria;

    (iii)   the ISO will dDispatch Non-Spinning Reserve in merit order of Energy bid prices as determined by BEEPthe RTD Software; and

    (iv)   the ISO may dDispatch Non-Spinning Reserve to replace Spinning Reserve if there is a shortfall in Spinning Reserve because of a deficiency of balancing Energy;

DP 8.7.3   **Replacement Reserve**

(a)   Replacement Reserve provided from Generating Units, Curtailable Demands and Interconnection schedules must meet the standards specified in the ASRP;

(b)   the ISO will utilize Replacement Reserve to replace Operating Reserve that has been dDispatched due to a shortfall in Generation or an increase in Demand;

	(c)	the ISO may dDispatch Replacement Reserve to replace Operating Reserve that has been dDispatched for balancing Energy; and
	(d)	the ISO will dDispatch Replacement Reserve in merit order of Energy bid prices as determined by BEEPRTD;

DP 8.7.4   **Replacement of Operating Reserve**

(a)   in the event of an un-forecasted increase in system Demand or a shortfall in Generation output, the ISO shall utilize Replacement Reserve to restore Operating Reserve;

(b)   if pre-arranged Operating Reserve is used to meet balancing Energy requirements, the ISO may replace such Operating Reserve by dDispatch of additional balancing Energy available from Supplemental Energy bids;

(c)   any additional Operating Reserve needs may also be met the same way;

(d)   where the ISO elects to rely upon Supplemental Energy bids, the ISO shall select the resources with the lowest incremental Energy bid price as established by RTDBEEP; and

(e)   if the ISO restores Operating Reserve through utilization of Replacement Reserve, the ISO is not required to replace the utilized Replacement Reserve;

DP 8.7.5   **Voltage Support**

(a)   Voltage Support provided from Generating Units shall meet the standards specified in the ASRP;

(b)   the ISO may Dispatch Generating Units to increase or decrease MVar output within the power factor limits of 0.9 lagging to 0.95 leading (or within other limits specified by the ISO in any exemption granted pursuant to Section 2.5.3.4 of the ISO Tariff) at no cost to the ISO when required for System Reliability;

(c)   may Dispatch each Generating Unit to increase or decrease MVar output outside of established power factor limits, but within the range of the Generating Unit's capability curve, at a price calculated in accordance with ISO Tariff;

(d)   If Voltage Support is required in addition to that provided pursuant to DP 8.7.5 (b) and (c), the ISO will reduce output of Participating Generators certified in accordance with the ASRP based on the merit order stack as determined by BEEP. The ISO will select Participating Generators in the vicinity where such additional Voltage Support is required; and

(e)   the ISO will monitor voltage levels at Interconnections to maintain them in accordance with the applicable Inter-Control Area Agreements.

DP 8.7.6   **Black Start**

(a)   Black Start shall meet the standards specified for Black Start in the ASRP; and

(b)   the ISO will dDispatch Black Start as required in accordance with the applicable Black Start Agreement.

* * *

DP 9.1.1   **Range of ISO Authority**

The ISO has full authority to:

(a)   direct the physical operation of the ISO Controlled Grid, including (without limitation) circuit breakers, switches, voltage control equipment, protective relays, metering and Load Shedding equipment;

(b)   commit Reliability Must-Run Generation, except that the ISO shall only commit Reliability Must-Run Generation for Ancillary Services capacity according to Section 5.2 of the Tariff;

(c)   order a change in operating status of voltage control equipment;

(d)   take required action to prevent against uncontrolled losses of load or Generation;

(e)   control the output of Generating Units and Interconnection schedules scheduled to provide Ancillary Services or offering Supplemental Energy;

(f)   dDispatch Curtailable Demand which has been scheduled to provide Non-Spinning Reserve or Replacement Reserve; and

(g)   require the operation of resources which are at the ISO's disposal in a System Emergency, as described in DP 10.

* * *

DP 9.3   **Dispatch Instructions for Generating Units and Curtailable Demand**

The ISO may issue Dispatch Instructions covering:

(a)   Ancillary Services;

(b)   Supplemental Energy, which may be used for:

(i)   Congestion Management;

(ii)   provision of Imbalance Energy; or

(iii)   replacement of an Ancillary Service;

(c)   agency operation of Generating Units, Curtailable Demands or Interconnection schedules, for example:

(i) output or Demand that can be dDispatched to meet Applicable Reliability Criteria;

(ii) Generating Units that can be dDispatched for Black Start;

(iii) Generating Units that can be dDispatched to maintain governor control regardless of their Energy schedules; or

(d) the operation of voltage control equipment applied on Generating Units as described in the ASRP.

DP 9.4 Response Required by Generators to ISO Dispatch Instructions

DP 9.4.1 Action Required by Generators

Generators must:

(a) comply with Dispatch Instructions immediately upon receipt and shall respond in accordance with Good Utility Practice;

(b) meet voltage criteria in accordance with the provisions specified in the ISO Tariff and ASRP;

(c) meet the applicable operational ramp rates as provided for in SBP 6.5 required by ASRP for the Ancillary Service concerned;

(d) respond to Dispatch Instructions for Ancillary Services within the time periods required by ASRP except in a System Emergency, when DP 10 will apply; and (in the case of Generating Units providing Regulation) respond to electronic signals from the EMS; and

(e) respond to a Dispatch Instruction issued for the start-up or shut down of a Generating Unit, within the time frame stated in the Instruction.

* * *

DP 9.5 Failure to Comply with Dispatch Instructions

DP 9.5.1 Obligation to Comply

All entities providing Ancillary Services (whether self-provided or procured by the ISO) or whose Supplemental Energy bids have been accepted by the ISO shall be obligated to respond to the ISO's Dispatch Instructions in accordance with their terms. If a dDispatched Generating Unit, Curtailable Demand or System Resource Interconnection schedule fails to respond to a Dispatch Instruction in accordance with its terms, the Generating Unit, Curtailable Demand or System ResourceInterconnection schedule:

(a) shall be declared and labeled as non-conforming to the Dispatch Instruction;

(b) cannot shall not be eligible to set the Hourly Dispatch Interval Ex Post Price.

DP 9.5.2   Sanctions

The ISO will develop additional mechanisms to deter Generating Units and Loads in the ISO or other Control Areas from failing to respond at a particular time or adequately respond over a particular period of time to a Dispatch Instruction or failing to perform according to Dispatch Instructions, for example, reduction in payments to SCs or suspension of the SC's Ancillary Services certificate for the Generating Unit, Curtailable Demand or System Resource concerned.

* * *

DP 11   ALGORITHMS TO BE USED

The ISO shall develop dDispatch algorithms for use by the ISO for dDispatching Generating Units and Curtailable Demands in accordance with the ISO Tariff.

1.2   CONDUCT WARRANTING MITIGATION

2.1   Definitions

The following definitions are applicable to this Appendix A:

"Economic Market Clearing Prices" are the market clearing prices for a particular

resource at the location of that particular resource at the time the resource was either

Scheduled or was Dispatched by the ISO. Economic Market Clearing Prices may

originate from the Day-ahead Energy market, the Hour-ahead Energy market (when these

markets are in place), or ISO Real-time Imbalance Energy market. The Economic Market

Clearing Price for the ISO Real Time Imbalance Energy Market shall be the

BEEPDispatch Interval Ex Post Price, unless the resource cannot change output level

within the hour (i.e., the resource is not amenable to intra-hour real-time dDispatch

instructions), or it is a System Resource. Economic Market Clearing Prices for the ISO

Real Time Imbalance Energy Market for resources that cannot change output level within

one BEEPDispatch Interval and System Resources shall be the simple average of

the relevant six BEEPDispatch Interval Ex Post Prices for each hour.

"Electric Facility" shall mean an electric resource, including a Generating Unit, System

Unit, or a Participating Load.

* * *

3.1.1   Conduct Thresholds for Identifying Economic Withholding

The following thresholds shall be employed by the ISO to identify economic withholding that may

warrant the mitigation of the bid from a resource and shall be determined with respect to a reference level

determined as specified in Section 3.1.1.1:

For Energy Bids to be Dispatched as Imbalance Energy through the BEEP RTD Software stack:

the lower of a 200 percent increase or $100/MWh increase in the bid with respect to its Reference Level.

* * *

3.2   Material Price Effects

3.2.1   Market Impact Thresholds

In order to avoid unnecessary intervention in the ISO Market, Mitigation Measures for economic withholding shall not be imposed unless conduct identified as specified above causes or contributes to a material change in one or more of the ISO -market-clearing prices (MCPs). Initially, the thresholds to be used by the ISO to determine a material price effect shall be as follows:

For Energy Bids to be Dispatched as Imbalance Energy through the ~~BEEP~~RTD Software ~~stack~~: the lower of an increase of 200 percent or $50 per MWh in the projected Hourly Ex Post Price at any location (zone or node) commensurate with the relevant pricing structure in effect in accordance with the ISO Tariff.

For Energy Bids to be Dispatched out of economic merit order to manage Intra-Zonal Congestion: if the price of the bid is $50/MWh or 200 percent greater than the ~~BEEP~~Dispatch Interval Ex Post Price at that location (zone or node) commensurate with the relevant pricing structure in effect in accordance with the ISO Tariff.

Accepted and justified bids above the applicable soft cap, as set forth in Section 28.1.2 of this Tariff, will not be eligible to set the Market Clearing Price. Such bids shall be included in the Market Impact test, however, and, for purposes of this test only, shall be assumed to be eligible to set the Market Clearing Price.

* * *

3.2.2.2 Bids to be Dispatched out of economic merit order to manage Intra-Zonal Congestion. If the price of the bid is $50/MWh or 200 percent greater than the ~~BEEP~~Dispatch Interval Ex Post Price at that location (zone or node) commensurate with the relevant pricing structure in effect in accordance with the ISO Tariff, the bid price shall be mitigated to the reference price and the Scheduling Coordinator for that

resource shall be paid the greater of the reference price or the relevant ~~BEEP~~Dispatch Interval Ex Post Price. Bids mitigated in accordance with this section 3.2.2.2 shall not set the ~~BEEP~~Dispatch Interval Ex Post Price.

* * *

4.2.2 Implementation

(a)   If the criteria contained in Section 3 are met, the ISO may substitute a default bid for a bid submitted for an Electric Facility. The default bid shall establish a maximum value for each component of the submitted bid, equal to a reference level for that component determined as specified in Section 3.1.1.

(b)   The Mitigation Measures will be applied to 1) all incremental bids submitted to the Real Time Imbalance Energy Market during the pre-dispatch process prior to the Real Time Imbalance Energy Market based on the projected Real-time MCPs that are computed during this process; and 2) to the Day-Ahead and the Hour-Ahead Energy markets when these markets are made operational.

(c)   An Electric Facility subject to a default bid shall be paid the MCP applicable to the output from the facility. Accordingly, a default bid shall not limit the price that a facility may receive unless the default bid determines the MCP applicable to that facility.

(d)   The ISO shall not use a default bid to determine revised MCPs for periods prior to the imposition of the default bid, except as may be specifically authorized by the Commission.

(e)   The Mitigation Measures shall not be applied to Energy bids projected to be Dispatched as Imbalance Energy through the ~~BEEP~~ RTD Software ~~stack~~ in the hours in which all Zonal ~~BEEP Interval~~ Ex Post Prices are projected to be below $91.87/MWh. If the zonal ~~BEEP~~Dispatch Interval Ex Post Price is projected to be above $91.87/MWh in any ISO zone, the Mitigation Measures shall be applied to all bids, except those from System Resources, in all ISO zones. The ISO will apply Mitigation Measures to all bids taken out of merit order to address Intra-Zonal Congestion.

(f)   The Mitigation Measures shall not be applied to bids below $25/MWh.

(g)   The posting of the MCP may be delayed if necessary for the completion of automated mitigation procedures.

(h)   Bids not mitigated under these Mitigation Measures shall remain subject to mitigation by other procedures specified in the ISO Tariff as may be appropriate.

4.3   Sanctions for Physical Withholding

The ISO may report a Market Participant the ISO believes- to have engaged in physical withholding, including providing the ISO false information regarding the derating or outage of an Electric Facility, to the Federal Energy Regulatory Commission in accordance with Section 2.3.3.9.5 of the ISO Tariff. In addition, a Market Participant that fails to operate a Generating Unit in conformance with ISO dispatch instructions shall be subject to the penalties set forthin Section 11.2.4.1.2 of the ISO Tariff.

SCHEDULES AND BIDS PROTOCOL

SBP 2.1.1 **Generation Section of a Balanced Schedule and Adjustment Bid Data**

The Generation section of a Balanced Schedule will include the following information for each Generating Unit:

(a) (a) SC's ID code;

(b) (b) type of market (Day-Ahead or Hour-Ahead) and Trading Day;

(c) (c) name of Generating Unit scheduled;

(d) (d) type of Schedule: Preferred or Revised (refer to the SP for details);

(e) (e) priority type, if applicable, to the Settlement Period (use OTHER if scheduling the use of Existing Contract rights or RLB_MUST_RUN) for Reliability Must-Run Generation;

(f) (f) contract reference number for Reliability Must-Run Generation;

(g) (g) transmission loss self-provision flag (LOSS_CMP_FLG): "Yes" indicates that Dispatch Instructions provided to the Generating Unit will include transmission losses associated with the unit's Final Hour-Ahead Schedule as determined by the relevant GMM;

(h) Inter-Zonal Congestion Management flag – "Yes" indicates that any Adjustment Bid submitted under item (kl) below should be used in the Day-Ahead or Hour-Ahead market;

(i) (h) publish Adjustment Bid flag, which will not be functional on the ISO Operations Date. In the future, "Yes" will indicate that the SC wishes the ISO to publish its Adjustment Bids;

(j) (i) Generating Unit ramp rate in MW/minute;

(k) (j) hourly scheduled Generating Unit output in MWh (the ISO will multiply these values by the hourly Generation Meter Multipliers), including any zero values, for each Settlement Period of the Trading Day (in the case of a Day-Ahead Schedule) and for the relevant Settlement Period (in the case of an Hour-Ahead Schedule); and

(l) (k) the MW and $/MWh values for each Generating Unit for which an Adjustment Bid is being submitted consistent with SBP 4.

* * *

SBP 2.1.3 **External Import/Export Section of a Balanced Schedule and Adjustment Bid Data**

The external import/export section of a Balanced Schedule will include the following information for each import or export:

(a) SC's ID code;

(b) type of market (Day-Ahead or Hour-Ahead) and Trading Day;

(c) Scheduling Point (the name);

(d) type of Schedule: Preferred or Revised (refer to the SP for details);

(e) interchange ID (the name of the selling entity, the buying entity, and a numeric identifier);

(f) Energy type – firm (FIRM), non-firm (NFRM) or dynamic (DYN) or Wheeling (WHEEL);

(g) external Control Area ID;

(h) priority type, if applicable, to the Settlement Period (use OTHER if scheduling the use of Existing Contract rights or RLB_MUST_RUN for Reliability Must-Run Generation);

(i) contract reference number for Reliability Must-Run Generation or Existing Contract (or set of interdependent Existing Contracts);

(j) contract type – transmission (TRNS), Energy (ENGY) or both (TR_EN);

(k) Schedule ID (NERC ID number);

(l) Congestion Management flag - "Yes" indicates that any Adjustment Bid submitted for an external import/export in item (q) below should be used;

(m) publish Adjustment Bid flag, which will not be functional on the ISO Operations Date. In the future, "Yes" will indicate that the SC wishes the ISO to publish its Adjustment Bids;

(n) complete WSCC tag;

(o) hourly scheduled external imports/exports in MWh (the ISO will multiply these values by the hourly Generation Meter Multipliers), including any zero values, for each Settlement Period of the Trading Day (in the case of a Day-Ahead Schedule) and for the relevant Settlement Period (in the case of an Hour-Ahead Schedule) and with external imports into the ISO Controlled Grid reported as negative quantities and external exports from the ISO Controlled Grid reported as positive quantities; and

(p) the MW and $/MWh values for each external import/export for which an Adjustment Bid is being submitted consistent with SBP 4; and

(q) for dynamically scheduled imports only, the transmission loss self-provision flag (LOSS_CMP_FLG): "Yes" indicates that Dispatch Instructions provided to the resource will include transmission losses associated with the resource's Final Hour-Ahead Schedule as determined by the relevant GMM.

***

SBP 4   ADJUSTMENT BIDS

Adjustment Bids will be used by the ISO for Inter-Zonal Congestion Management as described in the SP and are initially valid only for the markets into which they are bid, being the Day-Ahead Market or the Hour-Ahead Market. These Adjustment Bids will not be transformed into Supplemental Energy bids. ~~However, these Adjustment Bids are treated as standing offers to the ISO and may be used by the ISO in the Real-Time Market for the purpose of managing Intra-Zonal Congestion using System Resources, Dispatchable Loads and increasing Generating Units' output and for managing Overgeneration conditions.~~

* * *

SBP 5.1   Content of Ancillary Services Schedules and Bids

Ancillary Services in the Day-Ahead Market and the Hour-Ahead Market are comprised of the following: Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve. Each Generating Unit (including Physical Scheduling Plants), System Unit, Curtailable Demand or System Resource for which a SC wishes to submit Ancillary Services Schedules and bids must meet the requirements set forth in the Ancillary Services Requirements Protocol (ASRP). ~~For each Ancillary Service offered to the ISO auction or self-provided, SCs must include a bid price for Energy in the form of a staircase function composed of up to eleven (11) ordered pairs (i.e., ten (10) steps or price bands) of quantity/price information. These staircase functions must be either monotonically non-decreasing (Generating Units, System Units, and System Resources) or monotonically non-increasing (Curtailable Demands).~~ The same resource capacity may be offered into more than one ISO Ancillary Service auction at the same time (the sequential evaluation of such multiple offers between Ancillary Services markets to eliminate double counting of capacity is described in the SP). In each category of Ancillary Service, the reference to "Revised" types of Schedules indicates a submittal which is part of a Revised Day-Ahead Schedule as described in the SP. Each of the following data sections can be submitted up to seven (7) days in advance. -<u>Ramp rates submitted as detailed below will be only used by the ISO for procuring capacity associated with the specific Ancillary Services. The ISO will issue real-time Dispatch Instructions for the Energy associated with the awarded capacity based upon the applicable operational ramp rate submitted with the single Energy Bid curve in accordance with SBP Section 6.5.</u> There is no provision for external exports with regard to Ancillary Services bids. The functionality necessary to accept such bids does not exist in the ISO scheduling software.

<u>SCs with Ancillary Services awards must submit a single Energy Bid curve in the Real Time Market to correspond to any awarded capacity for the relevant resources as described in SBP Section 6.</u>

* * *

SBP 5.1.2.2   **Spinning Reserve: External Imports/Exports**

Each SC desiring to bid or self-provide Spinning Reserve will submit the following information for each relevant external import for each Settlement Period of the relevant Trading Day:

(a)   type of schedule: Spinning Reserve Ancillary Service (ANC_SRVC) or Revised Spinning Reserve Ancillary Service (REVISED_ANC_SRVC);

(b)   SC's ID code;

(c)   type of market (Day-Ahead or Hour-Ahead) and Trading Day;

(d)   Scheduling Point (the name);

(e)   interchange ID code (the name of the selling entity, buying entity and a numeric identifier);

(f)   external Control Area ID;

(g)   Schedule ID (NERC ID number);

(h)   complete WSCC tag;

(i)   preferred bid flag, which must be set to "NO", indicating a self-provided schedule, until such time as the ISO's scheduling system is able to support Ancillary Services bids from external imports/exports;

(j)   export flag, a "YES" indicates an external export and a "NO" indicates an external import;

(k)   In the case of Existing Contracts, the applicable contract reference number;

(l)   Spinning Reserve capacity (MW);

(m)   ramp rate (MW/minute); and

(n)   bid price for Spinning Reserve ~~Energy if called upon~~capacity ($/MW~~h~~).

* * *

SBP 5.1.3.3   **Non-Spinning Reserve: External Imports/Exports**

Each SC desiring to bid or self-provide Non-Spinning Reserve will submit the following information for each relevant external import for each Settlement Period of the relevant Trading Day:

(a)   type of schedule: Non-Spinning Reserve Ancillary Service (ANC_SRVC) or Revised Non-Spinning Reserve Ancillary Service (REVISED_ANC_SRVC);

(b)   SC's ID code;

(c)   type of market (Day-Ahead or Hour-Ahead) and Trading Day;

(d)   Scheduling Point (the name);

(e)   interchange ID code (the name of the selling entity, buying entity and a numeric identifier);

(f)	external Control Area ID;
(g)	Schedule ID (NERC ID number);
(h)	complete WSCC tag;
(i)	preferred bid flag, which must be set to "NO", indicating a self-provided schedule;
(j)	export flag, a "YES" indicates an external export and a "NO" indicates an external import;
(k)	In the case of Existing Contracts, the applicable contract reference number;
(l)	time to synchronize following notification (less than ten (10) minutes mandatory);
(m)	Non-Spinning Reserve capacity (MW);~~ and~~
(n)	ramp rate (MW/minute); and
(o)	bid price for Non-Spinning Reserve capacity ($/MW).

* * *

SBP 5.1.4.3 **Replacement Reserve: External Imports**

Each SC desiring to bid or self-provide Replacement Reserve will submit the following information for each relevant external import for each Settlement Period of the relevant Trading Day:

(a)	type of schedule: Replacement Reserve Ancillary Service (ANC_SRVC) or Revised Replacement Reserve Ancillary Service (REVISED_ANC_SRVC);
(b)	SC's ID code;
(c)	type of market (Day-Ahead or Hour-Ahead) and Trading Day;
(d)	Scheduling Point (the name);
(e)	interchange ID code (the name of the selling entity, buying entity and a numeric identifier);
(f)	external Control Area ID;
(g)	Schedule ID (NERC ID number);
(h)	complete WSCC tag;
(i)	preferred bid flag, which must be set to "NO", indicating a self-provided schedule, until such time as the ISO's scheduling system is able to support Ancillary Services bids from external imports;
(j)	in the case of Existing Contracts, the applicable contract reference number;

(k)   time to synchronize following notification (less than sixty (60) minutes mandatory);

(l)   Replacement Reserve capacity (MW);~~and~~

(m)   ramp rate (MW/minute); and

(n)   bid price for Replacement Reserve capacity ($/MW).

* * *

SBP 6.1   **Content of Energy Bids**

SBP 6.1.1   **Generation Section of Energy Bid Data**

Each SC offering Spinning, Non-Spinning, or Replacement Reserve, or Supplemental Energy to the ISO will submit the following information for each Generating Unit for each Settlement Period:

a)   ~~(a)~~ SC's ID code;

b)   ~~(b)~~ name of Generating Unit;

c)   ~~(c)~~ Generating Unit operating limits (high and low MW);

d)   ~~(d)~~ Generating Unit operational ramp rate in MW/minute;

e)   Generating Unit startup time function in minutes;

f)   Generating Unit startup cost function in $/start;

g)   Generating Unit minimum load cost in $/hr;~~and~~

h)   ~~(e)~~ the MW and $/MWh values for each Generating Unit for which a Supplemental Energy bid is being submitted consistent with this SBP 6.

A Physical Scheduling Plant shall be treated as a single Generating Unit for Supplemental Energy bid purposes.

SBP 6.1.2   **Demand Section of Energy Bid Data**

Each SC offering Spinning, Non-Spinning, or Replacement Reserve, or Supplemental Energy to the ISO will submit the following information for each Demand for each Settlement Period:

(a) SC's ID code;

(b) name of Demand;

(c) Demand shutdown time in minutes;

(d) Demand shutdown cost in $/start;

(e) Demand minimum curtailed load cost in $/hr; and

(f) ~~(c)~~ the MW and $/MWh values for each Demand for which a Supplemental Energy bid is being submitted consistent with this SBP 6.

SBP 6.1.3 **External Import Section of Energy Bid Data**

Each SC offering Spinning, Non-Spinning, or Replacement Reserve, or Supplemental Energy to the ISO will submit the following information for each external import for each Settlement Period;

(a)   SC's ID code;

(b)   name of Scheduling Point;

(c)   interchange ID (the name of the selling entity, the buying entity, and a numeric identifier);

(d)   external Control Area ID;

(e)   Schedule ID (NERC ID number);

(f)   complete WSCC tag;

(g)   operational ramp rate (MW/minute); and |

(h)   the MW and $/MWh values for each external import for which a Supplemental Energy bid is being submitted consistent with this SBP 6; and

(i)   minimum block of hours that bid must be dispatched; and

(j)   Flag indicating the bid must is capable available for intra-hour redispatch. If this flag is set to no then the bid is indicating that the bid must be pre-dispatched and not re-dispatched during the real-time operating hour.

SBP 6.2 **Format of Energy Bids**

The SC's ~~preferred operating point~~Final Hour-Ahead Schedule for each |
resource must be within the range of the Energy Bids. The minimum MW output level specified for a resource, which may be zero MW (or negative for pumped storage resources), and the maximum MW output level specified for a resource must be physically achievable by the resource. All submitted Energy Bids must be in the form of a monotonically increasing staircase function.~~function~~ for Demands. |
These staircase functions will be composed of up to eleven (11) ordered pairs (i.e., ten (10) steps or price bands) of quantity/price information, with an ~~single~~operational ramp rate associated with the |
entire MW range as provided for in SBP Section 6.5. SCs must comply |
with the ISO Data Templates and Validation Rules document, which contains the format for submission of Energy Bids.

SBP 6.3 **Timing of Submission of Energy Bids**

For specific timeline requirements for the submission of Energy Bids see the Dispatch Protocol.

SBP 6.4 **Validation of Energy Bids**

The ISO will check whether Energy Bids comply with the format requirements and will notify a SC if its bid does not so comply. A SC can check whether its Energy Bids will pass the ISO's validation by manually initiating validation of its Energy Bids at any time prior to the deadline for submission of Energy Bids. It is the SC's responsibility to perform such checks. SCs must comply with the ISO Data Templates and Validation Rules document, which contains the validation criteria for Energy Bids. |

SBP 6.5   **Format and Validation of Operational Ramp Rates**

The submitted operational ramp rate expressed in megawatts per minute (MW/min) as a function of the operating level, expressed in megawatts (MW), must be a staircase function with up to 10 segments defined by a set of 1 to 11 pairs, e.g., (50,1),(100,3),(200,2),(300,2). There is no monotonicity requirement for the operational ramp rate. The submitted operational ramp rate shall be validated as follows:

- The range of the submitted operational ramp rate must cover the entire capacity of the resource, from the minimum to the maximum operating capacity, as registered in the Master File for the relevant resource.

- The operating level entries must match exactly (in number, sequence, and value) the corresponding minimum and maximum operational ramp rate breakpoints, as registered in the Master File for the relevant resource.

- The last ramp rate entry shall be equal to the previous ramp rate entry and represent the maximum operating capacity of the resource as registered in the Master File. The resulting operational ramp rate segments must lie between the minimum and maximum operational ramp rates, as registered in the Master File.

- The submitted operational ramp rate must be the same for each hour of the Trading Day, i.e., the operational ramp rate submitted for a given hour must be the same with the one(s) submitted earlier for previous hours in the same Trading Day.

- Outages that affect the submitted operational ramp rate must be due to physical constraints, reported in SLIC and are subject to ISO approval. All approved changes to the submitted operational ramp rate will be used in determination of Dispatch Instructions for the shorter period of the balance of the Trading Day or duration of reported Outage.

- For all ISO Dispatch Instructions of Reliability Must Run resources the operational ramp rate will be the ramp rate declared in the Reliability Must Run Contract Schedule A.

SBP 6.6   **Format and Validation of Startup and Shutdown Times**

For a Generating Unit, the submitted startup time expressed in minutes (min) as a function of down time expressed in minutes (min) must be a staircase function with up to 10 segments defined by a set of 1 to 10 down time and startup time pairs. The startup time is the time required to start the resource if it is offline longer than the corresponding down time. The last segment will represent the time to start the unit from a cold start and will extends to infinity. The submitted startup time function shall be validated as follows:

- The first down time must be 0 min.

- The down time entries must match exactly (in number, sequence, and value) the corresponding down time breakpoints of the

maximum startup time function, as registered in the Master File for the relevant resource.

- The startup time for each segment must not exceed the startup time of the corresponding segment of the maximum startup time function, as registered in the Master File for the relevant resource.

- The startup time function must be strictly monotonically increasing, i.e., the startup time must increase as down time increases.

For Curtailable Demand, a single shutdown time in minutes is the time required for the resource to shut down after receiving a Dispatch Instruction.

SBP 6.7   Format and Validation of Startup and Shutdown Costs

For a Generating Unit, the submitted startup cost expressed in dollars ($) as a function of down time expressed in minutes (min) must be a staircase function with up to 10 segments defined by a set of 1 to 10 down time and startup cost pairs. The startup cost is the cost incurred to start the resource if it is offline longer than the corresponding down time. The last segment will represent the cost to start the resource from cold startup and will extend to infinity. The submitted startup cost function shall be validated as follows:

- The first down time must be 0 min.

- The down time entries must match exactly (in number, sequence, and value) the corresponding down time breakpoints of the cost-based startup cost function, as registered in the Master File for the relevant resource.

- The startup cost for each segment must not be negative and must not exceed the startup cost of the corresponding segment of the cost-based startup cost function, as registered in the Master File for the relevant resource. For gas-fired resources, the cost-based startup cost function shall be derived from the startup fuel function, as registered in the Master File for the relevant resource, and the applicable gas price index as approved by FERC.

- The startup cost function must be strictly monotonically increasing, i.e., the startup cost must increase as down time increases.

For Curtailable Demand, a single shutdown cost in $ is the cost incurred to shut down the resource after receiving a dispatch instruction. The submitted shutdown cost must not be negative.

SBP 6.8   Format and Validation of Minimum Load Costs

For a Generating Unit, the submitted minimum load cost expressed in dollars per hour ($/hr) is the cost incurred for operating the unit at minimum load. The submitted minimum load cost must not be negative and must not exceed the cost-based minimum load cost, as registered in the Master File for the relevant resource. For gas-fired resources, the cost-based minimum load cost shall be derived pursuant to Section 5.11.6.1.2.

For Curtailable Demand, the submitted minimum load cost ($/hr) is the cost incurred while operating the resource at reduced consumption after receiving a Dispatch Instruction. The submitted minimum load cost must not be negative.

SETTLEMENT AND BILLING PROTOCOL

APPENDIX B

GRID OPERATIONS CHARGE COMPUTATION

B 1   **Purpose of charge**

The Grid Operations Charge is a charge which recovers redispatch costs incurred due to Intra-Zonal Congestion pursuant to Section 7.3.2 of the ISO Tariff. The Grid Operations Charge is paid by or charged to Scheduling Coordinators in order for the ISO to recover and properly redistribute the costs of adjusting the Balanced Schedules submitted by Scheduling Coordinators.

B 2   **Fundamental formulae**

B 2.1   **Payments to SCs with incremented schedules**

When it becomes necessary for the ISO to increase the output of a Scheduling Coordinator's Generating Unit$_j$ or System Resource$_i$ or reduce a Curtailable Demand$_j$ in order to relieve Congestion within a Zone, the ISO will pay the Scheduling Coordinator. The amount that ISO pays the Scheduling Coordinator$_j$ is the price specified in the Scheduling Coordinator's ~~Day-Ahead or Hour-Ahead Adjustment Bid (or~~ Imbalance Energy bid ~~as appropriate)~~ for the Generating Unit$_j$ or System Resource$_i$ or Curtailable Demand$_j$ multiplied by the quantity of Energy Dispatched. The formula for calculating the payment to Scheduling Coordinator$_j$ for each block$_b$ of Energy of its ~~Adjustment~~ ~~b~~Bid curve in Trading Interval$_t$ is:

$$INC_{bijt} = adjinc_{bijt} * \Delta inc_{bijt}$$

B 2.1.1   **Total Payment for Trading Interval**

The formula for calculating payment to Scheduling Coordinator$_j$ whose Generating Unit$_j$ or System Resource$_i$ has been increased or Curtailable Demand$_j$ reduced for all the relevant blocks$_b$ of Energy in the ~~Adjustment Bid curve (or~~ Imbalance Energy bid curve$~~)~~$ of that Generating Unit or System Resource or Curtailable Demand in the same Trading Interval$_t$ is:

$$PayTI_{ijt} = \sum_b INC_{bijt}$$

B 2.2   **Charges to Scheduling Coordinators with decremented schedules**

When it becomes necessary for the ISO to decrease the output of a Scheduling Coordinator's Generating Unit$_j$ or System Resource$_i$ in order to relieve Congestion within a Zone, the ISO will make a charge to the Scheduling Coordinator. The amount that the ISO will charge Scheduling Coordinator$_j$ for decreasing the output of Generating Unit$_j$ is the decremental reference price specified for the Scheduling Coordinator as determined in accordance with Section 7.2.6.1 multiplied by the quantity of Energy Dispatched. The amount that the ISO will charge Scheduling Coordinator$_j$ for decreasing the output of System Resource$_i$ is the price specified in the Scheduling Coordinator's ~~Day-~~

~~Ahead or Hour-Ahead Adjustment Bid (or~~ Imbalance Energy Bid) for System Resource$_i$ multiplied by the quantity of Energy Dispatched. The formula for calculating the charge to Scheduling Coordinator$_j$ for each block$_b$ of Energy in its decemental reference price, ~~Adjustment Bid curve,~~ or Imbalance Energy bid in Trading Interval$_t$ is:

$$DEC_{bijt} = adjdec_{bijt} * \Delta dec_{bijt}$$

B 2.2.1   Total Charge for Trading Interval

The formula for calculating the charge to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ has been decreased for all the relevant blocks$_b$ of Energy at the decremental reference price for Generating Unit$_i$, ~~Adjustment Bid curve,~~ or Imbalance Energy bid for System Resource$_i$ in the same Trading Interval$_t$ is:

$$ChargeTI_{ijt} = \sum_b DEC_{bijt}$$

B 2.3   Not Used

B 2.4   Net ISO redispatch costs

The Trading Interval net redispatch cost encountered by ISO to relieve Intra-Zonal Congestion is the sum of the amounts paid by the ISO to those Scheduling Coordinators whose Generation or System Resource was increased or Curtailable Demand was decreased during the Trading Interval less the sum of the amounts received by the ISO from those Scheduling Coordinators whose Generating Units or System Resource were decreased during the Trading Interval. The fundamental formula for calculating the net redispatch cost is:

$$REDISP_{CONGt} = \sum_j PayTI_{ijt} - \sum_j ChargeTI_{ijt}$$

Note that $REDISP_{CONGt}$ can be either positive or negative. This means that it is possible for the ISO to generate either a net cost or a net income, for any given Trading Interval. In the event the ISO does not make use of equal amounts of incremental and decremental dispatched MWHs, then the net redispatch cost becomes the sum of the amounts paid (or charged) by the ISO to those Scheduling Coordinators whose Generation or System Resource was increased (or decreased) or Curtailable Demand was decreased (or increased) during the Trading Interval less the sum of the amounts received by the ISO from Scheduling Coordinators through the Imbalance Energy Market.

B 2.5   Grid Operations Price

The grid operations price is the Trading Interval rate used by the ISO to apportion net Trading Interval redispatch costs to Scheduling Coordinators within the Zone with Intra-Zonal Congestion. The grid operations price is calculated using the following formula:

$$GOP_t = \frac{REDISPcong_t}{\sum_j QCharge_{jt} + \sum_j Export_{jt}}$$

B 2.6   **Grid Operations Charge**

The Grid Operations Charge is the vehicle by which the ISO recovers the net redispatch costs. It is allocated to each Scheduling Coordinator in proportion to the Scheduling Coordinator's Demand in the Zone with Intra-Zonal Congestion and Exports from the Zone with Intra-Zonal Congestion. The formula for calculating the Grid Operations Charge for Scheduling Coordinator$_j$ in Trading Interval$_t$ is:

$$GOC_{jt} = GOP_t * \left(QCharge_{jt} + EXPORT_{jt} \right)$$

B 3   **Meaning of terms of formulae**

B 3.1   **INC$_{bijt}$ - $**

The payment from the ISO due to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ is increased or Curtailable Load$_i$ is reduced within a block$_b$ of Energy in its ~~Adjustment Bid curve (or~~ Imbalance Energy bid) in Trading Interval$_t$ in order to relieve Intra-Zonal Congestion.

B 3.2   **adjinc$_{bijt}$ - $/MWh**

The incremental cost for the rescheduled Generating Unit$_i$ or System Resource$_i$ or Curtailable Load$_i$ taken from the relevant block$_b$ of Energy in the ~~Day-Ahead or Hour-Ahead Adjustment Bid curve (or~~ Imbalance Energy bid) submitted by the Scheduling Coordinator$_j$ or generated by the ISO for the Trading Interval$_t$.

B 3.3   **Δincbijt - MW**

The amount by which the Generating Unit$_i$ or System Resource$_i$ or Curtailable Load$_i$ of Scheduling Coordinator$_j$ for Trading Interval$_t$ is increased by the ISO within the relevant block$_b$ of Energy in its ~~Adjustment Bid curve (or~~ Imbalance Energy bid).

B 3.4   **PayTI$_{jit}$ - $**

The Trading Interval payment to Scheduling Coordinator$_j$ whose Generating Unit$_i$ has been increased or System Resource$_i$ or Curtailable Load$_i$ reduced in Trading Interval$_t$ of the Trading Day.

B 3.5   **DEC$_{bijt}$ - $**

The charge to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ is decreased for Trading Interval$_t$ within a block$_b$ of Energy at the decremental reference price for Generating Unit$_i$ or in the ~~Adjustment Bid curve (or~~ Imbalance Energy bid) for System Resource$_i$.

B 3.6   **adjdec$_{bijt}$ - $/MWh**

The decremental cost for the rescheduled Generating Unit$_i$ or System Resource$_i$ taken from the relevant block$_b$ of Energy at the decremental reference price for Generating Unit$_i$ or ~~of the Day-Ahead or Hour-Ahead Adjustment Bid curve (or~~ Imbalance Energy bid) for System Resource$_i$ submitted by Scheduling Coordinator$_j$ or generated by the ISO for the Trading Interval$_t$.

B 3.7   **Δdec$_{bijt}$ - MW**

The amount by which the Generating Unit$_i$ or System Resource$_i$ of Scheduling Coordinator$_j$ for Trading Interval$_t$ is decreased by ISO within

the relevant block$_b$ of Energy at the decremental reference price for Generating Unit$_i$ or ~~of the Adjustment Bid curve (or~~ Imbalance Energy bid~~)~~ for System Resource$_i$.

APPENDIX D

IMBALANCE ENERGY CHARGE COMPUTATION

D 1   **Purpose of charge**

The Imbalance Energy charge is the term used for allocating the cost of not only the Imbalance Energy (the differences between scheduled and actual Generation and Demand), but also any Unaccounted for Energy (UFE) and any errors in the forecasted Transmission Losses as represented by the GMMs. Any corresponding cost of Dispatched Replacement Reserve Capacity that is not allocated as an Ancillary Service is also included along with the Imbalance Energy charge.

D 2   **Fundamental formulae**

D 2.1.1   **Uninstructed Imbalance Energy Charges on Scheduling Coordinators**

Uninstructed Imbalance Energy attributable to each ~~Scheduling Coordinator~~ Load Take-Out Point, Generating Unit, System Unit, or System Resource for which a Scheduling Coordinator has a Final Hour-Ahead Schedule or Metered Quantity, ~~in~~for each Settlement ~~Period Interval in the relevant Zone~~ shall be deemed to be sold or purchased, as the case may be, by the ISO and charges or payments for Uninstructed Imbalance Energy shall be settled by debiting or crediting, as the case may be, the Scheduling Coordinator with an amount for each ~~BEEP~~ Settlement Interval. ~~of each Settlement Period calculated in accordance with the following formulae:~~

Uninstructed Imbalance Energy within a Settlement Interval shall be settled in two tiers that are defined in relation to the expected Energy associated with the Final Hour-Ahead Schedule, if any, and the Dispatch Instruction as follows:

1)   Deviations from the expected Energy associated with a Dispatch Instruction resulting in: 1) under delivery of Instructed Imbalance Energy that is also equal to or greater than the Final Hour-Ahead Schedule, or 2) over delivery of Instructed Imbalance Energy that is also less than or equal to the Final Hour-Ahead Schedule constitutes tier 1 Uninstructed Imbalance Energy that shall be settled at a Resource-Specific Settlement Interval Ex Post Price as described in Appendix D 2.4.

2)   Deviations from the expected Energy associated with a Dispatch Instruction resulting in: 1) over delivery of Instructed Imbalance Energy that is also greater than the Final Hour-Ahead Schedule, or 2) under delivery of Instructed Imbalance Energy that is also less than the Final Hour-Ahead Schedule constitutes tier 2 Uninstructed Imbalance Energy and shall be settled at the Zonal Settlement Interval Ex Post Price as described in Appendix D 2.5.

Imbalance Energy is calculated as follows:

<u>Generator Calculation for ISO Metered Entities:</u>

$$IE_{i,h,o} = ME_{i,h,o} - SE_{i,h,o}$$

<u>Load Calculation:</u>

$$IE_{i,h,o} = SE_{i,h,o} - ME_{i,h,o}$$

<u>where,</u>

$$SE_{i,h,o} = \frac{HAfin_{i,h}}{6}$$

<u>$ME_{i,h,o}$ actual meter data for each resource i of each Settlement Interval o for each hour h.</u>

<u>Uninstructed Imbalance Energy is calculated as follows:</u>

$$UIE_{i,h,o} = E_{i,h,o} - IIE\_REG_{i,h,o}$$

<u>where:</u>

$$
\begin{aligned}
E_{i,h,o} = IE_{i,h,o} &- \sum_{1}^{k} IIE\_LOSS_{i,h,o,k} - \sum_{1}^{k} IIE\_ML_{i,h,o,k} - \\
&\sum_{1}^{k}\sum_{1}^{m} IIE\_PREDISPATCH_{i,h,o,k,m} - \sum_{1}^{k} RE\_STANDARD_{i,h,o,k} - \sum_{1}^{k} RED_{i,h,o,k} \\
&- \sum_{1}^{k}\sum_{1}^{m} IIE\_ECON_{i,h,o,k,m} - \sum_{1}^{k}\sum_{1}^{L} OOS\_P_{i,h,o,k,L} - \sum_{1}^{k}\sum_{1}^{L} OOS\_N_{i,h,o,k,L} - \sum_{1}^{k}\sum_{1}^{m} RIE_{i,h,o,k,m} \\
&- \sum_{1}^{k} IIE\_RERATE_{i,h,o,k}
\end{aligned}
$$

<u>$IIE\_REG_{i,h,o}$ is the Regulating Energy for resource i during Settlement Interval o in hour h</u>

$$
UIE\_1_{i,h,o} = \begin{cases}
\begin{aligned}
min\bigg(UIE_{i,h,o}, -min\bigg(0, &\sum_{1}^{k}\sum_{1}^{m} IIE\_ECON_{i,h,o,k,m} + \sum_{1}^{k}\sum_{1}^{m} IIE\_PREDISPATCH_{i,h,o,k,m} \\
&+ \sum_{1}^{k}\sum_{1}^{L} OOS\_P_{i,h,o,k,L} + \sum_{1}^{k}\sum_{1}^{L} OOS\_N_{i,h,o,k,L} + \sum_{1}^{k} RED_{i,h,o,k} \\
&+ \sum_{1}^{k}\sum_{1}^{m} RIE_{i,h,o,k,m} + \sum_{1}^{k} IIE\_ML_{i,h,o,k} + \sum_{1}^{k} RERATE_{i,h,o,k}\bigg)\bigg) \quad \therefore UIE_{i,h,o} \geq 0 \\[2ex]
max\bigg(UIE_{i,h,o}, -max\bigg(0, &\sum_{1}^{k}\sum_{1}^{m} IIE\_ECON_{i,h,o,k,m} + \sum_{1}^{k}\sum_{1}^{m} IIE\_PREDISPATCH_{i,h,o,k,m} \\
&+ \sum_{1}^{k}\sum_{1}^{L} OOS\_P_{i,h,o,k,L} + \sum_{1}^{k}\sum_{1}^{L} OOS\_N_{i,h,o,k,L} + \sum_{1}^{k} RED_{i,h,o,k} \\
&+ \sum_{1}^{k}\sum_{1}^{m} RIE_{i,h,o,k,m} + \sum_{1}^{k} IIE\_ML_{i,h,o,k} + \sum_{1}^{k} RERATE_{i,h,o,k}\bigg)\bigg) \quad \therefore UIE_{i,h,o} < 0
\end{aligned}
\end{cases}
$$

$$UIE\_2_{i,h,o} = UIE_{i,h,o} - UIE\_1_{i,h,o}$$

$$UIEC_{i,h,o} = \left(-1 * UIE\_1_{i,h,o} * STLMT\_PRICE_{i,h,o}\right) + \left(-1 * UIE\_2_{i,h,o} * ZONAL\_EX\_POST\_PRICE_{j,h,o}\right)$$

$$DevC = \sum_i GenDevC_i + \sum_i LoadDevC_i + \sum_q ImpDevC_q + \sum_q ExpDevC_q + UIEC$$

$$ASSEDevC = \sum_i ASSEGenDevC_i + \sum_i ASSELoadDevC_i + \sum_q ASSEImpDevC$$

~~$DevC_{bjxt} = NetDev_{bjxt} * BIP_{bxt}$~~

$$\sim\!NetDev_{bjxt} = \frac{\left(\sum\limits_{i \in SC_j} GenDev_{bixt} - \sum\limits_{i \in SC_j} LoadDev_{bixt} + \right)}{\left(\sum\limits_{q \in SC_j} ImpDev_{bqxt} - \sum\limits_{q \in SC_j} ExpDev_{bqxt} \right)}$$

~~Where P_{bxt} is the BEEP Interval Price for Imbalance Energy in Zone x during BEEP Interval b in Settlement Period t.~~

~~The deviation quantity between scheduled and actual Energy Generation for Generator i represented by Scheduling Coordinator j in Zone x during BEEP Interval b of Settlement Period t is calculated as follows:~~

$$GenDev_{bixt} = GenDev'_{bixt} + UnavailAncServMW_{bixt}$$

$$GenDev'_{bixt} = G_{s,bixt} * GMM_{f,ixt} - \left[\left(G_{a,bixt} - G_{adj,bixt}\right) * GMM_a - G_{a/s,bixt} - G_{s/e,bixt}\right]$$

~~Where:~~

~~If the BEEP Interval Ex Post Price is negative or zero, then:~~

~~$UnavailAncServMW_{bixt} = 0$~~

~~If the BEEP Interval Ex Post Price is positive, then:~~

$UnavailAncServMW_{bixt} =$

$$max\left[0, min\left(\frac{\left(-GenDev'_{bixt}, G_{a,bixt} * GMM_{a,ixt} - \right)}{\left[\frac{P_{max,ixt}}{HBI} * GMM_{a,ixt} - max\left(0, \frac{G_{oblig,ixt}}{HBI} - G_{a/s,bixt}\right)\right]}\right)\right]$$

~~The value of $G_{a,bixt}$ for Generation scheduled on behalf of Participating Generators for each BEEP Interval in each Settlement Period shall be the actual meter data aggregated on a 10-minute basis. The value of $G_{s,bixt}$ for Generation scheduled on behalf of Participating Generators for each BEEP Interval in each Settlement Period shall be determined as follows for BEEP Intervals 2 through 5:~~

$$G_{s,bixt} = \frac{G_{s,ixt}}{HIB}$$

~~For BEEP Interval 1 and BEEP Interval 6, implicit Dispatch instructions for ramping will be applied to adjust the Schedules attributed to those BEEP Intervals as follows:~~

$$G_{s,6ixt} = \left(\frac{G_{s,ixt}}{HIB}\right) \left(\frac{\left(G_{s,ixt+1} - G_{s,ixt}\right)}{4\,HIB}\right)$$

~~The value of $G_{s,bit}$ and $G_{a,bit}$ for Generation which has not undertaken in writing to be bound by the ISO Tariff in accordance with Article 5 shall be determined as follows for all six BEEP Intervals:~~

$$G_{s,bixt} = \frac{G_{s,ixt}}{HIB}$$

$$G_{a,bixt} = \frac{G_{a,ixt}}{HIB}$$

~~The deviation quantity between scheduled and actual Load consumption for Load i represented by Scheduling Coordinator j in Zone x during BEEP Interval b of Settlement Period t is calculated as follows:~~

$$LoadDev_{bixt} = LoadDev'_{bixt} - UnavailDispLoadMW_{bixt}$$
$$LoadDev'_{bixt} = L_{s,bixt} - \left(L_{a,bixt} - L_{adj,bixt} + L_{a/s,bixt} + L_{s/e,bixt}\right)$$

~~Where:~~

~~If the BEEP Interval Ex Post Price for decremental Energy is negative or zero, then:~~

~~$UnavailDispLoadMW_{bixt} = 0$~~

~~If the BEEP Interval Ex Post Price for Imbalance Energy is positive, then:~~

$$UnavailDispLoadMW_{bixt} =$$

$$\max\left(0, \min\left(LoadDev'_{bixt}, \max\left(0, \frac{L_{oblig,ixt}}{HBI} - L_{a/s,bixt}\right) - L_{a,bixt}\right)\right)$$

~~The value of $L_{a/s,bixt}$, $L_{s/e,bixt}$ and $L_{adj,bixt}$ are determined on a 10-minute basis. The value of L_a for Load scheduled on behalf of Participating Loads for each BEEP Interval in each Settlement Period shall be the actual meter data aggregated on a 10-minute basis. The value of $L_{s,bixt}$ for Load scheduled on behalf of Participating Loads for each BEEP Interval in each Settlement Period t, shall be determined as follows:~~

~~For BEEP Intervals 2 through 5,~~

$$L_{s,bit} = \frac{L_{s,it}}{HIB}$$

For BEEP Interval 1 and BEEP Interval 6, implicit Dispatch instructions for ramping will be applied to adjust the schedules attributed to those BEEP Intervals as follows:

$$L_{s,1ixt} = \left(\frac{L_{s,ixt}}{HIB}\right) - \left(\frac{\left(L_{s,ixt} - L_{s,ixt-1}\right)}{4\,HIB}\right)$$

$$L_{s,6ixt} = \left(\frac{L_{s,ixt}}{6}\right) + \left(\frac{\left(L_{s,ixt+1} - L_{s,ixt}\right)}{4\,HIB}\right)$$

The value of $L_{s,bixt}$ and $L_{a,bixt}$ for Loads that are not Participating Loads shall be determined as follows for all six BEEP Intervals:

$$L_{s,bixt} = \frac{L_{s,ixt}}{HIB}$$

$$L_{a,bixt} = \frac{L_{a,ixt}}{HIB}$$

Where $L_{a,ix}$ is Load i hourly metered quantity for Settlement Period t.

The deviation quantity between forward scheduled and Real Time adjustments to Energy imports*, adjusted for losses, for Scheduling Point q represented by Scheduling Coordinator j into Zone x during each BEEP Interval b of each Settlement Period t is calculated as follows:

$$ImpDev_{bqxt} = I_{s,bqxt} * GMM_{f,qxt} - \left(I_{a,bqxt} - I_{adj,bqxt} + I_{a/s,bqxt}\right) * GMM_{a,qxt} + I_{a/s,bqxt} * GMM_{a,qxt}$$

The values of $I_{a/s,bqxt}$, $I_{a,bqxt}$ and $I_{adj,bqxt}$ are determined on a 10-minute basis. The value of $I_{s,bqxt}$ in all BEEP Intervals shall be determined as follows:

$$I_{s,bqxt} = \frac{I_{s,qxt}}{HIB}$$

The deviation quantity between forward scheduled and Real Time adjustments to Energy exports* for Scheduling Point q represented by Scheduling Coordinator j from Zone x during BEEP Interval b for Settlement Period t is calculated as follows:

$$ExpDev_{bqxt} = E_{s,bqxt} - E_{a,bqxt} - E_{adj,bqxt}$$

The values of $E_{a,bqxt}$ and $E_{adj,bqxt}$ are determined on a 10-minute basis. The value of $E_{s,qt}$ in all BEEP Intervals shall be determined as follows:

---

* Note that this deviation is a difference between a forward Market value and a Real Time value. It is not inadvertent energy.

$$\overline{E_{s,bqxt}} = \frac{E_{s,qxt}}{HIB}$$

D 2.1.2   **Instructed Imbalance Energy Charges on Scheduling Coordinators**

~~Implicit Dispatch instructions for ramping Energy shall be calculated based on Final Hour Ahead Schedules for Energy to result in a linear ramp by all Participating Generators and Participating Loads~~ beginning ~~10 minutes prior to the start, and ending 10 minutes after the start of~~

~~each Settlement Period. Ramping Energy~~ Standard Ramping Energy is Energy associated with a Standard Ramp and shall be deemed delivered and settled at a price of zero dollars per MWh.

Ramping Energy Deviation is Energy produced or consumed due to hourly schedule changes in excess of Standard Ramping Energy and shall be paid or charged, as the case may be, at a Resource-Specific Settlement Interval Ex Post Price calculated using the applicable Dispatch Interval Ex Post Prices as described in this Appendix D 2.4. For Scheduling Coordinators scheduling a MSS that has elected to follow its Load, this Ramping Energy Deviation will account for the units following Load.

Ramping Energy Deviation shall be settled as an explicit component of Instructed Imbalance Energy for each resource i in Dispatch Interval k of Settlement Interval o for hour h, and calculated as follows:

$$REDC_{i,h,o} = \left(\sum_{1}^{k} RED_{i,h,o,k} \right) * STLMT\_PRICE_{i,h,o}$$

The amount of Instructed Imbalance Energy that will be deemed ~~to be~~ delivered in each ~~BEEP~~ Dispatch Interval will be ~~determined~~ based on Dispatch Instructions, as provided for in Section 2.5.22.6, and Final Hour Ahead Schedules. The amount of Instructed Imbalance Energy to be settled in a Settlement Interval will be equal to the sum of all Instructed Imbalance Energy for all Dispatch Intervals within the relevant Settlement Interval. ~~the ramp rates and time delays bid in accordance with SBP 5 and 6 and shall be deemed delivered to the ISO Controlled Grid.~~ Instructed Imbalance Energy for each Settlement Interval shall be settled at the relevant Resource Specific Settlement Interval Ex Post Price. Generating Units, Participating Loads, and System Units may be eligible to recover their Energy Bid costs in accordance with Section 11.2.4.1.1.1. Instructed Imbalance Energy from System Resources shall be settled in accordance with Section 11.2.4.1.1.2.

The Instructed Imbalance Energy amount for each resource i in Settlement Interval o for hour h shall be determined as follows:

$$IIEC_{i,h,o} = \left(\begin{array}{l} \sum\limits_{1}^{k}\sum\limits_{1}^{m} IIE\_ECON_{i,h,o,k,m} + \sum\limits_{1}^{k}\sum\limits_{1}^{m} IIE\_PREDISPATCH_{i,h,o,k,m} + \sum\limits_{1}^{k}\sum\limits_{1}^{m} RIE_{i,h,o,k,m} + \\ \sum\limits_{1}^{k} IIE\_RERATE_{i,h,o,k} + \sum\limits_{1}^{k} IIE\_ML_{i,h,o,k} \end{array} \right)$$

$$* STLMT\_PRICE_{i,h,o} * (-1) + IIEC\_OOS_{i,h,o} + REDC_{i,h,o} + IIEC\_REG_{i,h,o}$$

Uninstructed Imbalance Energy is Imbalance Energy due to non-compliance with a Dispatch Instruction and shall be settled as provided for in SABP Appendix D Section 2.1.1. ~~Any excess delivery or shortfall will be accounted for as Uninstructed Imbalance Energy. Payment due a Load, Generator, Import or Export for Instructed Imbalance Energy to be delivered in a BEEP Interval shall be calculated based on the actual Energy delivered to the ISO Grid in accordance with the Dispatch instruction.~~

~~Instructed Imbalance Energy in each BEEP Interval shall be paid, if positive, or charged, if negative, the corresponding BEEP Interval Ex Post Price.~~

~~Due to ramp rate limitations, resources responding to Dispatch Instructions that revert partially or wholly Dispatch Instructions issued earlier within the same hour may generate or consume Instructed Imbalance Energy bid at prices higher or lower than the BEEP Interval Ex Post Price, respectively. This residual Instructed Imbalance Energy which may cross hourly boundaries, shall be priced based on the applicable BEEP Interval Ex Post Price for the BEEP Interval to which the original Dispatch instruction applied.~~

~~Subject to the above conditions, the Instructed Imbalance Energy charge for each BEEP Interval b of each Settlement Period t for Scheduling Coordinator j for Zone x is calculated using the following formulas:~~

~~The instructed Generation deviation payment/charge is calculated as follows:~~

~~$IGDC_{jb} = G_{jb} * P_b$~~

~~The instructed Load deviation payment/charge is calculated as follows:~~

~~$ILDC_{bjxt} = -(L_{a/s,bjxt} + L_{se,bjxt}) * P_{bxt}$~~

~~The instructed import deviation payment/charge is calculated as follows:~~

~~$IIDC_{bqxt} = -(I_{a/s,bqxt} + I_{se,bqxt}) * P_{bxt}$~~

D 2.2   Unaccounted for Energy Charge

The Unaccounted for Energy Charge on Scheduling Coordinator ~~j~~g in Settlement Interval o of Settlement Period h~~for each BEEP Interval b of each Settlement Period t~~ for each relevant Zone j is calculated in the following manner:

The UFE for each utility Service Area ~~k~~s, for which separate UFE calculation is performed, is calculated as follows,

$$\cancel{UFE_{UDC,bkt} = \sum_{q \in UDC_k} I_{a,bqxt} - \sum_{q \in UDC_k} E_{a,bqxt} + \sum_{i \in UDC_k} G_{a,bixt} - \sum_{i \in UDC_k} L_{a,bixt} - TL_{bkt}}$$

$$UFE_{UDC,s,h,o} = \sum_{q \in UDC_s} I_{a,q,j,h,o} - \sum_{q \in UDC_s} E_{a,q,j,h,o} + \sum_{i \in UDC_s} G_{a,i,j,h,o} - \sum_{i \in UDC_s} L_{a,i,j,h,o} - TL_{s,h,o}$$

The Transmission Loss ~~TL_bkt~~ $TL_{s,h,o}$ for~~in~~ ~~BEEP~~Settlement Interval ~~b~~o ~~o~~of Settlement Period ~~Settlement Period t~~h for utility Service Area ~~k~~s is calculated as follows:

$$\cancel{TL_{i,h,o,k,s} = \left(\sum_i \left[G_{a,bixt} * (1 - GMM_{a,ixt}) \right] + \sum_q \left[I_{a,bqxt} * (1 - GMM_{a,qxt}) \right] \right) * \frac{PFL_{kt}}{\sum_k PFL_{kt}}}$$

$$\cancel{TL_{s,i,h,o} = \left(\sum_i \left[G_{a,s,i,h,o} * (1 - GMM_{a,h}) \right] + \sum_q \left[I_{a,s,i,h,o} * (1 - GMM_{a,h}) \right] \right) * \frac{PFL_{s,h}}{\sum_s PFL_{s,h}}}$$

$$TL_{s,h,o} = \left(\sum_i \left[G_{a,i,j,h,o} * (1 - GMM_{a,i,h}) \right] + \sum_q \left[I_{a,q,j,h,o} * (1 - GMM_{a,q,h}) \right] \right) * \frac{PFL_{s,h}}{\sum_s PFL_{s,h}}$$

Where ~~PFL_kt~~ $PFL_{s,h}$ are the transmission losses for utility Service Area ~~k~~ s as calculated by a power flow solution for ~~Settlement Period t~~Settlement Period h, consistent with the calculation of final forecasted Generation Meter Multipliers.

Each metered demand point z in utility Service Area ~~k~~s, either ISO grid connected or connected through UDC ~~k~~s, is allocated a portion of the UFE as follows:

$$\cancel{UFE_{bixt} = UFE_{UDC,bkt} * \frac{L_{bixt}}{\sum_{i \in UDC_k} L_{bixt}}}$$

$$UFE_{i,j,h,o} = UFE_{UDC,s,h,o} * \frac{L_{i,j,h,o}}{\sum_{i \in UDC_s} L_{i,j,h,o}}$$

The UFE charge for Scheduling Coordinator ~~j~~ g for ~~BEEP~~Settlement Interval ~~b~~ o of ~~Settlement Period t~~Settlement Period h in Zone ~~x~~ j is calculated ~~as follows:~~as a charge or payment using the applicable Zonal Settlement Interval Ex Post Price as follows:

$$\cancel{UFEC_{j,g,h,o} = \left(\sum_{i \in SCg} UFE_{j,i,h,o,} \right) * ZONAL\_EX\_POST\_PRICE_{j,h,o}}$$

$$\cancel{UFEC_{jxt} = \left(\sum_{i \in SC_j} UFE_{bixt} \right) * P_{bxt}}$$

$$UFEC_{g,j,h,o} = \left(\sum_{i \in SCg} UFE_{i,j,h,o,} \right) * ZONAL\_EX\_POST\_PRICE_{j,h,o}$$

D 2.3   **Hourly Ex Post Price**

The Hourly Ex Post Price ~~in Zone x in Settlement Period t is determined as follows:~~is the Energy-weighted average of the Dispatch Interval Ex Post prices in each Zone j during each Settlement Period using the absolute value of Instructed Imbalance Energy procured from all Participating Generators, Participating Load, System Units, and System Resources in each applicable Dispatch Interval. The Hourly Ex Post Price may vary between Zones if Congestion is present.

$$\cancel{HP_{xt} = \frac{\sum_b |Q_{bxt}| P_{bxt}}{\sum_b |Q_{bxt}|}}$$

$$HP_{j,h} = \frac{\sum_1^p \sum_1^i |IIE\_TOTAL_{j,i,h,p}| * EX\_POST\_PRICE_{j,h,o,p}}{\sum_1^p \sum_1^i |IIE\_TOTAL_{j,i,h,p}|}$$

where,

p is the Dispatch Interval index for hour h.

~~Where Q_bxt is the total Instructed Imbalance Energy during BEEP Interval b in Zone x in Settlement Period t.~~

D 2.4   **Resource-Specific Settlement Interval Ex Post Price**

The Resource-Specific Settlement Interval Ex Post Price is the weighted-average of the Dispatch Interval Ex Post Prices in each Settlement Interval using the Instructed Imbalance Energy from the respective Participating Generator, Participating Load, or System Resource, in each applicable Dispatch Interval. If there is no Instructed Imbalance Energy from a Participating Generator, Participating Load, or System Resource, in any of the applicable Dispatch Intervals, the

Resource-Specific Settlement Interval Ex Post Price for that resource would be the simple average of the applicable Dispatch Interval Ex Post Prices in the Settlement Interval.

The Resource-Specific Settlement Interval Ex Post Price is calculated as follows:

$$STLMT\_PRICE_{i,h,o} = \frac{\sum_{1}^{k} IIE\_TOTAL_{i,h,o,k} * EX\_POST\_PRICE_{j,h,o,k}}{\sum_{1}^{k} IIE\_TOTAL_{i,h,o,k}}$$

Where:

$IIE\_TOTAL_{i,h,o,k} =$

$$\sum_{1}^{m} IIE\_ECON_{i,h,o,k,m} + \sum_{1}^{m} IIE\_PREDISPATCH_{i,h,o,k,m} +$$

$$IIE\_ML_{i,h,o,k} + \sum_{1}^{m} RIE_{i,h,o,k,m} + \sum_{1}^{L} OOS\_P_{i,h,o,k,L} +$$

$$\sum_{1}^{L} OOS\_N_{i,h,o,k,L} + IIE\_LOSS_{i,h,o,k} + RED_{i,h,o,k} + \sum_{1}^{k} IIE\_RERATE_{i,h,o,k}$$

D 2.5 Zonal Settlement Interval Ex Post Price

The Zonal Settlement Interval Ex Post Price is the weighted-average of the Dispatch Interval Ex Post Prices in each Settlement Interval using the absolute value of Instructed Imbalance Energy procured from all Participating Generators, Participating Load, System Units, and System Resources in each applicable Dispatch Interval. If there is no Instructed Imbalance Energy from a Participating Generator, Participating Load, or System Resource, in any of the applicable Dispatch Intervals, the Zonal Settlement Interval Ex Post Price for that Zone would be the simple average of the applicable Dispatch Interval Ex Post Prices in the Settlement Interval.

The Zonal Settlement Interval Ex Post Price is calculated as follows:

$ZONAL\_EX\_POST\_PRICE_{j,h,o} =$

$$\frac{\sum_{p=1}^{2} \sum_{1}^{i} \left| IIE\_TOTAL_{i,h,p} \right| * EX\_POST\_PRICE_{j,h,o,p}}{\sum_{p=1}^{2} \sum_{1}^{i} \left| IIE\_TOTAL_{i,h,p} \right|}$$

where p is the Dispatch Interval index for hour h.

D 2.6 Calculation of Unrecovered Cost Payment for Generators

As set forth in 11.2.4.1.1.1, Generator resources will be eligible to recover their bid costs (less than or equal to the Maximum Bid Level)

for extra-marginal Energy dispatched above Pmin, if such costs are not recovered from the net of expected revenues earned through participation in the ISO's real-time market during the Trade Day (24-hour period). The expected market revenue deficits will only be included in the calculation for Settlement Intervals the resource operates within its relevant Tolerance Band. Additionally, resources will not recover the amount of these bid recovery costs allocated to each Settlement Interval in those Settlement Intervals in which the resource is operating outside of its relevant Tolerance Band.

The Unrecovered Cost Payment for each resource i shall be determined for the Trade Day d then evenly divided over n-Settlement Intervals as follows:

$COST\_RECOVERY_{i,d} =$

$$min(0, \sum_1^h \sum_1^o \left(PERF\_STAT_{i,h,o} * MR\_DEFICIT_{i,h,o} + MR\_SURPLUS_{i,h,o} \right)$$

where,

$MR\_DEFICIT_{i,h,o}$ = Market Revenue deficit for resource i in hour h for Settlement interval o based on the difference between the expected revenues earned in the Settlement Interval and and/or its bid cost;

$MR\_SURPLUS_{i,h,o}$= Market Revenue surplus for resource i in hour h for Settlement interval o based on the difference between the expected revenues earned in the Settlement Interval and/or its bid cost.

Resource i shall receive a share of its total cost recovery in each Settlement Interval o that is included in the $COST\_RECOVERY_{i,d}$ calculation above if it operates within its relevant Tolerance Band during the relevant Settlement Interval o.

$COST\_RECOVERY_{i,h,o} = PERF\_STAT_{i,h,o} * COST\_RECOVERY_{i,d} / n$

where,

n is the number of Settlement Intervals o that are included in the $COST\_RECOVERY_{i,d}$ calculation for resource i in Trade Day d.

Calculation of Market Revenue Surplus or Deficit

The market revenue surplus or deficit for each resource i will be computed for each Settlement Interval o based on the difference between the revenues earned in the Settlement Interval at the relevant 10-minute Ex Post price and the resource's bid cost (less than or equal to the Maximum Bid Level) as follows:

$MR\_DIFF_{i,h,o} =$

$$\left(\sum_1^k \sum_1^m IIE\_ECON_{i,h,o,k,m} + \sum_1^k \sum_1^m RIE_{i,h,o,k,m} \right) * STLMT\_PRICE_{i,h,o}$$

$$- BID\_COST_{i,h,o} - BID\_COST\_RIE_{i,h,o}$$

for all incremental energy bid segments m with $IIE\_PRICE_{i,h,o,k,m}$ and $RIE\_PRICE_{i,h,o,k,m}$ less than or equal to the Maximum Bid Level and all

decremental energy bid segments *m* with *IIE_PRICE*$_{i,h,o,k,m}$ and *RIE_PRICE*$_{i,h,o,k,m}$ greater than or equal to the Bid Floor.

$$MR\_DEFICIT_{i,h,o} = min\left(0, MR\_DIFF_{i,h,o}\right)$$

$$MR\_SURPLUS_{i,h,o} = \max\left(0, MR\_DIFF_{i,h,o}\right)$$

where,

$$BID\_COST_{i,h,o} = \left(\sum_{1}^{k}\sum_{1}^{m} IIE\_ECON_{i,h,o,k,m} * IIE\_PRICE_{i,h,o,k,m}\right)$$

$$BID\_COST\_RIE_{i,h,o} = \sum_{1}^{k}\sum_{1}^{m} RIE_{i,h,o,k,m} * RIE\_PRICE_{i,h,o,k,m}$$

D 2.6.1   Tolerance Band and Performance Check

The ISO shall determine the Tolerance Band for each Settlement Interval *o* for PGA resources based on the data from the Master File as follows:

$$TOLERANCE\_BAND_{i,h,o} =$$
$$\pm \max\left(FIX\_LIM, TOL\_PERCENT * P\max_i\right)/6$$

where,
FIX_LIM   is a fixed MW limit and is initially equal to 5 MW.

TOL_PERCENT   is a fixed percentage and is initially equal to 3%.

Pmax$_i$ is the maximum operating capacity in MW of resource *i* specified in the Master File.

The ISO shall determine the Tolerance Band for each Settlement Interval *o* for PLA resources as follows:

$$TOLERANCE\_BAND_{i,h,o} =$$
$$\pm\ max\left(FIX\_LIM, TOL\_PERCENT * HAfin_{i,h}\right)/6$$
where *HAfin*$_{i,h}$ is the Final Hour Ahead Energy Schedule.

Resources must operate within their relevant Tolerance Band in order to receive any above-Ex Post price payments. The ISO shall determine the performance status of the resource for each Settlement Interval *o*. A resource shall have met its performance requirement if its UIE$_{i,h,o}$ is within its relevant Tolerance Band. A resource meeting its performance requirement in Settlement Interval *o* will have a PERF_STAT$_{i,h,o}$ = 1. A resource that has not met its performance requirement in Settlement Interval *o* will have a PERF_STAT$_{i,h,o}$ = 0. System Resources do not

have a Tolerance Band. Non- Participating Load Agreement (PLA) load resources are not subject to the performance requirement.

D 2.6.2   Unrecovered Costs Neutrality Allocation

For each Settlement Interval o, the total Unrecovered Costs for Trade Day d shall be allocated pro-rata to each Scheduling Coordinator g based on its Metered Demand, calculated as follows:

$URC\_ALLOC_{g,h,o} = M_{g,h,o} * Per\ Unit\ Price$

where,

$M_{g,h,o}$ = the Metered Demand in the ISO control area for Scheduling Coordinator g in Settlement Interval o for hour h;

$$Per\ Unit\ Price = \frac{-1 * \sum\limits_{1}^{i} COST\_RECOVERY_{i,h,o}}{\sum\limits_{1}^{g} M_{g,h,o}}$$

D 2.6.3   Calculation of Unrecovered Cost Payment for System Resources

As set forward in Section 11.2.4.1.1.2, System Resources that are dispatched and deliver hourly-predispatched Instructed Imbalance Energy will be paid the higher of the simple average of the twelve Dispatch Interval Ex Post prices for the hour or their Energy bid costs for the quantity of Energy delivered in each hour. The determination of the hourly uplift payment shall be determined as follows: (1) Market deficits or surpluses are calculated as the difference between the resource-specific price and the resource's (hourly) bid cost; (2) An hourly uplift payment will be determined for any amount less than zero; (3) This hourly amount will then be divided evenly by the relevant number of n-Settlement Intervals and paid this portion for each Settlement Interval of the hour.

The hourly-predispatched uplift payment is calculated as follows:

$$PREDISPATCH\_UPLIFT_{i,h} = $$
$$min\left(0, \sum\limits_{1}^{o} \left(\left(\left(\sum\limits_{k=1}^{2}\sum\limits_{1}^{m} IIE\_PREDISPATCH_{i,h,o,k,m}\right) * STMLT\_PRICE_{i,h,o} - \right) \left(\sum\limits_{k=1}^{2}\sum\limits_{1}^{m} IIE\_PREDISPATCH_{i,h,o,k,m} * IIE\_PRICE_{i,h,o,k,m}\right)\right)\right)$$

$$PREDISPATCH\_PMT_{i,h,o} = PREDISPATCH\_UPLIFT_{i,h} / n$$

where,
n is the relevant number of Settlement Intervals o in the relevant hour h for resource i.

for the portion of incremental energy bid segments with $IIE\_PRICE_{i,h,o,k,m}$ less than or equal to the Maximum Bid Level and all decremental energy bid segments with $IIE\_PRICE_{i,h,o,k,m}$ greater than or equal to the Bid Floor.

D 2.6.4   **Allocation of Unrecovered Cost Payments for Hourly Pre-dispatched System Resources**

For each Settlement Interval o, the total uplift payments ($PREDISPATCH\_PMT_{i,h,o}$) for all hourly pre-dispatched System Resources will be included in the Excess Cost Payments to be allocated to a Scheduling Coordinator's Net Negative Deviation through allocation of excess costs and/or ISO metered Demand through excess cost neutrality allocation.

D 2.6.5   **Excess Cost Payments for Instructed Incremental Energy Bids above the Maximum Bid Level**

Incremental Instructed Imbalance Energy above the Maximum Bid Level will receive an additional Excess Cost Payment subject to operating within a resource's Tolerance Band.

Excess cost payments are calculated as follows:

$$EXCESS\_COST_{i,h,o} = \left[\left(\sum_1^k \sum_1^m IIE\_ECON_{i,h,o,k,m} + \sum_1^k \sum_1^m IIE\_PREDISPATCH_{i,h,o,k,m} + \right. \right.$$

$$\left. \sum_1^k \sum_1^m RIE_{i,h,o,k,m} \right) * STLMT\_PRICE_{i,h,o} - BID\_COST_{i,h,o} - BID\_COST\_RIE_{i,h,o} \right]$$

$$* PERF\_STAT_{i,h,o}$$

for the portion of energy bid segments with $IIE\_PRICE_{i,h,o,k,m}$ and $RIE\_PRICE_{i,h,o,k,m}$ greater than the Maximum Bid Level.

D 2.7   **Transmission Loss Obligation**

The transmission loss obligation charge shall be determined as follows:
For Generators:

$$TL_{i,h,o} = (ME_{i,h,o} - \sum_1^k IIE\_LOSS_{i,h,o,k}) * (1 - GMMa_h)$$

For System Resources, the transmission loss obligation shall be determined as follows:
$$TL_{i,h,o} =$$
$$(\sum_1^k \sum_1^v REAL\_TIME\_FLOW_{i,h,o,k,v} - \sum_1^k IIE\_LOSS_{i,h,o,k}) * (1 - GMMa_h)$$

For System Resources, self-provision of transmission losses applies only to Dynamically Scheduled System Resources. Otherwise,

$\sum_{1}^{k} IIE\_LOSS_{i,h,o,k}$ shall be assumed to equal 0 for all other System Resource schedules.

The transmission loss charge will be calculated based on the following formulation:

$TLC_{i,h,o} =$

$-\sum_{1}^{k} IIE\_LOSS_{i,h,o,k} * STLMT\_PRICE_{i,h,o} + TL_{i,h,o} * STLMT\_PRICE_{i,h,o}$

D 2.8   Uninstructed Deviation Penalty Charges

For negative Uninstructed Deviation Penalty billable quantities where $UDP\_BQ_{h,o} < 0$ and $ZONAL\_EX\_POST\_PRICE_{i,h,o} > 0$,
$UDP\_NEG\_Amt_i AMT_{i,h,o} =$
$-1 * UDP\_BQ_{i,h,o} * ZONAL\_EX\_POST\_PRICE_{i,h,o} * .5$

For positive UDP billable quantities where $UDP\_BQ_{i,h,o} > 0$ and $ZONAL\_EX\_POST\_PRICE_{i,h,o} > 0$, then
$UDP\_POS\_AMT_{i,h,o} = UDP\_BQ_{i,o,h} * ZONAL\_EX\_POST\_PRICE_{i,h,o}$

where,

$UDP\_BQ_{i,o,h}$ is the Uninstructed Deviation Penalty (UDP) billable quantity in MWh for a resource, or aggregated resource, denoted by i for Settlement Interval o of hour h.

$UDP\_POS\_AMT_{i,o,h}$ or $UDP\_POS\_AMT_{i,o,h}$ are the penalty amounts in Dollars$ for either an aggregated or individual resource i for Settlement Interval o of hour h.

The ISO will not calculate UDP settlement amounts for Settlement Intervals when the corresponding Zonal Settlement Interval Ex Post price is negative or zero.

For an MSS that has elected to follow its own Load, the Scheduling Coordinator for the MSS Operator will be assessed the Uninstructed Deviation Penalty charges based on the Deviation Band and Deviation Price in Section 23.12.2 of the ISO Tariff.

D 3   –Meaning of terms in the formulae

D 3.1   [Not Used]~~DevC~~$_{bjxt}$~~—$~~

~~The Uninstructed Imbalance Energy charge on Scheduling Coordinator j during BEEP Interval b in Settlement Period t in Zone x.~~

D 3.2 [Not Used]~~GenDev~~$_{bixt}$ ~~– MWh~~

~~The deviation between scheduled and actual Energy Generation for Generator i in Zone x during BEEP Interval b in Settlement Period t.~~

D 3.3 [Not Used]~~LoadDev~~$_{bixt}$ ~~– MWh~~

~~The deviation between scheduled and actual Load consumption for Load i in Zone x during BEEP Interval b in Settlement Period t.~~

D 3.4 [Not Used]~~ImpDev~~$_{bqxt}$ ~~– MWh~~

~~The deviation between forward scheduled and Real-Time adjustments to Energy imports, as adjusted for losses, for Scheduling Point q in Zone x during BEEP Interval b in Settlement Period t.~~

D 3.5 [Not Used]~~ExpDev~~$_{bqxt}$ ~~– MWh~~

~~The deviation between forward scheduled and Real-Time adjustments to Energy exports for Scheduling Point q in Zone x during BEEP Interval b in Settlement Period t.~~

D 3.6 [Not Used]~~G~~$_{s,ixt}$ ~~– MWh~~

~~The scheduled Generation of Generator i in Zone x in Settlement Period t as a result of both the Day-Ahead Final Schedule and the Hour-Ahead Final Schedule.~~

D 3.6.1 [Not Used]~~G~~$_{s,ixt-1}$ ~~– MWh~~

~~The scheduled Generation of Generator i in Zone x in Settlement Period t-1 as a result of both the Day-Ahead Final Schedule and the Hour-Ahead Final Schedule.~~

D 3.6.2 [Not Used]~~G~~$_{s,ixt+1}$ ~~– MWh~~

~~The scheduled Generation of Generator i in Settlement Period t+1 as a result of both the Day-Ahead Final Schedule and the Hour-Ahead Final Schedule.~~

D 3.6.3 [Not Used]~~G~~$_{adj,bixt}$ ~~– MWh~~

~~The Deviation of Generator i in Zone x ordered by the ISO in BEEP Interval b in Settlement Period t according to Sections 7.2.6.1 or 7.2.6.2, or for settlement according to Section 11.2.4.2.~~

D 3.7 G$_{a,i,j,h,o}$~~bixt~~ – MWh

The total actual metered Generation of Generator i in Zone ~~x~~ j during ~~BEEP~~ Settlement Interval ~~b~~ o ~~in~~during ~~Settlement Period t~~Settlement Period h.

D 3.8 [Not Used]~~G~~$_{oblig,ixt}$ ~~– MWh~~

~~The total Spinning, Non-Spinning, and Replacement Reserve committed capacity of Generator i in Zone x in Settlement Period t, as reflected in the final Ancillary Services Schedules.~~

D 3.9 [Not Used]~~$G_{a/s,bixt}$ — MWh~~

~~The Energy generated from Ancillary Service resource i in Zone x due to ISO dispatch instructions. This value will be calculated based on the expected Instructed Imbalance Energy during BEEP Interval b in Settlement Period t for which such Ancillary Services dispatch instruction(s) applies.~~

D 3.9.1 [Not Used]~~$G_{s/e,bixt}$ — MWh~~

~~The Energy generated from Supplemental Energy resource i in Zone x due to ISO dispatch instructions. This value will be calculated based on the expected Instructed Imbalance Energy during BEEP Interval b in Settlement Period t for which such Supplemental Energy dispatch instruction(s) applies.~~

D 3.10 [Not Used]~~$GMM_{f,ixt}$ — fraction~~

~~The forecasted Generation Meter Multiplier (GMM) for Generator i in Zone x in Settlement Period t as provided to the Scheduling Coordinator by the ISO in advance of the operation of the Day-Ahead Market.~~

D 3.11 [Not Used]~~$GMM_{f,qxt}$ — fraction~~

~~The forecasted Generation Meter Multiplier for an Energy import at Scheduling Point q in Zone x in Settlement Period t as provided to the Scheduling Coordinator by the ISO in advance of the Day-Ahead Market.~~

D 3.12 $GMM_{a,i,hixt}$ – fraction

The final forecasted Generation Meter Multiplier (GMM) for a Generator i ~~in Zone x~~ in Settlement Period~~Settlement Period t~~ h as calculated by the ISO at the hour-ahead stage (but after close of the Hour-Ahead Market).

D 3.13 $GMM_{a,q,hqxt}$ – fraction

The forecasted Generation Meter Multiplier for an Energy import at Scheduling Point q ~~in Zone x~~ in Settlement Period h~~Settlement Period t~~ as provided to the Scheduling Coordinator by the ISO after close of the Hour-Ahead Market.

D 3.14 [Not Used]~~$L_{s,bixt}$ — MWh~~

~~The scheduled Demand of Demand i in Zone x during BEEP Interval b in Settlement Period t as a result of both the Day-Ahead Final Schedule and the Hour-Ahead Final Schedule.~~

D 3.15 $L_{a,bixt}$~~i,j,h,o~~ – MWh

The actual metered Demand of Demand i in Zone ~~x~~ i ~~during~~ in ~~BEEP~~ Settlement Interval ~~b~~ o during Settlement Period h ~~in Settlement Period t.~~

D 3.15.1 [Not Used]~~$L_{a,ixt}$ — MWh~~

~~The actual metered Demand of Demand i in Zone x in Settlement Period t.~~

D 3.15.2 **[Not Used]**~~L_adj,bixt~~

~~The Deviation of Demand i in Zone x ordered by the ISO in BEEP Interval b in Settlement Period t according to Section 7.2.6.2, or for settlement according to Section 11.2.4.2.~~

D 3.16 **[Not Used]**~~L_oblig,ixt~~

~~The total Non-Spinning and Replacement Reserve comitted capacity of Load i in Zone x in Settlement Period t, as reflected in the final Ancillary Services Schedules.~~

D 3.17 **[Not Used]**~~L_a/s,bixt — MWh~~

~~The Energy reduction by curtailable Load i in Zone x due to ISO dispatch of Ancillary Services from such curtailable Load (i.e., Load bidding into the Ancillary Services markets). This value will be calculated based on the expected Instructed Imbalance Energy during BEEP Interval b in Settlement Period t for which such Ancillary Services dispatch instruction(s) applies.~~

D 3.17.1 **[Not Used]**~~L_s/e,bixt — MWh~~

~~The Energy reduction by curtailable Load i in Zone x due to ISO dispatch of Supplemental Energy from such curtailable Load. This value will be calculated based on the projected impact of the expected Instructed Imbalance Energy during BEEP Interval b in Settlement Period t~~

D 3.18 **[Not Used]**~~L_s,qxt — MWh~~

~~The total scheduled Energy import of Scheduling Coordinator j through Scheduling Point q in Settlement Period t as a result of both the Day-Ahead Final Schedule and the Hour-Ahead Final Schedule.~~

D 3.19 $\underline{I}$~~L~~$_{a,q,j,h,o}$~~bqxt~~ **– MWh**

The total actual Energy import of Scheduling Coordinator ~~j~~ g through Scheduling Point q in Settlement~~BEEP~~ Interval ~~b~~ o during Settlement Period ~~BEEP Interval b in Settlement Period t~~ h. This is deemed to be equal to the scheduled Energy over the same interval.

D 3.20 **[Not Used]**~~I_adj,bqxt — MWh~~

~~The deviation in real-time import of Scheduling Coordinator j through Scheduling Point q in BEEP Interval b during BEEP Interval b in Settlement Period t ordered by the ISO for congestion management, overgeneration, etc. or a result of an import curtailment. This value will be calculated based on the projected impact of the Dispatch instruction(s) (or curtailment event) between the close of the Hour-Ahead Market and the end of the BEEP Interval for which such Dispatch Instructions(s) (or curtailment event) applies.~~

D 3.21   ~~[Not Used]~~$I_{a/s,bqxt}$ — ~~MWh~~

~~The Energy generated from Ancillary Service System Resources of Scheduling Coordinator j through Scheduling Point q in BEEP Interval b during BEEP Interval b in Settlement Period t pursuant to Existing Contracts or Supplemental Energy from interties due to ISO's Dispatch instruction.~~

D 3.22   [Not Used]~~$E_{s,qxt}$~~ — ~~MWh~~

~~The total scheduled Energy export of Scheduling Coordinator j through Scheduling Point q in Settlement Period t as a result of both the Day-Ahead Final Schedule and the Hour-Ahead Final Schedule.~~

D 3.23 $E_{a,bqxt}$ $\underline{q,j,h,o}$ – MWh

The total actual Energy export of Scheduling Coordinator ~~j~~ g through Scheduling Point q in ~~BEEP~~ Settlement Interval ~~b~~ o of Settlement ~~Period t~~ Interval o for Settlement Period h. This is deemed to be equal to the total scheduled Energy export during the same interval.

D 3.24   ~~[Not Used]~~$E_{adj,bqxt}$ — ~~MWh~~

~~The deviation in Real-Time export of Scheduling Coordinator j through Scheduling Point q in BEEP Interval b during BEEP Interval b in Settlement Period t ordered by the ISO for Congestion Management, Overgeneration, etc. or as a result of an export curtailment. This value will be calculated based on the projected impact of the Dispatch Instruction(s) (or curtailment event) between the close of the Hour-Ahead Market and the end of the BEEP Interval for which such Dispatch Instruction (or curtailment event) applies.~~

D 3.25   ~~[Not Used]~~P_{bxt} — $/MWh

~~The Ex-Post Price for Imbalance Energy in Zone x during BEEP Interval b in Settlement Period t.~~

D 3.25.1   [Not Used]

* * *

D 3.37   ~~TL_{bkt}~~ $TL_{s,h,o}$ – MWh

The Transmission Losses per Settlement~~BEEP~~ Interval ~~b~~ o ~~of~~ in Settlement Period h ~~Settlement Period t~~ in utility Service Area k~~s~~.

D 3.38   ~~[Not Used]~~$IGDC_{bixt}$ — $

~~The Instructed Imbalance Energy payments/charges for Generator i in Zone x during BEEP Interval b in Settlement Period t.~~

D 3.39   ~~[Not Used]~~$ILDC_{bixt}$ — $

~~The Instructed Imbalance Energy payments/charges for Load i in Zone x during BEEP Interval b in Settlement Period t.~~

D 3.40   [Not Used]~~IIDC~~$_{bqxt}$~~— $~~

~~The Instructed Imbalance Energy payments/charges for import at Scheduling Point q during BEEP Interval b in Settlement Period t.~~

D 3.41   [Not Used]

D 3.42   [Not Used]

D 3.43   [Not Used]

D 3.44   [Not Used]

D 3.45   [Not Used]~~HBI — Number~~

~~The number of BEEP Intervals in Settlement Period t, currently set to 6.~~

D 3.46   [Not Used]

D 3.47   [Not Used]

D 3.48   [Not Used]~~P$_{max,ixt}$ — MW~~

~~The maximum capability at which Energy and Ancillary Services may be scheduled from the Generating Unit or System Resource i.~~

D 3.49   [Not Used]EX_POST_PRICE$_{i,h,o,k}$ – $/MWh

The Ex-Post price in Dispatch Interval k of Settlement Interval o in Settlement Period h in zone i.

D 3.50   HRLY_EX_POST_PRICE$_{i,h}$ – $/MWh

The energy-weighted Ex Post price for Settlement Period h in zone i.

D 3.51   STLMT_PRICE$_{i,h,o}$ – $/MWh

The 10-minute Settlement price (resource-specific Ex Post price) for resource i in the Settlement Interval o for the Settlement Period h.

D 3.52   SE$_{i,h,o}$ – MWh

The Scheduled Energy from resource i during Settlement interval o of Settlement Period h.

D 3.53   TOLERANCE_BAND$_{i,h,o}$ – MWh

The Tolerance Band limit for resource i during Settlement Interval o of Settlement Period h.

D 3.54   IIE_ECON$_{i,h,o,k,m}$ – MWh

The dispatched incremental or decremental Instructed Imbalance Energy (IIE) for resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h for bid segment m.
Decremental Energy shall be represented as a negative quantity.

IIE_ECON$_{i,h,o,k,m}$ shall be comprised of any of the four IIE_TYPE's: SUPP, SPIN, NSPN or RPLC and be associated with its respective IIE_PRICE$_{i,h,o,k,m}$

D 3.55   IIE_PRICE$_{i,h,o,k,m}$ – $/MWh

The bid price for energy bid segment m for resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h for bid segment m

D 3.56   **IIE_PREDISPATCH$_{i,h,o,k,m}$ – MWh**

The Settlement Periodly pre-dispatched Energy for resource i during Dispatch Interval k of Settlement Interval o of Settlement Period h for bid segment m (MWh).

D 3.57   **RIE$_{i,h,o,k,m}$ – MWh**

The Residual Energy for resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h for bid segment m.

D 3.58   **RIE_PRICE$_{i,h,o,k,m}$ – $/MWh**

The reference bid price for the Residual Energy for resource i during Dispatch interval k in Settlement Interval o of Settlement Period h for bid segment m.

D 3.59   **OOS_PRICE$_{i,h,o,k,L}$ – $/MWh**

The settlement price for the Instructed Out of Stack Energy for resource i during Dispatch interval k in Settlement Interval o of Settlement Period h for index number L.

D 3.60   **IIE_REG$_{i,h,o}$ – MWh**

The Regulating Energy for resource i during Settlement Interval o in Settlement Period h.

D 3.61   **IIE_PREDISPATCH$_{i,h,p}$ – MWh**

The Settlement Periodly pre-dispatched Energy for resource i during Dispatch interval p of Settlement Period h.

D 3.62   **E$_{i,h,o}$ – MWh**

Calculated as the difference of $IE_{i,h,o}$ and $IIE\_TOTAL_{i,h,o,k}$ and is equal to the sum of Uninstructed Imbalance Energy and Regulating Energy of resource i during Settlement Interval o in Settlement Period h.

D 3.63   **IIEC$_{i,h,o}$ – $**

The Instructed Imbalance Energy payment (charge) for resource i during Settlement Interval o of Settlement Period h.

D 3.64   **IIEC_OOS$_{i,h,o}$ – $**

The total OOS Energy payment (charge) for resource i during Settlement Interval o of Settlement Period h.

D 3.65   **IIEC_OOS_P$_{i,h,o}$ – $**

The incremental Instructed OOS Imbalance Energy payment (charge) for resource i during Settlement Interval o of Settlement Period h.

D 3.66   **IIEC_OOS_N$_{i,h,o}$ – $**

The decremental Instructed OOS Imbalance Energy payment (charge) for resource i during Settlement Interval o of Settlement Period h.

D 3.67   **IIE_LOSS$_{i,h,o,k}$ – MWh**

The transmission loss self-provided Energy from resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h.

D 3.68   **IIE_ML$_{i,h,o,k}$ – MWh**

The Imbalance Energy due to Minimum Load from resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h.

D 3.69   **IIE_TOTAL$_{i,h,o,k}$ – MWh**

The total Instructed Imbalance Energy from all energy sources except Regulation for resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h.

D 3.70   **IIE_RERATE$_{i,h,o,k}$ – MWh**

The SLIC derated Pmin or Pmax value as a result of an SC modifying its operating output level for a given resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h.

D 3.71   **UIE$_{i,h,o}$ – MWh**

The total Uninstructed Imbalance Energy from resource i during Settlement interval o of Settlement Period h.

D 3.72   **UIE_1$_{i,h,o}$ – MWh**

The Uninstructed Imbalance Energy attributed to non-compliance of *IIE_ECON* from resource i during Settlement interval o of Settlement Period h.

D 3.73   **UIE_2$_{i,h,o}$ – MWh**

The Uninstructed Imbalance Energy exclusive of UIE_1 from resource i during Settlement Interval o of Settlement Period h.

D 3.74   **UIEC$_{i,h,o}$ – $**

The Uninstructed Imbalance Energy payment (charge) for resource i during Settlement Interval o of Settlement Period h.

D 3.75   **ZONAL_EX_POST_PRICE$_{i,h,o}$ – $/MWh**

The energy weighted average ex post price for Imbalance Energy for Zone j in Settlement Interval o for Settlement Period h.

D 3.76   **ME$_{i,h,o}$ – MWh**

The Metered Energy from resource i during Settlement Interval o of Settlement Period h.

D 3.77   **RED$_{i,h,o,k}$ – MWh**

The Ramping Energy Deviation from resource i during Dispatch Interval k in Settlement Interval o of Settlement Period h.

D 3.78   **REDC$_{i,h,o}$ – $**

The Ramping Energy Deviation payment (charge) for resource *i* during Settlement Interval *o* of Settlement Period *h*.

D 3.79   **$MR\_ML_{i,h,o} - \$$**

The expected real-time market revenue from Minimum Load Energy for resource *i* in Settlement Interval *o* for Settlement Period *h*.

D 3.80   **$COST\_RECOVERY_{i,d} - \$$**

The Unrecovered Cost Payment for resource *i* for Trading Day *d*.

D 3.81   **$MR\_DIFF_{i,h,o}$**

is the market revenue surplus or deficit for resource *i* in Settlement Period *h* for Settlement Interval *o*.

D 3.82   **$MR\_DEFICIT_{i,h,o} - \$$**

The market revenue deficit for resource *i* in Settlement Period *h* for Settlement Interval *o*.

D 3.83   **$MR\_SURPLUS_{i,h,o} - \$$**

The market revenue surplus for resource *i* in Settlement Period *h* for Settlement Interval *o*.

D 3.84   **$PERF\_STAT_{i,h,o}$ - True/False**

The performance status of resource *i* for Settlement Interval *o* of Settlement Period *h*. The performance status is equal to 1 (compliant) or 0 (non-compliant).

D 3.85   **$BID\_COST_{i,h,o} - \$$**

The bid costs for IIE, except OOS Energy and RIE, for resource *i* in Settlement Period *h* for Settlement interval *o*.

D 3.86   **$BID\_COST\_RIE_{i,h,o} - \$$**

The bid costs for RIE for resource *i* in Settlement Period *h* for Settlement interval *o*.

D 3.87   **$PREDISPATCH\_PMT_{i,h,o} - \$$**

The unrecovered bid cost payment for an Settlement Periodly pre-dispatched System Resource *i* in Settlement Interval *o* for Settlement Period *h*.

D 3.88   **$EXCESS\_COST_{i,h,o} - \$$**

The excess cost payment for resource *i* in Settlement Interval *o* for Settlement Period *h*.

D 3.89   **$TL_{i,h,o}$ - MWh**

The Transmission Loss Obligation for resource *i* during Settlement Interval *o* of Settlement Period *h*.

D 3.90   **$EXCESS\_COST\_ALLOC_{g,h,o} - \$$**

The excess cost allocation for Scheduling Coordinator g in Settlement Period h for Settlement Interval o.

D 3.91   **REAL TIME FLOW$_{i,h,o,k,v}$ – MWh**

The real-time actual flow for intertie resource i during Dispatch Interval k during Settlement Interval o of Settlement Period h for Real Time Flow Type index v.

D 3.92   **RE STANDARD$_{i,h,o,k}$ – MWh**

The Standard Ramping Energy from resource i during Dispatch Interval k of Settlement Interval o of Settlement Period h.

D 3.93   **OOS P$_{i,h,o,k,L}$ – MWh**

The incremental Out of sStack Energy for resource i during Dispatch interval k in Settlement Interval o of Settlement Period h for index number L.

D 3.94   **OOS N$_{i,h,o,k,L}$ – MWh**

The decremental Out of Stack Energy for resource i during Dispatch interval k in Settlement Interval o of Settlement Period h for index number L.

D 3.95   **URC ALLOC$_{g,h,o}$ – $**

The unrecovered cost neutrality allocation for Scheduling Coordinator g in Settlement Interval o for Settlement Period h.

D 3.96   **IIE TYPE$_{i,h,o,k,m}$**

is the energy type for *IIE ECON$_{i,h,o,k,m}$*. Energy type is one of the following: Supplemental, Spin, Non-Spin or Replacement Reserve Energy.