Attachment E

5.12   Residual Unit Commitment

5.12.1 Purpose. The Residual Unit Commitment process allows the ISO to acquire enough resources to meet the Demand, including any Operating Reserve or other capacity requirements projected by the ISO for each hour of the next Trading Day.

5.12.2 Participation.

5.12.2.1   Non-hydroelectric Generating Units subject to a Participating Generating Agreement. Scheduling Coordinators must bid all non-hydroelectric Generating Units subject to a Participating Generator Agreement into the Residual Unit Commitment Process as set forth in Section 5.12.5.1.

5.12.2.2   Hydroelectric Generating Units subject to a Participating Generator Agreement. Scheduling Coordinators for hydroelectric Generating Units subject to a Participating Generator Agreement or other Generating Units not subject to a Participating Generator Agreement may bid into the Residual Unit Commitment Process as set forth in Section 5.12.5.1.

5.2.12.3   System Resources. Scheduling Coordinators may submit System Resources for participation in the Residual Unit Commitment Process as set forth in Section 5.12.5.2.

5.12.2.4   Curtailable Demand. Scheduling Coordinators may submit bids for Curtailable Demand in the Residual Unit Commitment Process as set forth in Section 5.12.5.3.

5.12.2.5   System Units. Scheduling Coordinators may submit bids for System Units in the Residual Unit Commitment Process as set forth in Section 5.12.5.4.

5.12.3 Data to be Submitted.

5.12.3.1   Scheduling Coordinators for Generating Units required to bid or voluntarily bidding into the Residual Unit Commitment Process shall submit the following information

to the ISO in the form as specified by the ISO and posted on the ISO Home Page. Scheduling Coordinators for such Generating Units must also file periodic updates of this data upon the direction of either FERC or the ISO. The ISO will treat the information provided to the ISO in accordance with this Section 5.12.3.1 as confidential and will apply the procedures in Section 20.3.4 of this ISO Tariff with regard to requests for disclosure of such information.

5.12.3.1.1   Gas-fired Generating Units. Data to be submitted for these Generating Units shall include: heat input data, minimum load level, start-up fuel data, start-up auxiliary power data, minimum run time, minimum off time, ramp rates, emissions rates and costs, start-up emissions data and costs, energy limitations, and the maximum number of start-ups per day.

5.12.3.1.2   Non-gas-fired Generating Units. Data to be submitted for these Generating Units shall include: a cost curve relating the unit's average cost to its output, minimum load level, start-up fuel data, start-up auxiliary power data, minimum run time, minimum off time, ramp rates, emissions rates and costs, start-up emissions data and costs, energy limitations, and the maximum number of start-ups per day.

5.12.3.1.3   Default information. If a Scheduling Coordinator for a Non-hydroelectric Generating Unit subject to a Participating Generating Agreement fails to submit the data required by this section 5.12.3, the ISO shall determine the unsubmitted data for that Generating Unit by using data previously submitted to the ISO, by using data from a unit of similar size and technology, or by using data from Schedule 1 in the Participating Generator Agreement in which that Generating Unit is listed.

5.12.4 Timing of the Residual Unit Commitment Process.

5.12.4.1   Submission of bids. Scheduling Coordinators shall submit bids to the Residual Unit Commitment Process no later than one-half hour after the ISO issues Final Day-Ahead Schedules.

5.12.4.2   ISO Notification. The ISO shall conduct the Residual Unit Commitment Process after bids are submitted and shall notify Scheduling Coordinators for those Generating Units, System Units, Curtailable Demands and System Resources selected in the Residual Unit Commitment Process no later than two hours after Final Day-Ahead Schedules are issued.

5.12.5 Structure of Bids. Scheduling Coordinators shall submit bids to the Residual Unit Commitment Process in the relevant forms set forth below.

5.12.5.1   Non-Hydroelectric Generating Units subject to a Participating Generator Agreement. Scheduling Coordinators shall submit three-part bids to the Residual Unit Commitment Process for each such Generating Unit which consist of the following parts:

5.12.5.1.1   Start-up Cost.   Scheduling Coordinators shall submit a bid of a figure, in dollars, representing the cost of the fuel and auxiliary power consumed by the Generating Unit during start-up. A Scheduling Coordinator's bid shall be reduced to equal a cost-based bid determined by the ISO using the information provided in accordance with Section 5.12.3, the proxy figure for natural gas costs posted on the ISO Home Page, and recent prices in the ISO Real Time Imbalance Energy Market, if that bid exceeds the bid so determined by the ISO.

5.12.5.1.2   Minimum Load Cost. Scheduling Coordinators shall submit a bid of a figure, in dollars, representing the cost of the fuel consumed each hour by the unit when is operating at its minimum load level. This figure shall be the same for each hour. A Scheduling Coordinator's bid shall be reduced to equal a cost-based bid determined by the ISO using the information provided in accordance with Section 5.12.3, a variable operations and maintenance cost of $6.00/MWh and the proxy figure for natural gas costs posted on the ISO Home Page if that bid exceeds the bid so determined by the ISO.

5.12.5.1.3   Energy bid. Scheduling Coordinators shall submit a monotonically increasing curve, consisting of no more than 10 segments, representing the energy payment (in $/MW per hour) requested at a particular output over the range from the

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Generating Unit's lowest stable sustainable output to the Generating Unit's maximum stable sustainable output for each hour. The price for energy at a given output in the curve bid into the ISO's Real Time Imbalance Energy Market for capacity selected by the ISO in the Residual Unit Commitment Process from the same Generating Unit cannot exceed the price for the same output in the energy curve bid into the Residual Unit Commitment Process for the same hour.

5.12.5.1.4 **Default Bids.** If a Scheduling Coordinator for a non-Hydroelectric Generating Unit subject to a Participating Generator Agreement required to bid into the Residual Unit Commitment Process in accordance with Section 5.11.4 fails to submit a bid into the Residual Unit Commitment Process, the ISO shall submit a bid on its behalf which consists of the following parts:

5.12.5.1.4.1 **Gas-Fired Generating Units subject to a Participating Generating Agreement.**

5.12.5.1.4.1.1 **Default Start-Up Costs.** The ISO shall submit a bid, based on the information provided in accordance with Section 5.12.3, the proxy figure for natural gas costs posted on the ISO Home Page, and recent prices in the ISO's Real Time Imbalance Energy market of a figure, in dollars, equal to the cost of the fuel and auxiliary power consumed by the Generating Unit during start-up.

5.12.5.1.4.1.2 **Default Minimum Load Costs.** The ISO shall submit a bid, based on the information provided in accordance with Section 5.12.3 of a figure, in dollars, equal to the sum of 1) the product of a) the Generating Unit's minimum load level as set forth in that Generating Unit's Participating Generator Agreement, b) the heat input characteristic of that Generating Unit at the minimum load level as set forth in Schedule 1 to that Generating Unit's Participating Generator Agreement, and c) the proxy figure for natural gas costs posted on the ISO Home Page and 2) the product of a) the Generating Unit's minimum load level as set forth in that Generating Unit's Participating Generator Agreement and b) $6.00.

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5.12.5.1.4.1.3 Default Energy Bid. The ISO shall submit a monotonically increasing curve consisting of ten segments, representing the relationship between the Generating Unit's incremental variable operating cost and its output as calculated by the ISO based on the data provided to the ISO in accordance with Section 5.12.3, the proxy figure for natural gas costs posted on the ISO Home Page, and a variable operating and maintenance costs of $6.00/MWh, over the range from the Generating Unit's lowest stable sustainable output to the Generating Unit's maximum stable sustainable output. This curve shall be the same for each hour of the Trading Day.

5.12.5.1.4.2   Non-Gas-Fired Non-Hydroelectric Generating Units subject to a Participating Generating Agreement.

5.12.5.1.4.2.1 Default Start-Up Costs. The ISO shall submit a bid, based on the information provided in accordance with Section 5.12.3 and recent prices in the ISO's Real Time Imbalance Energy market of a figure, in dollars, equal to the cost of the fuel and auxiliary power consumed by the Generating Unit during start-up.

5.12.5.1.4.2.2 Default Minimum Load Costs. The ISO shall submit a bid, based on the information provided in accordance with Section 5.12.3 of a figure, in dollars, equal to the sum of 1) the product of a) the Generating Unit's minimum load level as set forth in that Generating Unit's Participating Generator Agreement, and b) the cost of that Generating Unit at the minimum load level as set forth in Schedule 1 to that Generating Unit's Participating Generator Agreement and 2) the product of a) the Generating Unit's minimum load level as set forth in that Generating Unit's Participating Generator Agreement and b) $6.00. This bid shall be the same for each hour.

5.12.5.1.4.2.3 Default Energy bid. The ISO shall submit a monotonically increasing curve consisting of ten segments, representing the relationship between the Generating Unit's incremental variable operating cost and its output as calculated by the ISO based on the data provided to the ISO in accordance with Section 5.12.3 over the range from the

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Generating Unit's lowest stable sustainable output to the Generating Unit's maximum stable sustainable output. This curve shall be the same for each hour of the Trading Day.

5.12.5.2 **Hydro-electric Generating Units subject to a Participating Generator Agreement.** Scheduling Coordinators may submit three-part bids to the Residual Unit Commitment Process for each such Generating Unit which consists of the following parts:

5.12.5.2 **Start-up Cost.** Scheduling Coordinators shall submit a bid of a figure, in dollars, representing the cost of the fuel and auxiliary power consumed by the Generating Unit during start-up. A Scheduling Coordinator's bid shall be reduced to equal a cost-based bid determined by the ISO using the information provided in accordance with Section 5.12.3, the proxy figure for natural gas costs posted on the ISO Home Page, and recent prices in the ISO Real Time Imbalance Energy Market, if that bid exceeds the bid so determined by the ISO.

5.12.5.2.2 **Minimum Load Cost.** Scheduling Coordinators shall shall submit a bid of a figure, in dollars, representing the cost of the fuel consumed each hour by the unit when it is operating at its minimum load level. A Scheduling Coordinator's bid shall be reduced to equal a cost-based bid determined by the ISO using the information provided in accordance with Section 5.12.3, a variable operations and maintenance cost of $6.00/MWh and the proxy figure for natural gas costs posted on the ISO Home Page if that bid exceeds the bid so determined by the ISO.

5.12.5.2.3 **Energy bid.** Scheduling Coordinators shall submit a monotonically increasing curve, consisting of no more than 10 segments, representing the energy payment (in $/MW per hour) requested at a particular output over the range from the Generating Unit's lowest stable sustainable output to the Generating Unit's maximum stable sustainable output for each hour. The price for energy at a given output in the curve bid into the ISO's Real Time Imbalance Energy Market for capacity selected by the ISO in the Residual Unit Commitment Process from the same Generating Unit cannot

exceed the price for the same output in the energy curve bid into the Residual Unit Commitment Process for the same hour.

5.12.5.3 **System Resources.** Scheduling Coordinators may submit bids to the Residual Unit Commitment Process for System Resources which consist of the following parts:

5.12.5.3.1 **Energy bid.** Scheduling Coordinators shall submit a monotonically increasing curve, consisting of no more than ten segments, representing the energy payment (in $/MW per hour) requested for a given level of output for each hour.

5.12.5.3.2 **Block bids.** Scheduling Coordinators for System Resources may submit separate bids to provide Energy for a number of contiguous hours. Each such bid shall consist of a monotonically increasing curve, consisting of no more than ten segments, representing the energy payment (in $/MW per hour) requested for a given level of output.in dollars per MWh, and the contiguous hours in which the Energy is to be provided. The Energy price curve must be the same for all hours in the same block of contiguous hours. The Energy price curve may be different for different contiguous blocks of hours.

5.12.5.4 **Curtailable Demand.** Scheduling Coordinators may submit three-part bids to the Residual Unit Commitment Process for Curtailable Demand which consist of the following parts:

5.12.5.4.2 **Minimum Curtailment Payment.** A figure, in dollars, representing the minimum payment for initiating a curtailment regardless of the quantity curtailed or the duration of the curtailment.

5.12.5.4.3 **Minimum Hourly Payment.** A figure, in dollars, representing the minimum payment per hour of curtailment at the lowest MW level stated in the first segment of the energy bid curve set forth in accordance with Section 5.12.5.4.2.

5.12.5.4.4   Energy bid. A monotonically increasing curve, consisting of no more than ten segments, representing the energy payment (in $/MW per hour) requested to curtail a particular quantity of Demand for an hour beyond the lowest MW level stated in the first segment of the energy bid curve.

5.12.5.4.4   Additional bid data. Scheduling Coordinators may also include figures representing (a) the time, in minutes, required for curtailment following notification; (b) minimum off time, in hours, stating the minimum number of hours the Curtailable Demand is willing to be curtailed; and (c) maximum off time, in hours, stating the maximum number of hours the Curtailable Demand is willing to be curtailed.

5.12.5.5   System Units. Scheduling Coordinators may submit bids to the Residual Unit Commitment Process for System Units which consist of the following parts:

5.12.5.5.1   Energy bid. A monotonically increasing curve, consisting of no more than ten segments, representing the energy payment (in $/MW per hour) requested for a given level of output for each hour.

5.12.6   ISO Selection of Units in the Residual Unit Commitment Process.

5.12.6.1   Procurement Target.

5.12.6.1.1   Capacity. The ISO shall select Generating Units, System Units, System Resources and Curtailable Load in the Residual Unit Commitment Process to meet the difference between the sum of the ISO Adjusted Demand Forecast and the ISO forecast Operating Reserve Requirement for each hour in the Trading Day and the sum of the total scheduled ISO Control Area Demand and the ISO's Operating Reserve requirement as indicated in the Final Day-Ahead Schedules for each hour of the Trading Day.

5.12.6.1.1.1   ISO Adjusted Demand Forecast. The ISO Adjusted Demand Forecast is the total forecast Demand for the ISO Control Area less expected additional Energy to be delivered in the Hour Ahead and Real Time Imbalance Energy markets.

5.12.6.1.2 **Energy Procurement.** **For each hour of the Trading Day, the sum of the (1) Energy provided as Generation in Final Day-Ahead Schedules, and (2) the Energy output at minimum load for Generating Units selected by the ISO in the Residual Unit Commitment Process and (3) Energy purchased from System Resources in the Residual Unit Commitment Process shall not exceed 95% of the ISO Adjusted Demand Forecast for that hour unless the sum of (1) the Energy provided as Generation in Final Day-Ahead Schedules, and (2) the Energy output at minimum load for Generating Units selected by the ISO in the Residual Unit Commitment Process exceeds 95% of the ISO Adjusted Demand Forecast.**

5.12.6.2 **Cost Minimization.** **The ISO shall select Generating Units, System Units, System Resources and Curtailable Demand in the Residual Unit Commitment Process to minimize the total of the start-up, minimum load, and estimated Energy costs for the Residual Unit Commitment Process. To estimate Energy costs, the ISO shall project the Energy level to which the ISO will Dispatch those resources selected in the Residual Unit Commitment Process in each hour to fully meet the ISO Adjusted Demand Forecast.**

5.12.6.3 **Local Reliability Commitment.** **If required, and after using effective RMR units to the extent possible, the ISO shall select Generating Units in the Residual Unit Commitment Process that the ISO determines must be operating to comply with all applicable reliability criteria, including Generating Units that are needed to ensure local reliability.**

5.12.6.4 **Resource characteristics.** **The ISO shall consider the performance characteristics submitted by Generating Units in accordance with Section 5.12.3, including ramp rates, minimum load levels, energy limitations and other characteristics, of Generating Units, System Units, System Resources and Curtailable Demand when selecting those resources in the Residual Unit Commitment Process.**

5.12.7 **Payments.**

5.12.7.1 **Generating Units.**

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5.12.7.1.1 __Unrecovered Commitment Costs.__ __The ISO shall pay Generating Units__ __selected by the ISO in the Residual Unit Commitment Process their positive Unrecovered__ __Commitment Costs.__

5.12.7.1.1.1 __Unrecovered Commitment Costs shall be the Allocated Start-Up Costs plus__ __the sum, for all hours in the ISO Commitment Period, of the Hourly Minimum Load Cost__ __Deficiencies, less the sum, for all hours in the ISO Commitment Period, of the Hourly__ __Market Net Revenue.__

5.12.7.1.1.2 __The Allocated Start-Up costs shall be the product of the Unit's Start-Up__ __Cost (as submitted in Section 5.12.5.1.1.1) and a fraction equal to the number of Qualifying__ __Hours divided by the number of the hours in the ISO Commitment Period.__

5.12.7.1.1.2.1 __Eligibility to be paid Allocated Start-Up Costs.__ __A Generating Unit shall be__ __eligible to be paid Allocated Start-Up Costs for the Trading Day if 1) the Unit has no Self-__ __Commitment Periods for that Trading Day, and 2) the Unit actually starts up.__

5.12.7.1.1.2.2 __Commitment Period.__ __The Commitment Period begins when the Generating__ __Unit is synchronized to the grid and ends when the Generating Unit is de-synchronized__ __from the grid.__

5.12.7.1.1.2.3 __ISO Commitment Period.__ __The ISO Commitment Period begins when the__ __Generating Unit is synchronized in response to the ISO selecting that Unit in the Residual__ __Unit Commitment Process and ends at the later of 1) when the ISO notifies the Scheduling__ __Coordinator that the Unit is no longer required; 2) the unit is forced out of service; and 3)__ __the time that is the time the Generating Unit is synchronized plus the Generating Unit's__ __minimum run time, except the ISO Commitment Period shall not extend beyond the end of__ __a Trading Day.__

5.12.7.1.1.2.4 __Self-Commitment Period.__ __The Self-Commitment Period is that portion of a__ __Commitment Period when the Scheduling Coordinator for that Generating Unit submits__ __Energy schedules or is awarded Ancillary Services schedules.__ __Self-Commitment Periods__ __shall also include periods where the Scheduling Coordinator does not submit Energy__

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Schedules or is awarded Ancillary Services Schedules for the Generating Unit if the Generating Unit must remain on in those periods in response to the Scheduling Coordinator having submitted Energy schedules or having been awarded Ancillary Service Schedules to satisfy the Generating Unit's minimum run time or minimum off time.

5.12.7.1.1.2.5   Qualifying Hour. A Qualifying Hour shall be an Hour in the ISO Commitment Period in which 1) the Generating Unit is not awarded or does not self-provide an Hour-Ahead Ancillary Services schedule, and 2) the ISO does not Dispatch the Generating Unit in accordance with its RMR Contract.

5.12.7.1.1.3   Hourly Minimum Load Cost Deficiency. The Hourly Minimum Load Cost Deficiency for each hour shall be the sum, for all BEEP Intervals in that hour, of the number that is the greater of zero and the Unit's Minimum Load Cost less the product of the Unit's Minimum Load Level and the Market Clearing Price for that BEEP Interval.

5.12.7.1.1.3.1   Minimum Load Cost. The Minimum Load Cost shall be the sum of 1) the product of a) the Unit's average heat rate at minimum load; b) the proxy figure for natural gas costs posted on the ISO Home Page and c) the Unit's minimum load; and 2) the Unit's minimum load and $6.00.

5.12.7.1.1.4   Hourly Market Net Revenue. The Hourly Market Net Revenue for each hour shall be the sum, for all BEEP Intervals in that hour, of the product of 1) the number that is the Market Clearing Price for that BEEP Interval less the Imputed Cost and 2) the number that is the difference between the operating level instructed by the ISO and the Generating Unit's minimum load level.

5.12.7.1.1.4.1   Imputed Cost for Gas-Fired Generating Units. The Imputed Cost for Gas-Fired Generating Units shall be the sum of 1) the product of a) the unit's average heat rate at the operating level instructed by the ISO; b) the operating level instructed by the ISO; and c) the proxy figure for natural gas costs posted on the ISO Home Page; and 2) $6.00.

5.12.7.1.1.4.2   Imputed Cost for Non-Gas-Fired Generating Units. The Imputed Cost for Non-Gas-Fired Generating Units shall be the cost at the operating level as instructed by the ISO as provided in accordance with 5.12.3.

5.12.7.1.2   Payment for Terminated Start-up. If 1) the ISO selects a Generating Unit in the Residual Unit Commitment Process 2) the ISO instructs the unit to start-up, and 3) the start-up is terminated before the unit is synchronized, the ISO shall pay the Scheduling Coordinator for that Generating Unit a start-up payment equal to the start-up cost in the Generating Unit's bid multiplied by a fraction equal to the number of hours the unit was in start-up when the start-up was terminated divided by the number of hours the unit normally takes to start-up (as provided in accordance with 5.12.3), except that in no case shall this payment exceed the start-up cost provided in accordance with 5.12.3.

5.12.7.1.3   Capacity Payments.

5.12.7.1.3.1   Gas-Fired Generating Units. For each hour in which the ISO selects capacity from a gas-fired Generating Unit in the Residual Unit Commitment Process the ISO shall pay to the Scheduling Coordinator for that Generating Unit, subject to Section 5.12.7.1.4, a payment equal to the product of

> **(1)   the amount of capacity selected in the Residual Unit Commitment Process and**

> **(2)   the proxy figure for natural gas costs; and**

> **(3)   the difference between the unit's incremental heat rate at the output at which the ISO determines it expects the unit to be loaded at in the Residual Unit Commitment Process and the greater of a) the unit's minimum load level as set forth in Schedule 1 of the Unit's Participating Generator Agreement and b) the unit's final Day-Ahead Schedule.**

5.12.7.1.3.2   Non-Gas-Fired Generating Units. For each hour in which the ISO selects capacity from a non-gas-fired Generating Unit in the Residual Unit Commitment Process

the ISO shall pay to the Scheduling Coordinator for that Generating Unit, subject to Section 7.1.3.1, a payment equal to the product of

(1)   the amount of capacity selected in the Residual Unit Commitment Process and

(2)   the difference between the unit's incremental cost at the output at which the ISO determines it expects the unit to be loaded at in the Residual Unit Commitment Process and the greater of a) the unit's minimum load level as set forth in Schedule 1 of the Unit's Participating Generator Agreement and b) the unit's final Day-Ahead Schedule.

5.12.7.1.3.3   Withdrawing Capacity Payments when Dispatched. The ISO shall make no capacity payment in a BEEP Interval to the Scheduling Coordinator for a Generating Unit for the capacity from which the ISO Dispatches Energy from a Generating Unit at a level above the greater of the Unit's Day-Ahead Schedule or the Minimum Load for that Unit.

5.12.7.1.3.4   Withdrawing Capacity Payments for Exports. The ISO shall make no capacity payment in a BEEP Interval to the Scheduling Coordinator for a Generating Unit for the capacity selected by the ISO in the Residual Unit Commitment Process if the Energy from that capacity is being exported from the ISO Control Area.

5.12.7.2   System Resources.

5.12.7.2.1   Energy. System Resources the ISO selects in the Residual Unit Commitment Process shall be paid, for each hour, the product of 1) the higher of their bid price or the simple average of the six BEEP Interval Market Clearing Prices for that hour and 2) the operating level to which they are Dispatched in the Residual Unit Commitment Process.

5.12.7.2.2   System Resource Uplift Costs. The System Resource Uplift Costs shall be the sum, for all contiguous hours in which the System Resource is Dispatched in

accordance with its bid into the Residual Unit Commitment Process in the Trading Day, of the number that is the product of 1) the operating level to which the System Resource is dispatched in the Residual Unit Commitment Process and 2) the greater of a) zero and b) the System Resource's energy bid price for the level to which the System Resource is Dispatched by the ISO less the simple average of the BEEP Interval Market Clearing Prices for that hour.

5.12.7.3 **Curtailable Demand.**

5.12.7.3.1 **Minimum Curtailment Payment. If the ISO selects Curtailable Demand in the Residual Unit Commitment Process, the ISO shall pay the Scheduling Coordinator for that Curtailable Demand the amount of the minimum curtailment payment in that Curtailable Demand's bid provided the Curtailable Demand successfully reduces its Demand from its Final Hour Ahead Schedule at the time the ISO requests curtailment.**

5.12.7.4 **System Units**

5.12.7.4.1 **Capacity Payments. For each hour in which the ISO selects capacity from a System Unit in the Residual Unit Commitment Process the ISO shall pay to the Scheduling Coordinator for that System Unit, subject to Section 7.4.2, a payment equal to the product of**

> **(1)** **the amount of capacity selected in the Residual Unit Commitment Process and**

> **(2)** **the difference between the price at the System Unit's cost curve the output at which the ISO determines it expects the System Unit to be loaded at in the Residual Unit Commitment Process and b) the cost at the operating point reflected in the System Unit's Final Day-Ahead Schedule.**

5.12.7.4.2 **Withdrawing Capacity Payments when Dispatched. The ISO shall make no capacity payment to the Scheduling Coordinator for a System Unit for the capacity from**

which the ISO Dispatches Energy from a System Unit at a level above the operating point reflected in Final Day-Ahead Schedule.

5.12.8   Allocation of Residual Unit Commitment Process Charges.

5.12.8.1   Total Hourly Residual Unit Commitment Cost. The Total Hourly Residual Unit Commitment Cost for each hour shall be the sum of 1) the Hourly Generating Unit Commitment Costs, 2) the Hourly System Resource Commitment Costs, 3) the Hourly Curtailable Demand Commitment Costs, 4) the Hourly Capacity Reservation Costs and 5) Hourly Terminated Start-Up Costs.

5.12.8.1.1   The Hourly Generating Unit Commitment Costs shall be equal to the sum, for all Generating Units selected in the Residual Unit Commitment Process for that hour, of the Generating Unit's Unrecovered Commitment Costs divided by the number of hours in each Generating Unit's ISO Commitment Period.

5.12.8.1.2   The Hourly System Resource Costs shall be equal to the sum, for all System Resources selected by the ISO for that hour, of the System Resource's System Resource Uplift Costs divided by the number of contiguous hours the System Resource was Dispatched by the ISO in accordance with the System Resource's bid in the Residual Unit Commitment Process.

5.12.8.1.3   The Hourly Curtailable Demand Commitment Costs shall be equal to the sum, for all Curtailable Demands Dispatched by the ISO in that hour, of the Curtailable Demand's Curtailable Demand Commitment Costs divided by the number of hours the Curtailable Demand was curtailed by the ISO.

5.12.8.1.4   The Hourly Capacity Reservation Costs shall be, the sum, for all Generating Units and System Units selected in the Residual Unit Commitment Process for that hour, of the Capacity Payments made that hour in accordance with Section 5.12.7.1.3 and Section 5.12.7.4.1.

5.12.8.1.5 The Hourly Terminated Start-Up Costs shall be the sum, for all Generating Units selected in the Residual Unit Commitment Process for that hour, of the Terminated Start-Up Payments made in accordance with Section 5.12.7.1.2 divided by the number of hours the unit was in start-up when the start-up was terminated.

5.12.8.2 Total Underscheduling Hourly Unit Commitment Cost shall be the product of the Total Hourly Residual Unit Commitment Cost and a number equal to the lesser of 1) one (1) and 2) a number that is equal to a) the greater of zero and a number equal to the total ISO hourly Metered Demand less the total ISO Scheduled Demand divided by b) a number equal to the greater of zero and a number equal to the total ISO forecast Demand less the total ISO scheduled Demand, except that if total ISO forecast Demand equals total ISO scheduled Demand, the Total Underscheduling Hourly Unit Commitment Cost shall be zero.

5.12.8.2.1 Allocation of Total Underscheduling Hourly Unit Commitment Cost. The Total Underscheduling Hourly Unit Commitment Cost shall be allocated each hour to all Scheduling Coordinators based on the ratio of that Scheduling Coordinator's Net Negative Demand Deviations to total Net Negative Demand Deviations.

5.12.8.2.1.1 Net Negative Demand Deviation shall be the number that is equal to the lesser of zero (0) and the Demand scheduled by that Scheduling Coordinator in the Final Day-Ahead Schedules submitted to the ISO for that Trading Day less the Scheduling Coordinator's actual hourly Metered Demand.

5.12.8.3 Total Excess Hourly Unit Commitment Cost shall be the Total Hourly Unit Commitment Cost less a) the Total Underscheduling Hourly Unit Commitment Cost and b) the sum of any amounts available pursuant to Section 11.2.4.1.2 for such hour..

5.12.8.3.1 Allocation of Total Excess Hourly Unit Commitment Cost. The Total Excess Hourly Unit Commitment Cost shall be allocated each hour to all Scheduling Coordinators based on the ratio of that Scheduling Coordinator's Metered Demand to total Metered Demand.

5.12.8.3.2 Local Reliability Commitments. All start-up costs, minimum load costs and Energy costs from Generating Units the ISO selects to meet local reliability requirements shall be charged to the Participating Transmission Owner in whose Service Area the Generating Unit was selected.

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11.2.4.1.2 Penalties for Uninstructed Imbalance Energy

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Amounts collected as Uninstructed Deviation Penalties shall first be assigned to reduce the portion of Residual Unit Commitment costs that would otherwise be included in Total Excess Hourly Unit Commitment Cost, pursuant to Section 8.3. Any remaining amounts of collected Uninstructed Deviation Penalties shall next be assigned to reduce the portion of above-MCP costs that would otherwise be assigned pro rata to all Scheduling Coordinators in that BEEP 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.

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11.2.4.2.2 Allocation of Above-MCP Costs

For each BEEP Interval, the above-MCP 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. Each Scheduling Coordinator's charge shall be the lesser of:

(a) the pro rata share of the total 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 Interval and a weighted average price. The

weighted average price is equal to the total above-MCP costs divided by the MWh delivered as a result of ISO instructions with a cost component above the MCP.

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, **as such difference is reduced pursuant to Section 11.2.4.1.2,** shall be allocated amongst all Scheduling Coordinators in that BEEP Interval pro rata based on their metered Demand, including Exports.

The Scheduling Coordinator shall be exempt from the allocation of above-MCP costs in a BEEP interval if the Scheduling Coordinator has sufficient incremental Energy bids from physically available resources in the Imbalance Energy market to cover the net negative Uninstructed Deviation in the given interval of a resource and the prices of these Energy bids do not exceed the applicable NECPL.

* * *

Master Definitions Supplement

Allocated Start-Up Costs	**Allocated Start-Up Costs has the meaning set forth in Section 5.12.7.1.1.2.**
Hourly Capacity Reservation Costs	**Hourly Capacity Reservation Costs has the meaning set forth in Section 5.12.8.1.4.**
Hourly Curtailable Demand Costs	**Hourly Curtailable Demand Costs has the meaning set forth in Section 5.12.8.1.3.**
Hourly Generating Unit Commitment Costs	**Hourly Generating Unit Commitment Costs has the meaning set forth in Section 5.12.8.1.1.**
Hourly Market Net Revenue	**Hourly Market Net Revenue has the meaning set forth in Section 5.12.7.1.1.4.**

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<u>Hourly Minimum Load Cost Deficiency</u>	<u>Hourly Minimum Load Cost Deficiency has the meaning set forth in Section 5.12.7.1.1.3.</u>
<u>Hourly System Resource Costs</u>	<u>Hourly System Resource Costs has the meaning set forth in Section 5.12.8.1.2.</u>
<u>Imputed Cost</u>	<u>The imputed cost is the average cost of Generation at a particular output calculated by the ISO from data provided to the ISO.</u>
<u>ISO Commitment Period</u>	<u>ISO Commitment Period has the meaning set forth in Section 5.12.7.1.1.2.3.</u>
<u>Minimum Load Cost</u>	<u>Minimum Load Cost has the meaning set forth in Section 5.12.7.1.1.3.1.</u>
<u>Net Negative Demand Deviations</u>	<u>Net Negative Demand Deviations has the meaning set forth in Section 5.12.8.2.1.1.</u>
<u>Qualifying Hours</u>	<u>Qualifying Hours has the meaning set forth in Section 5.12.7.1.1.2.5.</u>
<u>Residual Unit Commitment Process</u>	<u>The process in which the ISO commits Generating Units and reserves service from System Units, System Resources and Curtailable Demands to meet the ISO's projected needs for the next Trading Day.</u>
<u>System Resource Uplift Costs</u>	<u>System Resource Uplift Costs has the meaning set forth in Section 5.12.7.2.2.</u>
<u>Total Excess Hourly Unit Commitment Cost</u>	<u>Total Excess Hourly Unit Commitment Cost has the meaning set forth in Section 5.12.8.2.2.</u>
<u>Total Hourly Residual Unit Commitment</u>	<u>Total Hourly Residual Unit Commitment</u>

Cost	Cost has the meaning set forth in Section 5.12.8.1.
Unrecovered Commitment Costs	Unrecovered Commitment Costs has the meaning set forth in Section 5.12.7.1.1.1.

***

SABP 6.5.2   Other Funds in the ISO Surplus Account.

(a)   Any amounts paid to the ISO in respect of acts or defaults giving rise to default interest referred to in SABP 6.10.5 or penalties referred to in SABP 3.1.1**, to the extent that the ISO Tariff does not otherwise provide for the allocation of the proceeds of such penalties,** shall be credited to the Surplus Account..

Attachment F

5.11   Must-Offer Obligations

5.11.1   [Not used]~~Applicability~~

~~The requirements of Section 5.11 shall apply to (a) all Participating Generators, and (b) all~~ ~~persons, regardless of whether the person is a "public utility" as defined in Section 201 of the~~ ~~Federal Power Act, that own or control one or more non-hydroelectric Generating Units, System~~ ~~Units or System Resources located in California from which energy or capacity is either: (i) sold~~ ~~through any market operated by the ISO, or (ii) transmitted over the ISO Controlled Grid. Each~~ ~~person described in this Section 5.11.1 is referred to in the ISO Tariff as a "Must-Offer~~ ~~Generator." The requirements of this Section 5.11 shall apply to all non-hydroelectric~~ ~~Generating Units located in California that are owned or controlled by a Must-Offer Generator.~~

5.11.2   Available Generation

For the purposes of this Section 5.11, a Generating Unit's ~~Must-Offer Generator's~~ "Available Generation" ~~from a non-hydroelectric Generating Unit~~ for Generating Units bidding into the Residual Unit Commitment Process shall be: (a) the Generating Unit's maximum operating level adjusted for any outages or reductions in capacity reported to the ISO in accordance with Section 2.3 or 5.11.3 and for any limitations on the Generating Unit's operation under applicable law, including contractual obligations, which shall be reported to the ISO, (b) minus the Generating Unit's scheduled operating point, if any, as identified in the ISO's Final ~~Hour~~Day-Ahead Schedule, (c) minus the Generating Unit's capacity committed to provide Ancillary Services to the ISO either through the ISO's Ancillary Services market or through self provision by a Scheduling Coordinator, and (d) if the Generating Unit is owned by a load serving entity, minus the capacity of the Generating Unit committed to deliver Energy or provide Operating Reserve to the load serving entity's ~~Must-Offer Generator's~~ Native Load. A Generating Unit's "Available Generation" for Generating Units bidding into the ISO Real Time Imbalance Energy Market shall be: (a) the Generating Unit's maximum operating level adjusted for any outages or reductions in capacity reported to the ISO in accordance with Section 2.3 or 5.11.3 and for any limitations on the Generating Unit's operation under applicable law, including contractual

obligations, which shall be reported to the ISO, (b) minus the Generating Unit's scheduled operating point, if any, as identified in the ISO's Final Hour-Ahead Schedule, (c) minus the Generating Unit's capacity committed to provide Ancillary Services to the ISO either through the ISO's Ancillary Services market or through self provision by a Scheduling Coordinator, (d) if the Generating Unit is owned by a load serving entitity, minus the capacity of the Generating Unit committed to deliver Energy or provide Operating Reserve to the load serving entity's Native Load and (e) minus the Generating Unit's capacity committed to provide Energy through the ISO's Residual Unit Commitment Process but not included in the Generating Unit's scheduled operating point as identified in the ISO's Final Hour-Ahead Schedule.

5.11.3 [Not used.]~~Reporting Requirements for Non-Participating Generators~~

~~So that the ISO may determine the Available Generation of all Must-Offer Generators, Must-Offer Generators that are not Participating Generators shall be required to file with the ISO, for each non-hydroelectric Generating Unit located in California they own or control: (i) the Unit's minimum operating level; (ii) the Unit's maximum operating level; and (iii) the Unit's ramp rates at all operating levels; and (iv) such other information the ISO determines is necessary to determine available generation and to dispatch Must-Offer Generators. In addition, Must-Offer Generators that are not Participating Generators must, consistent with the notification obligations of Participating Generators and in order to comply with the intent of this Section 5.11, notify the ISO, as soon as practicable, of any Planned Maintenance Outages, Forced Outages, Force Majeure Event outages or any other reductions in their maximum operating levels.~~

5.11.4 Obligation To Offer Available Capacity

All Participating Generators shall offer to sell in the ISO's Residual Unit Commitment Process, in all hours, all Available Generation from non-hydroelectric Generating Units owned or controlled by the Participating Generators. All Participating Generator shall offer to sell in the ISO's Real Time Market, in all hours, all Available Generation from non-hydroelectric

Generating Units (except Generating Units with startup times of greater than 10 minutes). ~~All Must-Offer Generators shall offer to sell in the ISO's Real-Time Market for Imbalance Energy, in all hours, all their Available Generation as defined in Section 5.11.2.~~

5.11.5 Submission of Bids and ~~Applicability of the Proxy Price~~Default Bids

The Scheduling Coordinators for Participating Generators required to offer Available Generation in the Real Time market under section 5.11.4 shall submit Supplemental Energy bids for such Available Generation for each BEEP Interval. If a Scheduling Coordinator for a Participating Generator required to offer Available Generation in the Real Time market under section 5.11.4 fails tp submit Supplemental Energy bids for any such Available Generation for any BEEP Interval, the unbid quantity of the Available Generation will be deemed by the ISO to be bid at the Default Bid for Energy calculated under Section 5.12.~~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. Subject to Section 2.5.23.3.8, in hours in which the ISO has declared a Price Mitigation Reserve Deficiency, any submitted bids that are priced above the Marginal Proxy Clearing Price for the BEEP Intervals, as determined in accordance with Section 2.5.23.3.1.1, will be paid as-bid if accepted by the ISO. Subject to Section 2.5.23.3.8, in hours in which the ISO has not declared a Price Mitigation Reserve Deficiency, any submitted bids that are priced above the Non-Emergency Clearing Price for the BEEP Intervals, as determined in accordance with Section 2.5.23.3.1.2, will be paid as-bid if accepted by the ISO. If, under this section, a Must-Offer Generator is paid as-bid, such bids will be subject to the cost-justification procedures established by FERC and may be subject to refund, as determined by FERC.~~

~~If a Must-Offer Generator fails to submit a Supplemental Energy bid for any portion of its Available Generation for any BEEP 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 to receive: (i) the Marginal Proxy Clearing Price, as determined in accordance with Section 2.5.23.3.1.1, during Price Mitigation Reserve Deficiencies or (ii) the Non-Emergency Clearing Price, as determined in accordance with Section 2.5.23.3.1.2, during non-Price Mitigation Reserve Deficiencies. 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 Waiver of Must-Offer Obligation

Must-Offer Generators may seek a waiver of the obligation to offer all available capacity, as set forth in Section 5.11.4 of this ISO Tariff, for one or more of their generating units for periods other than Self-Commitment Periods, which are defined as the hours when Must-Offer Generators submit Energy Schedules or Ancillary Services bids or self-provision schedules. Self-Commitment Periods shall be extended by the ISO as necessary to accommodate generating unit minimum up and down times such that the scheduled operation is feasible. If conditions permit, and at the ISO's sole discretion, the ISO may grant waivers and allow a Must-Offer Generator to remove one or more generating units from service during hours outside Self-Commitment Periods. The ISO shall grant waivers so as to: 1) minimize the start-up and Minimum Load Costs necessary to meet the ISO's forecasted Demand; 2) provide sufficient on-line generating capacity to meet operating reserve requirements; 3) provide for a reasonable assurance of competitive market outcomes; and 4) account for other physical operating constraints, including generating unit minimum up and down times. The hours outside of Self-Commitment Periods for which waivers are not granted shall constitute Waiver

Denial Periods. The Waiver Denial Period shall be extended as necessary to accommodate generating unit minimum up and down times. Units shall be on-line in real time during both Self-Commitment and Waiver Denial Periods, or they will be in violation of the must-offer obligation. Exceptions shall be allowed for verified forced outages. The must-offer obligation will remain in effect for a unit's Self-Commitment Period even if the Must-Offer Generator nullifies its Day-Ahead Energy Schedules or buys back its Day-Ahead Schedules for a unit in the Hour-Ahead market. The ISO may revoke waivers as necessary due to outages, changes in Load forecasts, or changes in system conditions. The ISO shall determine which waiver(s) will be revoked, and shall notify the relevant Scheduling Coordinator(s).

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. The ISO shall pay to a Must-Offer Generator the unrecovered Minimum Load Costs for each Waiver Denial Period for generating units that: 1) do not submit any Energy Schedules or Ancillary Services self-provision Schedules or bids in the Hour-Ahead market for any hours during such Waiver Denial Period, and 2) do not, over an hour, produce a quantity of Energy that: (i) varies by more than the greater of five (5) MWh or (ii) an hourly Energy amount equal to three (3) percent (%) of the unit's maximum operating output during a Waiver Denial Period.

5.11.6.1.2 Unrecovered Minimum Load Costs

Unrecovered Minimum Load Costs are the portion of the Minimum Load Costs that are not recovered from profits through participation in the ISO markets during the Waiver Denial Period. The profits shall be determined as the positive difference between market revenues and the operating costs of the unit for the Waiver Denial Period. Market revenues shall include all settlements for: 1) Uninstructed Imbalance Energy and 2) Instructed Imbalance Energy, including out-of-sequence and out-of-market Energy during the Waiver Denial Period. Market revenues shall include all settlements for: 1) Uninstructed Imbalance Energy and 2) Instructed Imbalance Energy, including out-of-sequence and out-of-market Energy during the Waiver Denial Period. The operating costs shall be calculated as the sum, for each BEEP Interval in the Waiver Denial Period, 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 instructed output averaged over that BEEP Interval and the proxy figure for natural gas costs posted on the ISO Home Page in effect at the time and the unit's instructed output averaged over that BEEP Interval, and 2) the product of the unit's instructed output averaged over that BEEP Interval and $6.00/MWh. The Minimum Load Costs shall be calculated as the sum, for all hours in the Waiver Denial Period, 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 minimum operating level as set forth in 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 minimum operating level as set forth in Schedule 1 of the Generating Unit's Participating Generator Agreement and 2) the product of the unit's minimum operating level as set forth in Schedule 1 of the Generating Unit's Participating Generator Agreement and $6/MWh. The Minimum Load Costs shall be offset by the Waiver Denial Period profits and any remaining shortfall shall constitute unrecovered Minimum Load Costs.

5.11.6.1.3 Invoicing Unrecovered Minimum Load Costs

The ISO shall determine each Scheduling Coordinator's unrecovered Minimum Load Costs and

make payments for these costs as part of the ISO's market settlement process. Scheduling

Coordinators may

submit to the ISO data detailing the hours for which they are eligible to recover Minimum Load Costs. Scheduling Coordinators who elect to submit data on hours they are eligible to recover Minimum Load Costs must: 1) use the Minimum Load Cost Invoice template posted on the ISO Home Page, and 2) submit the invoice on or before fifteen (15) business days following the last Trading Day in the month in which such costs were incurred, except that Scheduling Coordinators seeking reimbursement for Minimum Load Costs incurred between May 29, 2001, and the day that the ISO posts the Minimum Load Costs Invoice template on the ISO Home Page must submit their data no later than thirty (30) business days after the ISO first posts the template on the ISO Home Page.

5.11.6.1.4 Allocation of Unrecovered Minimum Load Costs

Unrecovered Minimum Load Costs for each unit's Waiver Denial Period shall be evenly divided over all hours of such Waiver Denial Period. For each such hour, the total unrecovered Minimum Load Costs shall be allocated to each Scheduling Coordinator in proportion to the sum of that Scheduling Coordinator's Load and Demand within California outside the ISO Control Area that is served by exports to the sum of the ISO Control Area Gross Load and the projected Demand within California outside the ISO Control Area that is served by exports.

Attachment G

ECONOMIC DISPATCH

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. The ISO shall

then adjust the output of Generating Units, System Units, and System

Resources available (either providing Spinning Reserve, Non-Spinning

Reserve, Replacement Reserve or offering Supplemental Energy) to 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** dispatch Generating Units, System Units, Loads

and System Resources only to meet its Imbalance Energy requirements **and**

eliminate any Price Overlap between incremental and decremental

energy bids. ~~The ISO shall not dispatch such resources in real time for~~

~~economic trades either between Scheduling Coordinators or within a~~

~~Scheduling Coordinator portfolio~~;

(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;

(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 instruction causes Energy to be delivered in a different BEEP Interval.

* * *

2.5.22.6 Real Time Dispatch. The ISO shall ~~select the least cost~~**economically**

dispatch 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 their preferred operating points by more than a specified threshold (to

be determined by the ISO). 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:**(a) ~~if additional Energy output, or Demand reduction, is needed, the ISO shall Dispatch additional output or reduce Demand from Generating Units, Loads, System Units or System~~ Resources **according to** ~~in ascending order of~~ their ~~incremental Supplemental Energy bid prices (or, for Generating Units, Loads, System Units and System Resources providing Ancillary Services, their~~ Energy Bid prices.

~~(b)   if the ISO is required to reduce Energy output from Generating Units, Loads, System Units or System Resources, the ISO shall dispatch down Generating Units, Loads, System Units and System Resources in descending order of their decremental Supplemental Energy bid prices (or, for Generating Units, Load, System Units and System Resources providing Ancillary Services their 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. ~~In the event that the ISO subsequently needs to decrement output, it will initially decrement the Generating Units, Loads, System Units or System Resources incremented previously, and then continue down the merit order of the decremental bids.~~

<center>* * *</center>

2.5.23 Pricing Imbalance Energy.

2.5.23.1 General Principles. Instructed and Uninstructed Imbalance Energy shall be priced using the BEEP Interval Ex Post Prices. The BEEP Interval Ex Post Prices shall be based on the bid of the marginal Generating Units, System Units, Loads ~~and~~ **or** System Resources dispatched by the ISO to increase or reduce Demand or Energy output in each BEEP Interval as provided in Section 2.5.23.2.1.

The marginal **bid is** ~~Generating Unit, System Unit, Load or System Resource provides~~

~~(a)   Incremental Energy if Generation output is increased, or Demand reduced, or~~

~~(b)   Decremental Energy if Generation output is decreased, or Demand increased.~~

~~For Incremental Energy, the marginal bid is the Generating Unit, System Unit, Load or System Resource with~~ the highest bid that is accepted by the ISO's BEEP Software for increased **energy supply or** ~~Generation, or reduced Demand. For Decremental Energy, the marginal bid is the Generating Unit, System Unit, Load or System Resource with~~ the lowest bid that is accepted by the ISO's BEEP Software for reduced **energy supply**~~Generation or increased Demand~~. **In the event the lowest price decremetal bid accepted by the ISO is greater and not equal to the highest**

priced incremental bid accepted, then the 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 instructions issued by the BEEP 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 instructions issued by the BEEP Software.

2.5.23.2   Determining Ex Post Prices.

2.5.23.2.1   **BEEP Interval Ex Post Prices**. For each BEEP Interval, the ISO will compute ~~an~~ updated supply **and demand** curve**s**, using the Generating Units, System Units, Loads and System Resources dispatched according to the ISO's BEEP Software during that time period to meet Imbalance Energy requirements **and to eliminate any Price Overlap**. The 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 2.5.23.3. For each BEEP Interval of the Settlement Period, BEEP will compute **the Ex Post Price so that it is:** ~~an incremental Ex Post Price and a decremental Ex Post Price. The BEEP Interval Ex Post Price for~~

~~incremental Energy will be the highest incremental marginal bid selected by the BEEP software in the corresponding BEEP Interval. The BEEP Interval Ex Post Price for decremental Energy will be the lowest price decremental marginal bid selected by the BEEP software in the corresponding BEEP Interval. If only decremental Imbalance Energy is dispatched in a BEEP Interval, then the BEEP Interval Ex Post Price for incremental Energy will be equal to the BEEP Interval Ex Post Price for decremental Energy. If only incremental Imbalance Energy is dispatched in a BEEP Interval, then the BEEP Interval Ex Post Price for decremental Energy will be equal to the BEEP Interval Ex Post Price for incremental Energy.~~

(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 accepted decremental bids; and

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

In the event of Inter-Zonal Congestion, the ISO will develop ~~a dispatch price curve, and the BEEP Interval Ex Post Prices for each Zone where congestion exists~~**supply and demand curves separately for each Zone separated by congestion**.

2.5.23.2.2   Hourly Ex Post Price ~~Applicable to Uninstructed Deviations~~**.**
The Hourly Ex Post Price in Settlement Period t in each ~~zone~~ **Zone** will equal the Energy weighted average of the BEEP Interval ~~Charges~~ **Prices** in each Zone, calculated as follows:

$$HP_{xt} = \frac{\sum_b |Q_{bxt}| \, P_{bxt}}{\sum_b |Q_{bxt}|}$$

Where:

~~PHourExPost~~$_x$=HP_{xt} **is the** Hourly Ex Post Price in Zone x;

P_{bxt} **is the BEEP Interval Ex Post Price during BEEP Interval b in Zone x; and**

$Q_{bx}t$ *is the total*

~~BIP~~$_{ix}$~~= BEEP Interval Ex Post Price~~

~~J=the number of Scheduling Coordinators with instructed deviations~~

MWH_{jix}=the Instructed Imbalance Energy ~~for Scheduling Coordinator j for the~~**during**

BEEP Interval ~~i~~ **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.

<center>* * *</center>

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.

~~$EnQUnst_{xt}$~~ $EnQInst_{xt}$ = ~~Uninstructed~~ **Instructed** Imbalance Energy increase or decrease in Zone X in real time Dispatch for each BEEP 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 ~~Uninstructed~~

Instructed Imbalance Energy under Section 11.2.4.1~~.~~**:**

$$\sum_i [(EnQInst_{ixt} * BEEPIntervalExPostPriceinZoneX) + REPA_{ixt}]$$

$REPA_{ixt}$ = 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} =   ~~10~~ **to 1**

C_{DN} =   ~~10~~ **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.

* * *

2.5.28.4 Replacement Reserve. The user rate per unit of Replacement Reserve obligation for each Settlement Period t for each Zone x shall be as follows:

$$ReplRate_{xt} = \frac{\left(PRepResDA_{xt} * OrigReplReqDA_{xt}\right) + \left(PRepResHA_{xt} * OrigReplReqHA_{xt}\right)}{OrigReplReqDA_{xt} + OrigReplReqHA_{xt}}$$

where

OrigReplReqDA$_{xt}$ = Replacement Reserve requirement net of self-provision in the Day-Ahead Market before consideration of any substitutions pursuant to Section 2.5.3.6.

OrigReplReqHA$_{xt}$ = Incremental change in the Replacement Reserve requirement net of self-provision between the Day-Ahead Market and the Hour-Ahead Market before consideration of any substitutions pursuant to Section 2.5.3.6.

PRepResDA$_{xt}$ is the Market Clearing Price for Replacement Reserve in the Day-Ahead Market for Zone *x* in Settlement Period *t*.

PRepResHA$_{xt}$ is the Market Clearing Price for Replacement Reserve in the Hour-Ahead Market for Zone *x* in Settlement Period *t*.

For each Settlement Period t, each Scheduling Coordinator shall pay to the ISO a sum calculated as follows for each Zone$_x$:

$ReplRate_{xt}*ReplOblig_{jxt}$

where

$ReplOblig_{jxt} = DevReplOblig_{jxt} + RemRepl_{jxt} - SelfProv_{jxt} + NetInterSCTrades_{jxt}$

$DevReplOblig_{jxt}$ is the Scheduling Coordinator's obligation for deviation Replacement Reserve in Zone x in the Settlement Period t and $RemRepl_{jxt}$ is the Scheduling Coordinator's obligation for remaining Replacement Reserve in Zone x for Settlement Period t.

$SelfProv_{jxt}$ is Scheduling Coordinator's Replacement Reserve self provision in Zone x for Settlement Period t.

$NetInterSCTrades_{jxt}$ is the sale of Replacement Reserve less the purchase of Replacement Reserve through Inter-Scheduling Coordinator Trades by Scheduling Coordinator j in Zone x for Settlement Period t.

Deviation Replacement Reserve for Scheduling Coordinator j in Zone x for Settlement Period t is calculated as follows:

If $ReplObligTotal_{xt} > TotalDeviations_{xt}$ then:

$$DevReplOblig_{xjt} = \left[Max\left(0, \sum_i GenDev_{ijxt} \right) - Min\left(0, \sum_i LoadDev_{ijxt} \right) \right]$$

If $ReplObligTotal_{xt} < TotalDeviations_{xt}$ then:

$$DevReplOblig_{xjt} = \frac{ReplObligTotal_{xt}}{TotalDeviations_{xt}} * \left[Max\left(0, \sum_i GenDev_{ijxt} \right) - Min\left(0, \sum_i LoadDev_{ijxt} \right) \right]$$

where,

$$TotalDeviations_{xt} = \sum_j \left[Max\left(0, \sum_i GenDev_{ijxt} \right) - Min\left(0, \sum_i LoadDev_{ijxt} \right) \right]$$

$GenDev_{ijxt}$ = The deviation between scheduled and actual Energy Generation for Generator i represented by Scheduling Coordinator j in Zone x during Settlement Period t as referenced in ~~Section 11.2.4.1~~**SABP Appendix D**.

$LoadDev_{ijxt}$ = The deviation between scheduled and actual Load consumption for resource i represented by Scheduling Coordinator j in Zone x during Settlement Period t as referenced in **SABP Appendix D**~~Section 11.2.4.1~~.

$DevReplOblig_{xt}$ is total deviation Replacement Reserve in Zone x for Settlement Period t.

$ReplObligTotal_{xt}$ is total Replacement Reserve Obligation in zone x for Settlement Period t.

Remaining Replacement Reserve for Scheduling Coordinator j in Zone x for Settlement Period t is calculated as follows:

$$RemRepl_{xjt} = \frac{MeteredDemand_{jxt}}{TotalMeteredDemand_{xt}} * Total\,Re\,m\,Re\,pl_{xt}$$

where:

$MeteredDemand_{jxt}$ is the Scheduling Coordinator's total metered Demand excluding exports in Zone x for Settlement Period t.

TotalMeteredDemand$_{xt}$ is total metered Demand excluding exports in Zone x for Settlement Period t.

TotalRemRepl$_{xt}$ = Max[0,ReplObligTotal$_{xt}$ + TotalSelfProv$_{xt}$ - DevReplOblig$_{xt}$]

* * *

11.2.4 Imbalance Energy.

The ISO shall calculate, account for and settle Imbalance Energy in the Real Time Market for each ~~Settlement~~ BEEP 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 Scheduling Coordinator for each Settlement 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 BEEP Interval ~~of each Settlement Period equal to~~

the product of the net deviation in the Zone or Zones, as appropriate, and the appropriate BEEP Interval Ex Post Price determined in accordance with Section 2.5.23.2.1.

The ISO shall develop protocols and procedures for the monitoring of persistent intentional excessive imbalances by Scheduling Coordinators and for the imposition of appropriate sanctions and/or penalties to deter such behavior.

11.2.4.1.1   Settlement for Instructed Imbalance Energy

Instructed Imbalance Energy attributable to each Scheduling Coordinator j in each Settlement Period t in the relevant Zone **in each BEEP Interval** shall be deemed to be sold or purshased**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 Interval of each Settlement Period in accordance with Section 2.5.23.

* * *

11.2.4.3   Unaccounted For Energy (UFE)

For settlement purposes, UFE is treated as Imbalance Energy. For each Settlement Period,**BEEP Interval,** the ISO will calculate UFE on the ISO Controlled Grid, for each UDC Service Area. The UFE will be included in the net settlements for **settled as** Imbalance Energy in Section 11.2.4.1**at the BEEP 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 UDC Service Area to total metered Demand within the UDC Service Area.

* * *

Ex Post Price   The Hourly Ex Post Price or the BEEP Interval Ex Post Prices.

* * *

Hourly Ex Post Price   The **Energy-weighted average of the BEEP Interval Ex Post Prices** ~~prices charged or paid to Scheduling Coordinators Responsible for Participating Buyers for Imbalance Energy~~ in each Zone **during each settlement period**. The **Hourly Ex Post** ~~price~~ **Price** will vary between Zones if Congestion is present. ~~The Hourly Ex Post Price is the Energy weighted average of the BEEP Interval Ex Post Prices in each Zone during each Settlement Period.~~**This price is used in the Regulation Energy Payment Adjustment and in RMR settlements.**

* * *

Price Overlap   **The price range of bids for Supplemental Energy or Energy associated with Ancillary Services**

bids for any 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.

DP 4.4   Acknowledgement of Dispatch Instructions

The recipient of a Dispatch Instruction shall confirm the Dispatch Instruction. Dispatch ~~instructions~~ **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 Iinstructions to the ISO. **Dispatch Instructions of Imbalance Energy will be deemed delivered and settled as such.**

* * * * *

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 dispatch Generating Units and **dispatchable** Interconnection schedules providing Regulation service to meet WSCC and NERC Area Control Error (ACE) performance criteria;

(b)   **in each BEEP Interval**, following the loss of a resource and once ACE has returned to zero, the ISO shall determine if the Regulation Generating Units and **dispatchable** Interconnection schedules are operating at a point away from their Set Point. The ISO shall then adjust the output of Generating Units, ~~and~~ **Curtailable Demands, and dispatchable** Interconnection schedules (either providing Spinning Reserve, Non-Spinning Reserve**, Replacement Reserve,** or Supplemental Energy) to return the Regulation Generating Units and **dispatchable** Interconnection schedules to their Set Points to restore their full regulating margin;

(c)   **in each BEEP Interval,** the ISO shall dispatch Generating Units, Curtailable Demands and **dispatchable** Interconnection schedules ~~only~~ to meet its balancing Energy requirements.~~ The ISO shall not dispatch such~~ **and eliminate any Price Overlap between decremental and incremental Energy Bids, thereby, 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 **dispatchable** Interconnection schedules to be dispatched to

meet its balancing Energy requirements based on the merit order stack of Energy bid prices produced by BEEP;

(e)   the ISO shall not discriminate between Generating Units, Curtailable Demands and **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;

(f)   Generating Units, Curtailable Demands or **dispatchable** Interconnection schedules shall be 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 dispatching such resources, the ISO is not making any commitment beyond the 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)   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; In the event that the ISO subsequently needs to decrement output, it will initially decrement

the Generating Units or Interconnection schedules incremented

previously, and then continue down the merit order of the

decremental bids; and

(i)   The bid ramp rate of a resource will be considered by the BEEP

Software in determining the amount of Instructed Imbalance

Energy by BEEP Interval, and such consideration may result in

Instructed Imbalance Energy in BEEP Intervals subsequent to the

BEEP Interval to which the Dispatch instruction **Instruction**

applies;-

(j)   **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, subject to hourly pre-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. 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 wil be made to

compensate the interchange for unrecovered costs for the

hour in which it was dispatched.

* * *

SP 11.2   Stacking of the Energy Bids

The sources of Imbalance Energy described in SP 11.1 will be arranged

in order of increasing Energy bid prices to create a merit order stack for

use in accordance with the DP. This merit order stack will be arranged without regard to the source of the Energy bid except that Energy bids associated with Spinning and Non-Spinning Reserve shall not be included in the merit order stack during normal operating conditions if 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. In the event of an unplanned Outage, a Contingency or threatened or actual System Emergency, all Energy bids associated with Spinning and Non-Spinning Reserve may be included in the merit order stack. In the event of Inter-Zonal Congestion, separate merit order stacks will be created for each Zone. The information in the merit order stack shall be provided to the real time dispatcher through the BEEP (Balancing Energy and Ex-Post Pricing) ~~S~~software.

Where, in any ~~Settlement Period~~**BEEP Interval**, the highest decremental Energy Bid in the merit order stack is higher than the lowest incremental Energy Bid, the BEEP ~~S~~software will eliminate the **Price** ~~O~~overlap by ~~determining a target price for~~ **actually dispatching** all those incremental and decremental bids which fall within the overlap. ~~All decremental Energy Bids higher than the target price will be decreased to the target price. All incremental Energy Bids lower than the target price will be increased to the target price.~~

References to incremental Energy Bids include references to Demand reduction bids, and for the purpose of applying this algorithm a reduction in Demand shall be treated as an equivalent increase in Generation.

* * *

SCHEDULES AND BIDS PROTOCOL

SBP 5   ANCILLARY SERVICES

SCs must comply with the ISO Data Templates and Validation Rules document, which contains the format for submission of Ancillary Services schedules and bids. Additionally, SCs should refer to the Ancillary Services bid evaluation and scheduling principles contained in the SP. As also described in the SP, the resources constituting a System Unit which submitted Ancillary Services bids or schedules and which, as a result, has been accepted by the ISO to supply Ancillary Services in a Settlement Period must be disclosed to the ISO one (1) hour prior to the start of the Settlement Period.

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. 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.

SBP 5.1.1   Regulation

SBP 5.1.1.1 Regulation: Generating Units or System Units

Each SC desiring to self-provide Regulation or to participate in the ISO's Regulation auction will submit the following information for each relevant Generating Unit or System Unit for each Settlement Period of the relevant Trading Day:

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

(b)   SC's ID code;

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

(d)   Generating Unit or System Unit ID code;

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

(f)   upward and downward range of Generating Unit or System Unit capacity over which the Generating Unit or System Unit is offering to provide Regulation;

(g)   Generating Unit or System Unit operating limits (high and low MW);

(h)   Generating Unit or System Unit ramp rate (MW/minute); and

(i)   bid price for Regulation capacity ($/MW).; and

(j)   bid price for regulating Energy if called upon ($/MWh) (required for validation bid only).

SBP 5.1.1.2   Regulation: External Imports

Each SC desiring to self-provide Regulation or to participate in the ISO's Regulation auction will submit the following information for each relevant external import for each Settlement Period of the relevant Trading Day:

(a)   type of schedule: (Regulation Ancillary Service);

(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, a "YES" indicates a bid and a "NO" indicates a self-provided schedule;

(j)   in the case of Existing contracts, the applicable contract reference number;

(k)   upward and downward range of System Resource capacity over which the System Resource is offering to provide Regulation;

(l)   System Resource operating limits (high and low MW);

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

(n)   bid price for Regulation capacity ($/MW).; and

(o)   bid price for Regulation Energy if called upon ($/MWh).

SBP 5.1.2   Spinning Reserve

SBP 5.1.2.1   Spinning Reserve: Generating Units or System Units

Each SC desiring to self-provide Spinning Reserve or to participate in the ISO's Spinning Reserve auction will submit the following information for each relevant Generating Unit or System Unit 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)   Generating Unit or System Unit ID code;

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

(f)   Generating Unit or System Unit operating limits (high and low MW);

(g)   Spinning Reserve capacity (MW);

(h)   Generating Unit or System Unit ramp rate (MW/minute); and

(i)   bid price for Spinning Reserve capacity ($/MW).; and

(j)   bid price for Spinning Reserve Energy if called upon ($/MWh).

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); and

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

(n)   bid price for Spinning Reserve Energy if called upon ($/MWh).

SBP 5.1.3   Non-Spinning Reserve

SBP 5.1.3.1   Non-Spinning Reserve: Generating Units or System Units

Each SC desiring to self-provide Non-Spinning Reserve or to participate in the ISO's Non-Spinning Reserve auction will submit the following information for each relevant Generating Unit or System Unit 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)   Generating Unit or System Unit ID code;

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

(f)   time to synchronize following notification (less than ten (10) minutes mandatory);

(g)   Non-Spinning Reserve capacity available within ten (10) minutes following notification (MW);

(h)   Generating Unit or System Unit operating limits (high and low MW);

(i)   Generating Unit or System Unit ramp rate (MW/minute); and

(j)   bid price for Non-Spinning Reserve capacity ($/MW).; and

(k)   bid price for Non-Spinning Reserve Energy if called upon ($/MWh).

SBP 5.1.3.2   Non-Spinning Reserve: Curtailable Demands

Each SC desiring to self-provide Non-Spinning Reserve or to participate in the ISO's Non-Spinning Reserve auction will submit the following information for each relevant Curtailable Demand 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 and Hour-Ahead) and Trading Day;

(d)   available Curtailable Demand ID code;

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

(f)   maximum allocation curtailment duration (hours) (CURT_HR);

(g)   time to interruption following notification (minutes);

(h)   amount of Curtailable Demand that can be interrupted within ten (10) minutes following notification (MW); and

(i)   bid price for Non-Spinning Reserve capacity ($/MW).; and

(j)   bid price for Non-Spinning Reserve Energy if called upon ($/MWh).

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 Energy if called upon ($/MWh).

SBP 5.1.4   Replacement Reserve

SBP 5.1.4.1   Replacement Reserve: Generating Units or System Units

Each SC desiring to self-provide Replacement Reserve or to participate in the ISO's Replacement Reserve auction will submit the following information for each relevant Generating Unit or System Unit 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)   Generating Unit or System Unit ID code;

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

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

(g)   Generating Unit or System Unit operating limits (high and low MW);

(h)   Replacement Reserve capacity available within sixty (60) minutes following notification (MW);

(i)   Generating Unit or System Unit ramp rates (MW/minute); and

(j)   bid price for Replacement Reserve capacity ($/MW).; and

(k)   bid price for Replacement Reserve Energy if called upon ($/MWh).

SBP 5.1.4.2   Replacement Reserve: Curtailable Demands

Each SC desiring to self-provide Replacement Reserve or to participate in the ISO's Replacement Reserve auction will submit the following information for each relevant Curtailable Demand 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)   Curtailable Demand ID code;

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

(f)   maximum allocation curtailment duration (hours) (CURT_HR);

(g)   time to reduction following notification (minutes);

(h)   amount of Curtailable Demand that can be interrupted within sixty (60) minutes following notification (MW);

(i)   Curtailable Demand reduction rate (MW/minute); and

(j)   bid price for Replacement Reserve capacity ($/MW).; and

(k)   bid price for Replacement Reserve Energy if called upon ($/MWh).

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 Energy if called upon ($/MWh).

SBP 5.2   Validation of Ancillary Services Bids

The ISO will verify that each Ancillary Services Schedule or bid conforms to the format specified for the relevant service. If the Ancillary Services Schedule or bid does not so conform, the ISO will send a notification to the SC notifying the SC of the errors in the Schedules and/or bids. SCs will comply with the ISO Data Templates and Validation Rules document, which contains the validation criteria for Ancillary Services Schedules and bids. Shown below are the two stages of validation carried out by the ISO:

SBP 5.2.1   Stage One Validation

During stage one validation, each incoming Ancillary Services schedule or bid will be validated to verify proper content, format and syntax. A technical validation will be performed to verify that a schedule or bid quantity of Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve does not exceed the available capacity for Regulation, Operating Reserves and Replacement Reserve on the Generating Units, System Units, Curtailable Demands and external imports/exports scheduled or bid. The SC will be notified immediately through WEnet of any validation errors. For each error detected, an error message will be generated by the ISO in the SC's notification screen which will specify the nature of the error. The SC can then look at the notification messages to review the detailed list of errors, make changes, and resubmit if it is still within the timing requirements of the SP. The SC is also notified of successful validation via WEnet.

SBP 5.2.2   Stage Two Validation

Stage two validation will be conducted by the ISO in accordance with Appendix E of the ISO Tariff.

SBP 5.2.3   **Validation Checks**

The ISO's stage one validation checks are performed automatically whenever Ancillary Services Schedules and bids are submitted, as described in the SP. The ISO's stage two validation is performed automatically in accordance with the timing requirements described in the SP. A SC can also check whether its Ancillary Services Schedules and bids will pass the ISO's stage two validation by manually initiating validation of its Ancillary Services Schedules and bids, as described in the SP, at any time prior to the deadline for submission of Ancillary Services Schedules and bids. It is a SC's responsibility to perform such checks.

SBP 5.3   **Buy Back of Ancillary Services**

A Scheduling Coordinator who has sold or self-provided Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity to the ISO in the Day-Ahead Market shall be required to replace such capacity to the extent scheduled self-provision is decreased between the Day-Ahead and Hour-Ahead Markets, or to the extent the Ancillary Service associated with a Generating Unit, Curtailable Demand, or System Resoruce successfully bid in a Day-Ahead Ancillary Service Market is reduced in the Hour-Ahead market, for any reason (other than the negligence or willful misconduct of the ISO, or a Scheduing Coordinator's involuntary decrease in such sold capacity or scheduled self-provision on the instruction of the ISO). The price for such replaced Ancillary Service shall be at the Market Clearing Price in the Hour-Ahead Market for the same Settlement Period for the Ancillary Service capacity concerned.

SBP 6   ~~SUPPLEMENTAL~~ **ENERGY BIDS**

~~There is no requirement for~~ SCs to ~~must~~ submit ~~Supplemental~~ Energy ~~B~~bids for resources providing Spinning, Non-Spinning, or Replacement Reserves. The upper portion of the Energy Bid that corresponds to the resource's available capacity up to the highest operating limit, shall be allocated to any awarded or self-provided Ancillary Services in the following order from higher to lower capacity: a) Regulation Up; b) Spinning Reserve; c) Non-Spinning Reserve; and d) Replacement Reserve. For resources providing Regulation Up, the upper regulating limit shall be used if it is lower than the highest operating limit. The remaining portion of the Energy Bid, if there is any, shall constitute Supplemental Energy. Supplemental Energy bids ~~submitted, however,~~ are available to the ISO for procurement and use for Imbalance Energy, additional Voltage Support and Congestion Management in the Real Time Market.

SBP 6.1   **Content of** ~~Supplemental~~ **Energy Bids**

SBP 6.1.1   **Generation Section of** ~~Supplemental~~ **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)   SC's ID code;

(b)   name of Generating Unit;

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

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

(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 ~~Supplemental~~ 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; and

(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 ~~Supplemental~~ 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)   ramp rate (MW/minute); and

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

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

(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 ~~Supplemental~~ Energy Bids

The SC's preferred operating point for each resource must be within the
range of the ~~Supplemental~~ Energy ~~B~~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 ~~Supplemental~~ Energy ~~B~~bids must be in the form of a

monotonically ~~non-de~~increasing staircase function ~~for Generating Units and external imports and a monotonically non-increasing staircase 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 a single ramp rate associated with the

entire MW range. SCs must comply with the ISO Data Templates and Validation Rules document, which contains the format for submission of ~~Supplemental~~ Energy ~~B~~bids.

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

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

SBP 6.4   **Validation of ~~Supplemental~~ Energy Bids**

The ISO will check whether ~~Supplemental~~ Energy ~~B~~bids comply with the format requirements and will notify a SC if its bid does not so comply. A SC can check whether its ~~Supplemental~~ Energy ~~b~~Bids will pass the ISO's validation by manually initiating validation of its ~~Supplemental~~ Energy ~~B~~bids at any time prior to the deadline for submission of ~~Supplemental~~ Energy ~~B~~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 ~~Supplemental~~ Energy ~~B~~bids.

SBP 7   **INTERFACE REQUIREMENTS**

SBP 7.1   **WEnet**

WEnet provides the backbone on which any of three communications mechanisms will be utilized. These are:

(a)   use of a web browser such as Netscape;

(b)   use of File Transfer Protocol (FTP); or

(c)   use of an Application Programming Interface (API).

Details of the technical aspects of each of these mechanisms, including information on how to change mechanisms and back-up procedures for individual SC failures, will be made available by the ISO to SCs on request. It is assumed that each SC has made application for and signed a Scheduling Coordinator Agreement. As such, each SC will already be familiar with and have arranged the mechanism, including security arrangements, by which it will initially communicate with the ISO.

SBP 7.2   **Templates**

The ISO Data Templates and Validation Rules document provides a description of the templates which will be utilized to enter data into the ISO's systems. For each of the three communications mechanisms, data entry is as follows:

(a)   direct entry of data into the template screens through the use of a browser;

(b)   upload of ASCII delimited text through use of an upload button on the template screens which activates the FTP mechanism; or

Attachment H

5.13. Energy Bids

5.13.1. Energy Bid Definition

A single Energy Bid curve per resource per hour shall be used in: (a) the Residual Unit Commitment Process as set forth in Section 5.12, (b) the Real-Time Hourly Pre-Dispatch as set forth in Dispatch Protocol 8.6.4, and (c) the Real-Time Economic Dispatch (10-minute Imbalance Energy market). The energy bid, although different than the Adjustment Bid that may be submitted by resources in the Day-Ahead and Hour-Ahead Congestion Management markets, shall also be a staircase price ($/MWh) versus quantity (MW) curve of up to 10 segments. 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.

5.13.2. Energy Bid Submission

5.13.2.1. Day-Ahead Residual Unit Commitment

Energy Bids shall be submitted for use in the Day-Ahead Residual Unit Commitment Process no later than 30 minutes after the publication of final Day-Ahead Schedules, in accordance with Section 5.12.4. Resources required to offer their Available Generation in accordance with Section 5.11.4 shall be required to submit Energy Bids for all of their Available Generation. In absence of submitted bids, default bids shall be used for resources required to offer their Available Generation in accordance with Section 5.12. Resources not required to offer their Available Generation in accordance with Section 5.11.4 may voluntarily submit Energy Bids. All submitted Energy Bids shall be subject to the Damage Control Bid Cap as set forth in Section 28.1 and to the Mitigation Measures set forth in Appendix A to the Market Monitoring and Information Protocol.

5.13.2.2. Real-Time Market

Energy Bids shall be submitted for use in the Real-Time Hourly Pre-Dispatch in DP 8.6.4(j) and the Real-Time Economic Dispatch up to 45 minutes prior to the Operating Hour. Resources required to offer their Available Generation in accordance with Section 5.11.4 shall be required to submit Energy Bids for all of their Available Generation. In the absence of submitted bids, default bids will be used for resources required to offer their Available Generation in accordance with Section 5.11.4. Resources not required to offer their Available Generation in accordance with Section 5.11.4 may voluntarily submit Energy Bids.

Submitted Energy Bids in the Real-Time Market may not exceed the price of the corresponding Day-Ahead Energy Bids for capacity selected in the Residual Unit Commitment Process. Capacity selected in the Residual Unit Commitment process will be associated with the lowest-priced portion of the Real-time Energy Bid curve.

5.13.2.3. Real-time Energy Bid Partition

The portion of the Energy Bid that corresponds to the high end of the resource's operating range, shall be allocated to any awarded or self-provided Ancillary Services in the following order from higher to lower capacity: (a) Regulation Up; (b) Spinning Reserve; (c) Non-Spinning Reserve; and (d) Replacement Reserve. For resources providing Regulation Up, the upper regulating limit shall be used if it is lower than the highest operating limit. The remaining portion of the Energy Bid (i.e. that portion between capacity selected in the Residual Unit Commitment Process and capacity committed to provide Ancillary Services) shall constitute a Bid to provide Supplemental Energy.