ATTACHMENT B

INDEX

1. DEFINITIONS AND INTERPRETATION.

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2. ISO OPERATIONS.

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2.2.6.4 [Not Used] ~~**Trades between Scheduling Coordinators.** Billing and settling an Inter-Scheduling Coordinator Energy or Ancillary Service Trade shall be done in accordance with the agreements between the parties to the trade. The parties to an Inter-Scheduling Coordinator Energy or Ancillary Service Trade shall notify the ISO, in accordance with the ISO Protocols, of the Zone in which the transaction is deemed to occur, which, for Inter-Scheduling Coordinator Energy Trades, shall be used for the purpose of identifying which Scheduling Coordinator will be responsible for payment of applicable Usage Charges~~;

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2.2.6.8 Annual and Weekly Forecasts. Submitting to the ISO the forecasted**s as provided for in the Demand Forecast Protocol;** ~~weekly peak Demand on the ISO Controlled Grid and the forecasted Generation capacity. The forecasts shall cover a period of twelve (12) months on a rolling basis;~~

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2.2.7.2 [Not Used] ~~**Submitting Balanced Schedules.** A Scheduling Coordinator shall submit to the ISO only Balanced Schedules in the Day-Ahead Market and the Hour-Ahead Market. A Schedule shall be treated as a Balanced Schedule when aggregate Generation, Inter-Scheduling Coordinator Energy Trades (whether purchases or sales), and imports or exports to or from external Control Areas adjusted for Transmission Losses as appropriate, equals aggregate forecast Demand with respect to all entities for which the Scheduling Coordinator schedules in each Zone. If a Scheduling Coordinator~~

~~submits a Schedule that is not a Balanced Schedule, the ISO shall reject that Schedule provided that Scheduling Coordinators shall have an opportunity to validate their Schedules prior to the deadline for submission to the ISO by requesting such validation prior to the applicable deadline.~~

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2.2.8.1 [Not Used] ~~Preferred Schedule.~~ ~~A Preferred Schedule shall be submitted by each Scheduling Coordinator on a daily and/or hourly basis to the ISO. Scheduling Coordinators may also submit to the ISO, Ancillary Services bids in accordance with Section 2.5.10 and, where they elect to self provide Ancillary Services pursuant to Section 2.5.20.1, an Ancillary Service schedule meeting the requirements set forth in Section 2.5.20.6. The Preferred Schedule shall also include an indication of which resources (Generation or Load) if any may be adjusted by the ISO to eliminate Congestion. On receipt of the Preferred Schedule in the Day-Ahead scheduling process, the ISO shall notify the Scheduling Coordinator of any specific Reliability Must-Run Units which have not been included in the Preferred Schedule but which the ISO requires to run in the next Trading Day. The ISO will also notify the Scheduling Coordinator of any Ancillary Services it requires from specific Reliability Must-Run Units under their Reliability Must-Run Contracts in the next Trading Day. If the ISO identifies mismatches in the scheduled quantity or location for any Inter-Scheduling Coordinator Energy Trade, it will notify the Scheduling Coordinators concerned and give them until a specified time, which will allow them approximately one half-hour, in which to modify their Schedules to resolve the mismatch before it applies the provisions of Section 2.2.11.3.4. If the ISO notifies a Scheduling Coordinator that there will be no Congestion on the ISO Controlled Grid and, subject to Section 2.2.11.3.4, the Preferred Schedule shall become that Scheduling Coordinator's Final Schedule.~~

2.2.8.2 [Not Used] ~~Suggested Adjusted Schedules.~~ ~~In the Day-Ahead scheduling process, if the sum of Scheduling Coordinators' Preferred Schedules would cause Congestion across any Inter-Zonal Interface, the ISO shall issue to all Scheduling Coordinators an estimate of the Usage Charges if Congestion is not relieved and Suggested Adjusted Schedules that shall reflect adjustments made by the ISO to each Scheduling Coordinator's Preferred Schedule to eliminate Congestion, based on the~~

~~initial Adjustment Bids submitted in the Preferred Schedules. The ISO will include in the Suggested Adjusted Schedules the resolution of any mismatches in Inter-Scheduling Coordinator Energy Trades, as determined by the ISO.~~

2.2.8.3 [Not Used] ~~**Revised Schedules.** Following receipt of a Suggested Adjusted Schedule, a Scheduling Coordinator may submit to the ISO a Revised Schedule, which shall be a Balanced Schedule, and which shall seek to reduce or eliminate Congestion. If the ISO identifies mismatches in the scheduled quantity or location for any Inter-Scheduling Coordinator Energy Trade, it will notify the Scheduling Coordinators concerned and give them until a specified time, which will allow them approximately one half-hour, in which to modify their Schedules to resolve the mismatch before it applies the provisions of Section 2.2.11.3.4.~~

2.2.8.4 [Not Used] ~~**Final Schedules.** If the ISO notifies a Scheduling Coordinator that there will be no Congestion on the ISO Controlled Grid, the Revised Schedule shall become that Scheduling Coordinator's Final Schedule. If no Scheduling Coordinator submits any changes to the Suggested Adjusted Schedules, all of the Suggested Adjusted Schedules shall become the Final Schedules. The Final Schedules shall serve as the basis for Settlement between the ISO and each Scheduling Coordinator.~~

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2.2.10 [Not Used] ~~**Information to be Provided by the ISO to all Scheduling Coordinfators.**~~

~~By 6:00 p.m. two days prior to a Trading Day, the ISO shall publish on WEnet information, including the following to all Scheduling Coordinators for each Settlement Period of the Trading Day:~~

2.2.10.1 [Not Used] ~~**Scheduled Line Outages.** Scheduled transmission line Outages;~~

2.2.10.2 [Not Used]

2.2.10.3 [Not Used] ~~**Forecast Loop-Flow.** Forecast Loop Flow over ISO Inter-zonal Interfaces and Scheduling Points;~~

2.2.10.4 [Not Used] ~~**Advisory Demand Forecasts.** Advisory Demand Forecasts by location;~~

2.2.10.5 [Not Used]~~**Updated Transmission Loss Factors.** Updated Generation Meter Multipliers reflecting Transmission Losses to be supplied by each Generating Unit and by each import into the ISO Control Area; and~~

2.2.10.6 [Not Used]~~**Ancillary Services.** Expected Ancillary Services requirement by reference to Zones for each of the reserve Ancillary Services.~~

2.2.10.7 [Not Used]

2.2.10.8 [Not Used]

2.2.11 Information to Be Submitted by Scheduling Coordinators to the ISO.

Each Preferred Schedule submitted by a Scheduling Coordinator shall represent its preferred mix of Generation to meet its Demand and account for Transmission Losses and must include the name and identification number of each Eligible Customer for whom a Demand Bid ~~or an Adjustment Bid~~ is submitted, as well as:

2.2.11.1 [Not Used] ~~**For Load:**~~

2.2.11.1.1 [Not Used] ~~**Designated Location Code.** For all Load the Location Code of the Take-Out Point;~~

2.2.11.1.2 [Not Used]~~**Quantity at Take-Out Point.** The aggregate quantity (in MWh) of Demand being served at each Take-Out Point for which a bid has been submitted~~;

2.2.11.1.3 [Not Used]~~**Flexibility.** Whether the Preferred Schedule is flexible for adjustment to eliminate Congestion;~~

2.2.11.1.4 [Not Used]~~**Adjustment Bids.** The MW and $/MWh values representing the Adjustment Bid curve for any Dispatchable Load.~~

2.2.11.2 For Generation:

2.2.11.2.1 [Not Used]~~Location of Generating Units.~~ ~~The Location Code of all Generating Units scheduled, if applicable, or the source Control Area and Scheduling Point;~~

2.2.11.2.2 [Not Used]~~Quantity Scheduled.~~ ~~The aggregate quantity (in MWh) being scheduled from each Generating Unit and System Resource;~~

2.2.11.2.3 [Not Used]~~Notification of Flexibility.~~ ~~Notification of whether the Preferred Schedule is flexible for adjustment to eliminate Congestion~~;

2.2.11.2.4 [Not Used]~~Adjustment Bids.~~ ~~The MW and $/MWh values representing the Adjustment Bid curve for each Generating Unit and System Resource for which an Adjustment Bid has been submitted;~~

2.2.11.2.5 [Not Used]~~Operating Characteristics.~~ ~~Operating characteristics for each Generating Unit and System Resource for which an Adjustment Bid has been submitted; and~~

2.2.11.2.6 Must-Take/Must-Run Generation. Identification of all scheduled Generating Units that are Regulatory Must-Take Generation or Regulatory Must-Run Generation.

2.2.11.3 [Not Used]~~For deliveries to/from other Scheduling Coordinators:~~

2.2.11.3.1 [Not Used]~~Identification Code.~~ ~~Identification Code of Scheduling Coordinator to which Energy is provided or from which Energy is received;~~

2.2.11.3.2 [Not Used]~~Quantity of Energy.~~ ~~Quantity (in MWh) of Energy being received or delivered;~~

2.2.11.3.3 [Not Used]~~Zone.~~ ~~The Zone within which Energy is deemed to be provided by one Scheduling Coordinator to another under the Inter-Scheduling Coordinator Energy Trades.~~

2.2.11.3.4 [Not Used]~~Adjustments.~~ ~~Scheduling Coordinators will have the opportunity to resubmit Preferred Schedules and or Revised Schedules upon notice by the ISO if the ISO determines~~

~~that the quantity or location of the receiving Scheduling Coordinator is not consistent with the quantity or location of the delivering Scheduling Coordinator. If the Scheduling Coordinators involved in a mismatched Inter-Scheduling Coordinator Energy Trade do not submit adjusted Schedules which resolve any mismatch as to quantities and provided that there is no dispute as to whether the mismatched trade occurred or over its location, the ISO will adjust the Schedule containing the higher quantity to match the scheduled quantity of Energy in the other Schedule, except where the Schedule to be reduced contains only Inter-Scheduling Coordinator Energy Trades, in which case the ISO will adjust the other Schedule to match the Schedule containing the higher quantity. If there is a dispute between the Scheduling Coordinators as to whether the Inter-Scheduling Coordinator Energy Trade occurred or over its location, the ISO will remove the disputed trade from the Schedules in which it appears. The ISO will then balance the Schedules which are no longer Balanced Schedules by adjusting resources in the relevant Scheduling Coordinator's portfolio in accordance with the procedures detailed in the ISO Protocols.~~

2.2.11.3.5 **[Not Used]** ~~The Generating Unit or Dispatchable Load that the source or recipient of Energy traded.~~

2.2.11.3.6 **[Not Used]** ~~The MW and $/MWh values representing the Adjustment Bid for any Generating Unit or Dispatchable Load that is the source or recipient of Energy traded.~~

2.2.11.4 **For Self Provided Ancillary Services:** Scheduling Coordinators electing to self provide Ancillary Services shall supply the information referred to in Section 2.5.20.5 in relation to each Ancillary Service to be self provided.

2.2.11.5 **For Interruptible Imports:** the quantity (in MWh) of Energy categorized as Interruptible Imports and whether the Scheduling Coordinator intends to self provide the Operating Reserve required by Section 2.5.3.2 to cover such Interruptible Imports or to purchase such Operating Reserve from the ISO.

2.2.12 Timing of Day-Ahead Scheduling.

2.2.12.1 The ISO may in its sole discretion waive the timing requirements of this Section 2.2 where necessary to preserve System Reliability. The ISO may also waive the timing requirements of Section 2.2 where, because of error or delay, the ISO is unable to meet the timing requirements. Any such waiver shall be published on WEnet.

2.2.12.2 [Not Used] ~~**Reliability Must Run Information.** By no later than two hours before the close of the PX Day-Ahead Market for the Trading Day, the ISO will notify Scheduling Coordinators for Reliability Must-Run Units of the amount and time of Energy requirements from specific Reliability Must-Run Units that the ISO requires to deliver Energy in the Trading Day to the extent that the ISO is aware of such requirements (the "RMR Dispatch Notice"). The Energy to be delivered for each hour of the Trading Day pursuant to the RMR Dispatch Notice (including Energy the RMR Owner is entitled to substitute for Energy from the Reliability Must-Run Unit pursuant to the RMR Contract) shall be referred to as the "RMR Energy".~~

2.2.12.2.1 [Not Used] ~~No later than one hour before the close of the PX Day-Ahead Market for the Trading Day, any RMR Owner receiving an RMR Dispatch Notice as indicated in this Section 2.2.12.2 (the "Applicable RMR Owner") must notify the ISO through the RMR Owner's Scheduling Coordinator (the "Applicable RMR SC"), with regard to each hour of the Trading Day identified in the RMR Dispatch Notice, of, (i) the amount of its obligation to deliver RMR Energy that it intends to satisfy by delivering the RMR Energy pursuant to a market transaction, and receiving only market compensation therefor (the "RMR Market Energy"), and (ii) the amount of its obligation to deliver RMR Energy that it intends to satisfy by delivering the RMR Energy as a contract transaction, and accepting payment under the relevant RMR Contract (the "RMR Contract Energy"). If the Applicable RMR Owner so notifies the ISO by March 1, 2001, for calendar year 2001, and by January 1 of any subsequent calendar year, the RMR Owner may during that calendar year notify the ISO directly of its choice of payment option, rather than through the Applicable RMR Owner's Scheduling Coordinator. If the Applicable RMR Owner elects to provide notice of its choice of payment option directly, the ISO will not accept notice from the Applicable~~

~~RMR Owner's Scheduling Coordinator during the relevant calendar year. Notwithstanding anything to the contrary in any RMR Contract, the Applicable RMR Owner may not elect to satisfy its obligation to deliver the RMR Energy specified in the RMR Dispatch Notice by delivering that RMR Energy pursuant to a transaction in the Real Time Market.~~

2.2.12.2.2 **[Not Used]** ~~***RMR Contract Energy*** -- For each hour specified in the RMR Dispatch Notice, the Applicable RMR Owner shall bid the entire amount of the RMR Contract Energy for that hour into the PX Day-Ahead Market at zero dollars per MWh, unless the Applicable RMR Owner is precluded from bidding into the PX because of law, regulation, the applicable PX rate schedule, or the unavailability of the PX Day-Ahead Market. All RMR Energy delivered under this option shall be deemed delivered under a Nonmarket Transaction for the purposes of the RMR Contract.~~

2.2.12.2.3 **[Not Used]** ~~***RMR Market Energy*** -- For each hour specified in the RMR Dispatch Notice, the Applicable RMR Owner (i) may bid into the PX Day-Ahead Market any amount of the RMR Market Energy for that hour and (ii) may schedule as a bilateral Day-Ahead transaction any amount of RMR Energy for that hour.~~

2.2.12.2.3.1 **[Not Used]**

2.2.12.2.3.1.1 **[Not Used]** ~~The Preferred Day-Ahead Schedule of the Applicable RMR SC shall include as RMR Energy for each hour no less than the sum of the RMR Contract Energy for that hour and the amount of RMR Market Energy scheduled as a bilateral Day-Ahead transaction for that hour, unless the Applicable RMR Owner is required to bid the Contract Energy into the PX Day-Ahead Market and the amount awarded in the PX Day-Ahead Market is less than the amount of the RMR Contract Energy, in which case the Preferred Day-Ahead Schedule shall include the sum of that lesser amount and the amount of RMR Market Energy scheduled as a bilateral Day-Ahead transaction for that hour. If the Preferred Day-Ahead Schedule of the Applicable RMR SC for any hour includes Adjustment Bids for the RMR Unit, the Adjustment Bid shall specify the RMR Energy as the minimum MW output to which the Applicable RMR SC will allow the RMR Unit to be redispatched for that hour.~~

~~Notwithstanding anything to the contrary in the RMR Contract, neither the Applicable RMR Owner nor the Applicable RMR SC shall be entitled to any payment from any source for RMR Energy that is not bid and scheduled as required by this Section 2.2.12.2.2. In the event that the RMR Energy is not delivered, (i) if the RMR Energy had been scheduled, the Applicable RMR Owner shall not be entitled to an Availability Payment under the RMR Contract and the Applicable RMR SC shall pay for the Imbalance Energy necessary to replace that RMR Energy, or (ii) if the RMR Energy had not been scheduled, the Applicable RMR Owner shall not be entitled to an Availability Payment under the RMR Contract and, if the variable costs saved by the Owner's failure to deliver the RMR Energy (which shall be equal to the Variable Cost Payment determined pursuant to Schedule C in the RMR Contract) are greater than the foregone Availability Payment under the RMR Contract, the Applicable RMR Owner shall pay the difference between the variable costs saved and the Availability Payment.~~

2.2.12.2.3.2 **[Not Used]** ~~If the Applicable RMR SC's Preferred Day-Ahead Schedule does not include the entire amount of RMR Energy for any hour, the Applicable RMR Owner shall bid all remaining RMR Energy for that hour, net of any RMR Market Energy the Applicable RMR Owner elects to provide through an Hour-Ahead bilateral transaction for that hour, into the next available PX Market for such hour at zero dollars per MWh.~~

2.2.12.2.3.2.1 **[Not Used]** ~~The Applicable RMR SC's Preferred Hour-Ahead Schedule for each hour shall include all RMR Energy specified in the RMR Dispatch Notice for that hour, except for the amount of RMR Energy that the Applicable RMR Owner was required to bid into the PX Markets under Section 2.2.12.2.3.2 but was not awarded in such PX Markets for such hour. If the Preferred Hour-Ahead Schedule of the Applicable RMR SC for any hour includes Adjustment Bids for the RMR Unit, the Adjustment Bid shall specify the RMR Energy as the minimum MW output to which the Applicable RMR SC will allow the RMR Unit to be redispatched for that hour.~~

2.2.12.2.3.3 **[Not Used]** ~~Whether or not the RMR Energy is in the Final Preferred Schedule, the Applicable RMR Owner must deliver the RMR Energy pursuant to the RMR Dispatch Notice. If the amount of RMR Energy for any hour that is delivered is less than the amount specified for that hour in~~

~~the RMR Dispatch Notice, the RMR Energy delivered shall be deemed RMR Contract Energy in an amount not to exceed the amount that the Applicable RMR Owner elected to deliver as RMR Contract Energy for that hour; the remainder shall be deemed RMR Market Energy. Notwithstanding anything to the contrary in the RMR Contract, neither the Applicable RMR Owner nor the Applicable RMR SC shall be entitled to any payment from any source for RMR Energy that is not bid and scheduled as required by this Section 2.2.12.2. If the amount of RMR Energy for any hour that is bid and scheduled as required by this Section 2.2.12.2 is less than the amount of RMR Energy specified in the RMR Dispatch Notice for that hour, the RMR Energy bid and scheduled as required shall be deemed RMR Contract Energy in an amount not to exceed the amount that the Applicable RMR Owner elected to deliver as RMR Contract Energy; the remainder shall be deemed RMR Market Energy.~~

2.2.12.2.4 [Not Used] ~~If, at any time after two hours before the close of the PX Day-Ahead Market for the Trading Day, the ISO determines that it requires additional Energy from specific Reliability Must-Run Units during the Trading Day, the ISO will notify Scheduling Coordinators for such Reliability Must-Run Units of the amount and time of the additional Energy requirements from such Reliability Must-Run Units (the "Supplemental RMR Dispatch Notice"). No later than one hour before the close of the next PX Market for each hour specified in the Supplemental RMR Dispatch Notice, the Applicable RMR Owner must notify the ISO through the the Applicable RMR SC, with regard to each such hour, of (i) the amount of its obligation to deliver RMR Energy specified in the Supplemental RMR Dispatch Notice that it intends to satisfy by delivering RMR Contract Energy, and (ii) the amount of its obligation to deliver RMR Energy that it intends to satisfy by delivering RMR Market Energy. The Energy specified in the Supplemental Dispatch Notice shall be subject to the same bidding, scheduling, and delivery requirements and pricing provisions specified in this Section 2.2.12.2 as is RMR Energy not included in the Day-Ahead Schedule. If the ISO issues the Supplemental RMR Dispatch Notice less than two hours before the close of the last PX Market for any particular hour of the Trading Day, the Energy specified in the Supplemental Dispatch Notice for such particular hour shall be exempt from the bidding and scheduling requirements and the pricing provisions of this Section 2.2.12.2.~~

2.2.12.3 **[Not Used]** ~~**Non-PX Demand Information.** By 6:00 a.m. on the day preceding the Trading Day, each Scheduling Coordinator (other than the PX) shall provide to the ISO a Demand Forecast specified by UDC Service Area for which it will schedule deliveries for each of the Settlement Periods of the following Trading Day. The ISO shall aggregate the Demand information by UDC Service Area and transmit the aggregate Demand information to each UDC serving such aggregate Demand.~~

2.2.12.4 The Preferred Schedule of each Scheduling Coordinator for the following Trading Day shall be submitted at or prior to 10:00 a.m. on the day preceding the Trading Day together with any **Energy** ~~Adjustment~~ Bids and Ancillary Services bids.

2.2.12.5 In submitting its Preferred Schedule, each Scheduling Coordinator shall notify the ISO of any Generating Units or Dispatchable Loads which are not scheduled but have submitted **Energy** ~~Adjustment~~ Bids and are available for Dispatch at those same **Energy** ~~Adjustment~~ Bids to assist in relieving Congestion.

2.2.12.6 **[Not Used]** ~~**ISO Analysis of Preferred Schedules.** On receipt of the Preferred Schedules, the ISO will analyze the Preferred Schedules of Applicable RMR SCs to determine the compatibility of such Preferred Schedules with the RMR Dispatch Notices. If the ISO identifies mismatches in the scheduled quantity or location for any Inter-Scheduling Coordinator Energy Trade, it will notify the Scheduling Coordinators concerned and give them until a specified time, which will allow them approximately one half-hour, in which to modify their Schedules to resolve the mismatch before it applies the provisions of Section 2.2.11.3.4. The ISO shall analyze the combined Preferred Schedules submitted by all Scheduling Coordinators to forecast the probability of Congestion being caused by the Preferred Schedules. If the ISO finds that the Preferred Schedules will not cause Congestion, and subject to Section 2.2.11.3.4, the Preferred Schedules shall become the Final Schedules and the ISO shall notify Scheduling Coordinators accordingly.~~

2.2.12.7 **[Not Used]** ~~**Issuance of Suggested Adjusted Schedules.** If the ISO finds that the Preferred Schedules would cause Congestion, it shall issue Suggested Adjusted Schedules no later than~~

~~11:00 a.m. on the day preceding the Trading Day. The ISO will include in the Suggested Adjusted Schedules the resolution of any mismatches in Inter-Scheduling Coordinator Energy Trades, as determined by the ISO.~~

2.2.12.8 **[Not Used]** ~~**Submission of Revised Schedules.** If the ISO has issued Suggested Adjusted Schedules, by 12:00 noon on the day preceding the Trading Day, each Scheduling Coordinator may submit a Revised Schedule to the ISO or shall inform the ISO that it does not wish to make any change to its previously submitted Preferred Schedule. If the ISO identifies mismatches in the scheduled quantity or location for any Inter-Scheduling Coordinator Energy Trade, it will notify the Scheduling Coordinators concerned and give them until a specified time, which will allow them approximately one half-hour, in which to modify their Schedules to resolve the mismatch before it applies the provisions of Section 2.2.11.3.4.~~

2.2.12.8.1 **[Not Used]** ~~**Revised Schedules Become Final Day-Ahead Schedules.** Subsequent to receiving Revised Schedules if the ISO identifies no Congestion on the ISO Controlled Grid and subject to Section 2.2.11.3.4, the Revised Schedules and any unamended Preferred Schedules shall become Final Day-Ahead Schedules and the ISO shall notify Scheduling Coordinators accordingly.~~

2.2.12.8.2 **[Not Used]** ~~**Use of Congestion Management for Final Schedule.** Subsequent to receiving Schedules if the ISO identifies Congestion on the ISO Controlled Grid, it shall use the Congestion Management provisions of this ISO Tariff and the ISO Protocols to develop the Final Day-Ahead Schedules.~~

2.2.13 Timing of Hour-Ahead Scheduling.

2.2.13.1 **Submission of Preferred Schedule.** Each Scheduling Coordinator's Preferred Schedule for each Settlement Period during a Trading Day together with any additional or updated ~~Adjustment~~ **Energy** Bids or Ancillary Services ~~B~~**b**ids shall be submitted at least ~~two~~ **one** hour prior to the commencement of that **operating hour** ~~Settlement Period~~.

2.2.13.1.1 [Not Used] ~~**Statements in Preferred Schedule.** In submitting its Preferred Schedule, each Scheduling Coordinator may submit Bids for use in the Hour-Ahead Market to assist in relieving Congestion.~~

2.2.13.1.2 [Not Used] ~~**Final Hour-Ahead Schedule Submission.** Each Hour-Ahead Schedule shall indicate the changes which the relevant Scheduling Coordinator wishes to make to the Final Day-Ahead Schedule.~~

2.2.13.2 [Not Used] ~~**ISO Analysis of Preferred Schedules.** The ISO shall analyze the combined Preferred Schedules submitted by all Scheduling Coordinators to forecast the probability of Congestion being caused by the Preferred Schedules.~~

2.2.13.2.1 [Not Used] ~~**Preferred Schedules Become Final Hour-Ahead Schedules.** If the ISO identifies no Congestion on the ISO Controlled Grid, the Preferred Schedules shall become Final Hour-Ahead Schedules and the ISO shall notify Scheduling Coordinators accordingly.~~

2.2.13.2.2 [Not Used] ~~**Congestion Management Provisions for Final Hour Ahead Schedules.** If the ISO identifies Congestion, it shall use the Congestion Management provisions of Section 7.2 of this ISO Tariff and the ISO Scheduling Protocol to develop the Final Hour-Ahead Schedules.~~

2.2.13.2.3 ~~**Unscheduled Demand.**~~[Not Used]

2.2.13.2.3.1 [Not Used].~~**Penalty on Unscheduled Demand.** Any Scheduling Coordinator whose total metered Demand in a Zone in a Settlement Period exceeds the total Demand reflected in its Final Hour-Ahead Schedule by more than five (5) percent of such metered Demand shall pay the penalty set forth in Section 2.2.13.2.3.2 for each MWh of the excess, unless the Scheduling Coordinator's metered Demand is less than 200 MW, in which case the Scheduling Coordinator shall pay the penalty to the extent its metered Demand exceeds the Demand in its Final Hour-Ahead Schedule by more than ten (10) MWh.~~

2.2.13.2.3.2 [Not Used]~~**Amount of Penalty.** For each MW of unscheduled Demand subject to penalty as determined in accordance with Section 2.2.13.2.3.1, a Scheduling Coordinator shall pay a~~

~~penalty equal to the lesser of: (a) two times the Market Clearing Price of Imbalance Energy; and (b) $100; but no less than $0. This penalty shall be payable in addition to any amounts payable for the purchase of Imbalance Energy.~~

2.2.13.2.3.3 **[Not Used]** ~~**Allocation of Penalty Revenues.** The revenues received by the ISO through the payment of the penalties described in Section 2.2.13.2.3.2 will be allocated in proportion to metered Demand to those Scheduling Coordinators who do not incur penalties under Section 2.2.13.2.3.1 for the Settlement Period with respect to which the charges were assessed.~~

2.2.13.3 **Final Hour-Ahead Schedules.** The ISO shall inform each Scheduling Coordinator of its responsibilities to provide Ancillary Services in accordance with Section 2.5.21. Not later than thirty (30) minutes before the commencement of each Settlement Period, the ISO shall provide each Scheduling Coordinator with the Final Schedule for that Settlement Period. Each Final Schedule shall ~~be a Balanced Schedule and~~ contain the following information:

2.2.13.3.1 **Generation.**

2.2.13.3.1.1 Name and identification number of each Participating Generator appearing in the Final Schedule;

2.2.13.3.1.2 Location Code of each Generating Unit, System Resource and Scheduling Point;

2.2.13.3.1.3 The ~~changes in~~ final scheduled quantity (in MWh) for each such Generating Unit~~,~~ or System Resource ~~and scheduled vltage~~;

2.2.13.3.1.4 Notification if the scheduled Generation was adjusted ~~to resolve Congestion; and~~.

2.2.13.3.1.5 [Not Used]

2.2.13.3.2 **Load**

2.2.13.3.2.1 For each Load where a Demand Bid has been submitted, the Load Aggregation Point;

2.2.13.3.2.2 **Final Scheduled Quantity.** Final scheduled quantity (in MWh) of Demand; and

2.2.13.3.2.3 Notification of Adjustment. Notification if the scheduled Demand was adjusted ~~to resolve Congestion~~.

2.2.13.4 [Not Used] ~~Usage Charges.~~ ~~The ISO shall notify each Scheduling Coordinator of the applicable Usage Charge calculated in accordance with Section 7.3.~~

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2.3 System Operations under Normal and Emergency Operating Conditions.

2.3.1 ISO Control Center Operations.

2.3.1.1 ISO Control Center.

2.3.1.1.1 Establish ISO Control Center. The ISO shall establish a WSCC approved Control Area and control center to direct the operation of all facilities forming part of the ISO Controlled Grid, Reliability Must-Run Units and Generating Units providing **Energy and** Ancillary Services.

2.3.1.1.2 Establish Back-up Control Facility. The ISO shall establish back-up control facilities remote from the ISO Control Center sufficient to enable the ISO to continue to direct the operation of the ISO Controlled Grid, Reliability Must-Run Units and Generating Units providing **Energy and** Ancillary Services in the event of the ISO Control Center becoming inoperable.

2.3.1.1.3 ISO Control Center Authorities. The ISO shall have full authority, subject to Section 2.3.1.2 to direct the operation of the facilities referred to in Section 2.3.1.1.2 including (without limitation), to:

(a) direct the physical operation by the Participating TOs of transmission facilities under the Operational Control of the ISO, including (without limitation) circuit breakers, switches, voltage control equipment, protective relays, metering, and Load Shedding equipment;

(b) commit and dispatch **designated Capacity Resources and** Reliability Must-Run Units;

(c) order a change in operating status of auxiliary equipment required to control voltage or frequency;

(d) take any action it considers to be necessary consistent with Good Utility Practice to protect against uncontrolled losses of Load or Generation and/or equipment damage resulting from unforeseen occurrences;

(e) control the output of Generating Units that are selected to provide Ancillary Services and ~~Imbalance~~Energy;

(f) dispatch Loads through direct Load control or other means at the ISO's discretion that are curtailable as an Ancillary Service; and

(g) procure Supplemental Energy.

2.3.1.1.4 Coordination and Approval for Outages. The ISO shall have authority to coordinate and approve Outages and returns to service of all facilities comprised in the ISO Controlled Grid and Reliability Must-Run Units in accordance with Section 2.3.3.

2.3.1.1.5 Responsibility for Authorized Work on Facilities. The ISO shall have authority to approve requests by Participating TOs to work on all energized transmission equipment under the Operational Control of the ISO.

2.3.1.1.6 The ISO shall be the WSCC security coordinator for the ISO Controlled Grid.

2.3.1.2 Market Participant Responsibilities.

2.3.1.2.1 Comply with Operating Orders Issued. With respect to this Section 2.3.1.2, all Market Participants within the ISO Control Area **and all System Resources** shall comply fully and promptly with the ISO's operating orders, unless such operation would impair public health or safety. **In this regard, Final Hour-Ahead Schedules for Energy for Generating Units, System Resources, System Units and Dispatchable Loads are deemed to be operating orders. As such these Schedules are binding obligations and must be fulfilled unless otherwise directed by the ISO.**

Any Hour-Ahead Ancillary Services Schedule or Supplementary Energy Bid is a binding obligation, and a resource so scheduled or bid cannot be made unavailable or otherwise fail to respond to ISO operating orders except for conditions beyond the control of the resource owner. Any Day-Ahead commitment of a resource, either self-scheduled or committed in an ISO Energy market or through an ISO Residual Unit Commitment Process is a binding obligation, and such resource cannot be de-committed or otherwise made unavailable except for conditions beyond the control of the resource owner or as approved by the ISO. For this purpose ISO operating orders to shed Load shall not be considered as an impairment to public health or safety.

* * *

2.3.2.3.2 Before any such intervention the ISO must ~~(in the following order)~~: (a) dispatch all scheduled Generation and all other Generation offered or available to it regardless of price (including all ~~Adjustment Bids, Supplemental~~ Energy bids **and** Ancillary Services and ~~reserves~~); (b) dispatch all interruptible loads made available by UDCs to the ISO in accordance with the relevant agreements with UDCs; (c) dispatch or curtail all price-responsive Demand that has been bid into any of the markets and exercise its rights under all load curtailment contracts available to it; (d) exercise Load Shedding to curtail Demand on an involuntary basis to the extent that the ISO considers necessary.

2.3.2.3.3 The Administrative Price in relation to each of the markets for Imbalance Energy and Ancillary Services shall be set at the applicable **Locational Marginal Price or Ancillary Services Marginal Price** ~~Market Clearing Price~~ in the Settlement Period immediately preceding the Settlement Period in which the intervention took place. When Administrative Prices are imposed, ~~Inter-Zonal~~ Congestion will be managed in accordance with DP 8.5 of the Dispatch Protocol.

* * *

2.3.2.8.2 Load Curtailment. A Scheduling Coordinator may specify that Loads will be reduced at specified Market Clearing Prices or offer the right to exercise Load curtailment to the ISO as an Ancillary Service or utilize Load curtailment itself (by way of self provision of Ancillary Services) as Non-Spinning

Reserve ~~or Replacement Reserve~~. The ISO, at its discretion, may require direct control over such Curtailable Demand to assume response capability for managing System Emergencies. However, non-firm Loads shall not be eligible to provide Curtailable Demand if they are receiving incentives for interruption under existing programs approved by a Local Regulatory Authority, unless: a) participation in the ISO's Ancillary Services markets is specifically authorized by such Local Regulatory Authority, and b) there exist no contingencies on the availability, nor any unmitigated incentives encouraging prior curtailment, of such interruptible Load for Dispatch as Curtailable Demand as a result of the operation of such existing program. The ISO may establish standards for automatic communication of curtailment instructions to implement Load curtailment as a condition for accepting any offered Curtailable Demand as an Ancillary Service.

* * *

2.3.2.9.3 Imposing Sanctions. If the ISO finds that the operation and maintenance practices of any Participating TOs, Participating Generators, Eligible Customers, or UDCs prolonged the response time or contributed to the Outage, the ISO may impose sanctions on the responsible Participating TOs, Participating Generators, Eligible Customers, or UDCs provided that no sanction shall be imposed in respect of actions taken in compliance with the ISO's instructions or pursuant to a Remedial Action Scheme. The ISO shall develop and file with FERC a schedule of such sanctions. Any dispute concerning whether sanctions should be imposed under this Section shall be resolved through the ISO ADR Procedures. The schedule of sanctions filed with FERC (including categories and levels of sanctions) shall not be subject to the ISO ADR Procedures. The ISO shall publish on the ISO Home Page~~t~~ details of all instances in which a sanction has been imposed.

* * *

2.3.3.5.3 Where, in the reasonable opinion of the ISO Outage Coordination Office, the requested Maintenance Outage or requested change to an Approved Maintenance Outage is likely to have a detrimental effect on the efficient use and reliable operation of the ISO Controlled Grid **or the adequacy**

of reserves in the ISO Control Area, the ISO Outage Coordination Office may reject the requested Maintenance Outage or requested change to Approved Maintenance Outage. The determination of the ISO Outage Coordination Office shall be final and binding on the Operator. If, within fourteen (14) days of having made its determination, the Operator requests the ISO Outage Coordination Office to provide reasons for its determination, it shall do so as soon as is reasonably practicable. The ISO will give reasons for informational purposes only and without affecting in any way the finality or validity of the determination.

* * *

2.3.3.9.5 Within forty-eight (48) hours of the commencement of a Forced Outage, the Operator shall provide to the ISO an explanation of the Forced Outage, including a description of the equipment failure or other cause and a description of all remedial actions taken by the Operator. Upon request of the ISO, Operators, and where applicable, Eligible Customers, Scheduling Coordinators, UDCs and MSSs promptly shall provide information requested by the ISO to enable the ISO to review the explanation submitted by the Operator and to prepare reports on Forced Outages. If the ISO determines that any Forced Outage may have been the result of gaming or other questionable behavior by the Operator, the ISO shall submit a report describing the basis for its determination to the FERC. The ISO shall consider the following factors when evaluating the Forced Outage to determine if the Forced Outage was the result of gaming or other questionable behavior by the operator: 1) if the Forced Outage coincided with certain market conditions such that the Forced Outage may have influenced market prices or the cost of payments associated with **Exceptional** ~~out-of-sequence dispatches, out-of-market~~ **D**~~d~~ispatches, or **other** Real Time Market ~~dispatches~~Dispatches; 2) if the Forced Outage coincided with a change in the bids submitted for any units or resources controlled by the Operator or the Operator's Scheduling Coordinator; 3) if the ISO had recently rejected a request for an outage for, or to shut down, the Generating Unit experiencing the Forced Outage; 4) if the timing or content of the notice of the Forced Outage provided to the ISO was inconsistent with subsequent reports of or the actual cause of the outage; 5) if the Forced Outage or the duration of the Forced Outage was inconsistent with the

history or past performance of that Generating Unit or similar Generating Units; 6) if the Forced Outage created or exacerbated congestion; 7) if the Forced Outage was extended with little or no notice; 8) if the Operator had other alternatives to resolve the problems leading to the Forced Outage; 9) if the Operator took reasonable action to minimize the duration of the Forced Outage; or 10) if the Operator failed to provide the ISO an explanation of the Forced Outage within forty-eight (48) hours or failed to provide any additional information or access to the generating facility requested by the ISO within a reasonable time.

* * *

2.3.4 Management of Overgeneration Conditions.

The ISO shall use default Energy Bids as set forth in Section 31.2.3.1.4.2 in SCUC to adjust Schedules to manage Overgeneration in the Day-Ahead and Hour-Ahead Energy Markets. ~~The ISO's management of overgeneration relates only to real time.~~ Overgeneration in real time will be mitigated by the ISO as follows; provided that the ISO operator will have the discretion, if necessary to avoid a system emergency, to eliminate one or more of the following steps.

* * *

2.3.4.3 In addition to the action taken under 2.3.4.2, the ISO will, if it considers it necessary to maintain the reliable operation of the ISO Control Area, offer Energy for sale on behalf of Scheduling Coordinators to adjacent Control Area operators at the ~~estimated~~ **Dispatch Interval Locational Marginal Price** ~~BEEP Interval Ex Post Price~~ or, if the ISO considers it necessary, at a price established by the ISO on behalf of Scheduling Coordinators, to be paid to adjacent Control Area operators.

* * *

2.3.5.1.3 If the forecast shows that the applicable WSCC/NERC Reliability Criteria cannot be met during peak Load periods, then the ISO shall facilitate the development of market mechanisms to bring the ISO Controlled Grid during peak periods into compliance with the Applicable Reliability Criteria (or such more stringent criteria as the ISO may impose pursuant to Section 2.3.1.3.2). The ISO shall solicit

bids for ~~Replacement R~~reserves in the form of Ancillary Services, short-term Generation supply contracts of up to one (1) year with Generators, and Load curtailment contracts giving the ISO the right to reduce the Loads of those parties that win the contracts when there is insufficient Generation capacity to satisfy those Loads in addition to all other Loads. The curtailment contracts shall provide that the ISO's curtailment rights can only be exercised after all available Generation capacity has been fully utilized unless the exercise of such rights would allow the ISO to satisfy the Applicable Reliability Criteria at lower cost, and the curtailment rights shall not be exercised to stabilize or otherwise influence prices for power in the Energy markets.

2.3.5.1.4 If ~~Replacement R~~reserves, short-term Generation supply contracts or curtailment contracts are required to meet Applicable Reliability Criteria, the ISO shall select the bids that permit the satisfaction of those Applicable Reliability Criteria at the lowest cost.

* * *

2.3.5.1.9 Costs incurred by the ISO pursuant to any contract entered into under this Section 2.3.5.1 for resources to meet any portion of the anticipated difference between forward schedules and the real-time deviations from those schedules shall be charged to each Scheduling Coordinator **the same way Residual Unit Commitment costs are allocated as set forth in Section 5.12.8.** ~~pro rata based upon the same proportion as the Scheduling Coordinator's obligation for deviation Replacement Reserve in the hour, determined in accordance with Section 2.5.28.4 bears to the total deviation Replacement Reserve in that hour.~~

* * *

2.4.4.4.4.1 The holders of Existing Rights **shall not be charged the Locational Marginal Price at the Sink or paid the Locational Marginal Price at the Source for their Final Day-Ahead or Final Hour-Ahead Energy Schedules associated with Existing Rights**.~~will not be responsible for paying Usage Charges related to those rights, nor will they be entitled to receive Usage Charge revenues related to those rights.~~

* * *

2.5 Ancillary Services.

2.5.1 Scope.

The ISO shall be responsible for ensuring that there are sufficient Ancillary Services available to maintain the reliability of the ISO Controlled Grid consistent with WSCC and NERC criteria. The ISO's Ancillary Services requirements may be self provided by Scheduling Coordinators. Those Ancillary Services which the ISO requires to be available but which are not being self provided will be competitively procured by the ISO from Scheduling Coordinators in the Day-Ahead Market, Hour-Ahead Market and in real time or by longer term contracts. The ISO will manage both ISO procured and self provided Ancillary Services as part of the real time dispatch. The ISO will calculate payments for Ancillary Services to Scheduling Coordinators and charge the cost to Scheduling Coordinators.

For purposes of this ISO Tariff, Ancillary Services are: (i) Regulation, (ii) Spinning Reserve, (iii) Non-Spinning Reserve, (iv) ~~Replacement Reserve, (v)~~ Voltage Support, and (~~vi~~) Black Start capability. Bids for Non-Spinning Reserve and Replacement Reserve may be submitted by the Demand-side as well as by owners of Generation. Identification of specific services in this ISO Tariff shall not preclude development of additional interconnected operation services over time. The ISO and Market Participants will seek to develop additional categories of these unbundled services over time as the operation of the ISO Controlled Grid matures.

2.5.2 Ancillary Services Standards.

All Ancillary Services shall meet the ISO's Ancillary Services standards.

2.5.2.1 Determination of Ancillary Service Standards. The ISO shall set the required standard for each Ancillary Service necessary to maintain the reliable operation of the ISO Controlled Grid. Ancillary Services standards shall be based on WSCC Minimum Operating Reliability Criteria (MORC) and ISO

Controlled Grid reliability requirements. The ISO Grid Operations Committee, in conjunction with the relevant reliability council (WSCC), shall develop these Ancillary Services standards to determine reasonableness, cost effectiveness, and adherence to national and WSCC standards. The standards developed by the ISO shall be used as a basis for determining the quantity and type of each Ancillary Service which the ISO requires to be available.

2.5.2.2 Time-frame For Revising Ancillary Service Standards. The ISO Technical Advisory Committee shall periodically undertake a review of the ISO Controlled Grid operation to determine any revision to the Ancillary Services standards to be used in the ISO Control Area. At a minimum the ISO Grid Operations Committee shall conduct such reviews to accommodate revisions to WSCC and NERC standards. The ISO may adjust the Ancillary Services standards temporarily to take into account, among other things variations in system conditions, real time dispatch constraints, contingencies, and voltage and dynamic stability assessments. Where practicable, the ISO will provide notice, via the ISO Home Page, of any temporary adjustments to Ancillary Service standards **as set forth in Scheduling Protocol Section 3.2.1** ~~by 6:00 p.m. two days ahead of the Trading Day to which the adjustment will apply~~.

2.5.3 Quantities of Ancillary Services Required.

For each of the Ancillary Services, the ISO shall determine the quantity and **Ancillary Service Region** ~~and location~~ of the Ancillary Service which is required and which must be under the direct Dispatch control of the ISO on an hourly basis each day. The ISO shall determine the quantities it requires as follows:

2.5.3.1 Regulation Service. The ISO shall maintain sufficient Generating Units immediately responsive to AGC in order to provide sufficient Regulation service to allow the system to meet WSCC and NERC criteria.

2.5.3.2 Spinning And Non-Spinning Reserves. The ISO shall maintain minimum contingency Operating Reserve made up of Spinning Reserve and Non-Spinning Reserve in accordance with WSCC MORC criteria equal to (a) 5% of the Demand to be met by Generation from hydroelectric resources plus 7% of the Demand to be met by Generation from other resources, or (b) the single largest Contingency, if this is greater or (c) by reference to such more stringent criteria as the ISO may determine from time to time. When the level of Operating Reserve is determined by Demand, the ISO shall not maintain Operating Reserve with respect to Demand covered by firm purchases from outside the ISO Control Area. In addition, the ISO shall maintain Operating Reserve equal to the total amount of Interruptible Imports scheduled by Scheduling Coordinators for any hour. Such additional Operating Reserve must either be self-provided or purchased from the ISO by Scheduling Coordinators. To the extent such additional Operating Reserve is self-provided by a Scheduling Coordinator, it may consist entirely of Non-Spinning Reserve. To the extent that such additional Operating Reserve is not self-provided by a Scheduling Coordinator, the ISO will procure the necessary amounts of Operating Reserve, but not necessarily entirely from Non-Spinning Reserves.

2.5.3.3 [Not Used] ~~**Replacement Reserve.** The ISO shall make its determination of the required quantity of Replacement Reserve based on:~~

~~(a) historical analysis of the deviation between actual and Day-Ahead forecast Demand,~~

~~(b) historical patterns of unplanned Generating Unit Outages,~~

~~(c) historical patterns of shortfalls between Final Day-Ahead Schedules and actual Generation and Demand,~~

~~(d) historical patterns of unexpected transmission Outages, and~~

~~(e) such other factors affecting the ability of the ISO to maintain System Reliability as the ISO may from time to time determine.~~

~~The ISO shall have discretion to determine the quantity of Replacement Reserve it requires in each Zone.~~

2.5.3.4 Voltage Support.

The ISO shall determine on an hourly basis for each day the quantity and location of Voltage Support required to maintain voltage levels and reactive margins within WSCC and NERC criteria using a power flow study based on the quantity and location of scheduled Demand. The ISO shall issue daily voltage schedules, which are required to be maintained for ISO Controlled Grid reliability. All other Generating Units shall comply with the power factor requirements set forth in contractual arrangements in effect on the ISO Operations Date, or, if no such contractual arrangements exist and the Generating Unit exists within the system of a Participating TO, the power factor requirements applicable under the Participating TO's TO Tariff or other tariff on file with the FERC.

All Participating Generators shall maintain the ISO specified voltage schedule at the transmission interconnection points to the extent possible while operating within the power factor range specified in their interconnection agreements or, for Regulatory Must-Take Generation, Regulatory Must-Run Generation and Reliability Must-Run Generation consistent with existing obligations. For Generating Units, that do not operate under one of these agreements, the minimum power factor range will be within a band of 0.90 lag (producing VARs) and 0.95 lead (absorbing VARs) power factors. Participating Generators with Generating Units existing at the ISO Operations Date that are unable to meet this operating power factor requirement may apply to the ISO for an exemption. Prior to granting such an exemption, the ISO shall require the Participating TO or UDC to whose system the relevant Generating Units are interconnected to notify it of the existing contractual requirements for voltage support established prior to the ISO Operations Date for such Generating Units. Such requirements may be contained in CPUC Electric Rule 21 or the Interconnection Agreement with the Participating TO or UDC. The ISO shall not grant any exemption under this Section from such existing contractual

requirements. The ISO shall be entitled to instruct Participating Generators to operate their Generating Units at specified points within their power factor ranges. Generators shall receive no compensation for operating within these specified ranges.

If the ISO requires additional Voltage Support, it shall procure this either through Reliability Must-Run Contracts **or Capacity Resources** or, if no other more economic sources are available by instructing a Generating Unit to move its MVar output outside its mandatory range. Only if the Generating Unit must reduce its MW output in order to comply with such an instruction will it be compensated in accordance with Section 2.5.18.

All Loads directly connected to the ISO Controlled Grid shall maintain reactive flow at grid interface points within a specified power factor band of 0.97 lag to 0.99 lead. Loads shall not be compensated for the service of maintaining the power factor at required levels within the bandwidth. A UDC interconnecting with the ISO Controlled Grid at any point other than a Scheduling Point shall be subject to the same power factor requirement.

The power factor for both the Generating Units and Loads shall be measured at the interconnection point with the ISO Controlled Grid. The ISO will develop and will be authorized to levy penalties against Participating Generators, UDCs or Loads whose Voltage Support does not comply with the ISO's requirements. The ISO will establish voltage control standards with UDCs and the operators of other Control Areas and will enter into operational agreements providing for the coordination of actions in the event of a voltage problem occurring.

Wheeling Through and Wheeling Out transactions may also be subject to a reactive charge as developed by the ISO. If the ISO shall determine that a reactive charge should be payable at a future date, it shall, subject to FERC acceptance and approval, publish annually the Voltage Support obligations and applicable charges for Wheeling Through and Wheeling Out transactions at Scheduling

Points. The obligations shall be predetermined by the ISO based on the estimated amount of the Wheeling Through and Wheeling Out transactions each year.

2.5.3.5 Black Start Capability. The ISO shall determine the amount and location of Black Start Generation it requires through contingency studies that are used as the basis of the ISO's emergency plans. The studies shall specify:

(a) the initiating disturbance;

(b) the magnitude of the Outage, including the extent of the Outage (local area, ISO Controlled Grid, or WSCC), the assumed status of Generation after the initiating disturbance, the status of interconnections, the system load level at the time of the disturbance, the interconnection support, and assumptions regarding the availability of support from other utilities to help restore Generation and Demand;

(c) the Generator performance including a percentage of Black Start units (to be determined by the ISO) which are expected to fail to start, and

(d) expected transmission system damage.

The ISO shall also specify the following load restoration performance goals:

(i) Black Start unit start-up and connection times;

(ii) ISO Controlled Grid restoration times; and

(iii) load restoration times.

Scheduling Coordinators shall provide the ISO with their load restoration time requirements for any Loads that provide emergency services.

2.5.3.6 The ISO, whenever possible, will increase its purchases of an Ancillary Service that can substitute for another Ancillary Service, when doing so is expected to reduce its total cost of procuring

Ancillary Services while meeting reliability requirements. The ISO will make such adjustments in accordance with the following principles:

(a) The Regulation requirement must be satisfied by Regulation bids from Resources qualified to provide Regulation;

(b) Additional Regulation capacity can be used to satisfy requirements for any type of reserves (Spinning Reserve **or** Non-Spinning Reserve ~~or Replacement Reserve~~);

(c) Regulation and Spinning Reserve requirements must be satisfied by the combination of Regulation and Spinning Reserve bids;

(d) Additional Regulation and Spinning Reserve capacity can be used to satisfy requirements for Non-Spinning ~~and Replacement~~ Reserve~~, except that any Spinning Reserve capacity that 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 cannot be used to satisfy requirements for Replacement Reserve~~;

(e) Regulation, Spinning Reserve, Non-Spinning Reserve requirements must be satisfied by the combination of Regulation, Spinning Reserve and Non-Spinning Reserve bids;

(f) ~~Additional Regulation, Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve capacity can be used to satisfy requirements for Replacement Reserve except that any Spinning and Non-Spinning Reserve capacity that 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 cannot be used to satisfy requirements for Replacement Reserve;~~

~~(fg)~~ Total MW purchased from the Regulation, Spinning Reserve and, Non-Spinning Reserve~~, and Replacement Reserve~~ markets will not be changed by this Section 2.5.3.6; and

(g~~h~~) All quantities of Ancillary Services so procured must be non-negative.

2.5.4 Locational Quantities of Ancillary Services.

For each of the Ancillary Services, the ISO shall determine the required locational dispersion in accordance with ISO Controlled Grid reliability requirements. **The designation of Ancillary Service Regions shall reflect the required locational dispersion.** These standards shall be used as guidance only. The actual location of Ancillary Services on a daily and hourly basis shall depend on the locational spread of Demand within the ISO Control Area, the Available Transmission Capacity, the locational mix of Generation, and historical patterns of transmission and Generation availability.

2.5.4.1 Black Start Units.

(a) must be located in the ISO Control Area;

(b) may be located anywhere in the ISO Control Area provided that the Black Start resource is capable of meeting the ISO performance requirements for starting and interconnection to the ISO Controlled Grid; but

(c) must be dispersed throughout the ISO Control Area.

2.5.5 Time-frame For Contracting for Ancillary Services.

The ISO shall procure on a daily and hourly basis, each day, Regulation, Spinning **and,** Non-Spinning ~~and Replacement~~ Reserves. The ISO shall procure reserves~~Replacement Reserve~~ on a longer term basis pursuant to Section 2.3.5.1.3 if necessary to meet reliability criteria. The ISO Governing Board must approve all long term reserve~~Replacement Reserve~~ contracts. The ISO shall contract for Voltage Support annually (or for such other period as the ISO may determine is economically advantageous) and on a daily or hourly basis as required to maintain System Reliability. The ISO shall contract annually (or for such other period as the ISO may determine is economically advantageous) for Black Start Generation.

2.5.6 Technical Requirements for Providing Ancillary Services.

All Generating Units, System Units, Loads and System Resources providing Ancillary Services shall comply with the technical requirements set out in Sections 2.5.6.1 to 2.5.6.4 below relating to their operating capabilities, communication capabilities and metering infrastructure. No Scheduling Coordinator shall be permitted to submit a bid to the ISO for the provision of an Ancillary Service from a Generating Unit, System Unit, Load or System Resource, or to submit a schedule for self provision of an Ancillary Service from that Generating Unit, System Unit, Load or System Resource, unless the Scheduling Coordinator is in possession of a current certificate issued by the ISO confirming that the Generating Unit, System Unit, Load or System Resource complies with the ISO's technical requirements for providing the Ancillary Service concerned. Scheduling Coordinators can apply for Ancillary Services certificates in accordance with the ISO's Protocols for considering and processing such applications. The ISO shall have the right to inspect Generating Units, Loads or the individual resources comprising System Units and other equipment for the purposes of the issue of a certificate and periodically thereafter to satisfy itself that its technical requirements continue to be met. If at any time the ISO's technical requirements arenot being met, the ISO may withdraw the certificate for the Generating Unit, System Unit, Load or System Resource concerned.

2.5.6.1 Operating Characteristics Required to Provide Ancillary Services. Each Generating Unit, System Unit, Load or System Resource which a Scheduling Coordinator wishes to schedule or bid to provide Ancillary Services must comply with the requirements for the specific Ancillary Service in regard to the following:

(a) ramp rate increase and decrease **over the operating range of the resource** (MW/minute);

(b) power factor (leading and lagging) as required by Section 2.5.3.4;

(c) maximum output (real and reactive), except that System Resources shall be required to comply only with the requirement for maximum real power;

(d) minimum output (real and reactive), except that System Resources shall be required to comply only with the requirement for minimum real power;

(e) AGC capability, control scheme, and range; and

(f) minimum length of time the resource can be available to provide the relevant Ancillary Service.

The ISO will **specify** ~~differentiate~~ the operating characteristics **necessary to provide each Ancillary Service in the Ancillary Services Requirements Protocol**.~~according to the Ancillary Service being provided~~.

* * *

2.5.7.2 ~~Usage Charge in~~ Accounting for Congestion in Ancillary Service Bid Evaluation.

~~As of the ISO Operations Date, T~~the ISO will **account for Congestion** ~~not incorporate forecast Usage Charges into~~ **in** its Ancillary Service bid evaluations **as set forth in Section 31.2.3.1.4.4** ~~the means to evaluate Ancillary Service bids across Zones when Congestion is present~~.

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2.5.7.4.2 Scheduling Coordinators may bid or self-provide external imports of Spinning Reserve or~~,~~ Non-Spinning Reserve ~~or Replacement Reserve~~ from resources located outside the ISO Control Area, where technically feasible and consistent with WSCC criteria; and provided that such Scheduling Coordinators have certified to the ISO their ability to deliver the service to the point of interchange with the ISO Control Area (including with respect to their ability to make changes, or cause such changes to be made, to interchange schedules during any interval of a Settlement Period at the discretion of the ISO).

* * *

2.5.9 Provision of System Information to Scheduling Coordinators.

By 6:00 p.m. two days prior to the Trading Day, the ISO shall make available to Scheduling Coordinators general system information including those items of information set forth in Section **31.1** ~~2.2.10~~. This information shall be provided at the same time as the ISO provides general system information to all Scheduling Coordinators wishing to schedule power on the ISO Controlled Grid.

2.5.10 Time Frame for Submitting And Evaluating Bids.

2.5.10.1 Day-Ahead Auction. Bids for the ISO's Day-Ahead Regulation, Spinning Reserve **and**~~,~~ Non-Spinning Reserve ~~and Replacement Reserve~~ service market must be received by 10:00 am on the day prior to the Trading Day. The bids shall include information for each ~~of the twenty-four (24)~~ Settlement Periods of the Trading Day. Failure to provide the information within the stated time frame shall result in the bids being declared invalid by the ISO.

2.5.10.2 Hour-Ahead Auction. Bids for the ISO's Hour-Ahead Regulation, Spinning Reserve **and**~~,~~ Non-Spinning Reserve ~~and Replacement Reserve~~ service market for each Settlement Period must be received at least **one hour**~~two hours~~ prior to the commencement of that Settlement Period. The bids shall include information for only the relevant Settlement Period. Failure to provide the information within the stated time frame shall result in the bids being declared invalid by the ISO. Scheduling Coordinators wishing to buy back in the Hour-Ahead Market Regulation, Spinning Reserve, **or** Non-Spinning Reserve ~~or Replacement Reserve~~ capacity sold to the ISO in the Day-Ahead Market pursuant to section 2.5.21 must do so by submitting a revised bid in the Hour-Ahead Market for the Ancillary Service and resource concerned.

2.5.11 Information To Be Submitted By Bidders.

Bids shall be submitted by Scheduling Coordinators acting on behalf of Participating Generators, and owners or operators of Loads. Bids must be in the format specified by the ISO and include the bid information for each service described in the Schedules and Bids Protocol and such other information as

the ISO may determine it requires to evaluate bids as published from time to time in ISO Protocols. The ISO will verify and respond to submitted bid data in accordance with Appendix E and the ISO Protocols. Bidders may submit new bids on a daily basis (or hourly basis for the Hour-Ahead Market).

2.5.12 Bid Evaluation Rules.

Bid evaluation shall be based on the following principles:

(a) the ISO shall not differentiate between bidders other than through price and capability to provide the service, and the required locational mix of services;

(b) to minimize the costs to users of the ISO Controlled Grid, the ISO shall select the bidders with lowest bids for capacity which meet its technical requirements, including location and operating capability;

(c) for the Day-Ahead Market, the Day-Ahead bids shall be evaluated **over the SCUC time horizon as set forth in Section 31.2.3.1.2.2**~~.independently for Settlement Period of the following Trading Day~~;

(d) for the Hour-Ahead Market, the ISO shall evaluate bids **over the SCUC time horizon as set forth in Section 31.3.2**~~in the two hours preceding the hour of operation~~;

(e) the ISO will procure sufficient Ancillary Services in the Day Ahead Market to meet its forecasted requirements, as known at the close of the Day-Ahead Market, except that the ISO may elect to procure a portion of such requirements in the Hour-Ahead Markets if the ISO first provides notice to Scheduling Coordinators of such action, including the approximate hourly megawatt amounts of each Ancillary Service that it intends to procure in the Hour-Ahead Markets.

2.5.13 Evaluation of Ancillary Services Bids.

When Scheduling Coordinators bid into the Regulation, Spinning Reserve **and**~~,~~ Non-Spinning Reserve ~~and Replacement Reserve~~ markets, they may bid the same capacity into as many of these markets as desired by providing the appropriate bid information to the ISO. **Scheduling Coordinators shall submit Ancillary Services Bids in accordance with the Schedules and Bids Protocol.** The ISO shall evaluate bids in the markets for Regulation, Spinning Reserve **and**~~,~~ Non-Spinning Reserve ~~and Replacement Reserve~~ **simultaneously as set forth in Section 31.2.3.1.3**~~sequentially and separately in the following order: Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve. Any capacity accepted by the ISO in one of these markets shall not be passed on to another market, except that capacity accepted in the Regulation market that represents the downward range of movement accepted by the ISO may be passed on to another market; any losing bids in one market may be passed onto another market, if the Scheduling Coordinator so indicates to the ISO~~. A Scheduling Coordinator may specify capacity bid into only the markets it desires. A Scheduling Coordinator shall also have the ability to specify different capacity prices ~~and different Energy prices~~ for the Spinning Reserve, Non-Spinning Reserve, ~~Replacement Reserve~~ and Regulation markets. ~~The bid information, bid evaluation and price determination rules set forth below shall be used in the Day-Ahead, Hour-Ahead and real time procurement of Regulation, Spinning Reserve Non- Spinning Reserve, and Replacement Reserve~~.

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

2.5.14 **[Not Used]** ~~The Regulation Auction.~~

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

(a) bidder name/Identification Code;

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

(c) the date for which the bid applies;

(d) maximum operating level (MW);

(e) minimum operating level (MW);

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

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

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

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

(a) bidder name/Identification Code;

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

(c) Scheduling Point;

(d) interchange ID code;

(e) external Control Area ID;

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

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

(h) the contract reference number, if applicable;

(i) maximum operating level (MW);

(j) minimum operating level (MW);

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

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

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

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

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

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

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

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

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

Subject to

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

Where

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

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

Price Determination. The price payable to Scheduling Coordinators for Regulation Capacity made available for upward and downward movement in accordance with the ISO's Final Day-Ahead Schedules shall, for each Generating Unit, System Unit, and System Resource concerned, be the zonal market clearing price as follows:

$PAGC_* = MCP_{zt}$

~~Where:~~

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

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

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

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

2.5.15 [Not Used] ~~The Spinning Reserve Auction.~~

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

~~(a) bidder name/Identification Code;~~

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

~~(c) the date for which the bid applies;~~

~~(d) maximum operating level (MW);~~

~~(e) minimum operating level (MW);~~

~~(f) ramp rate (MW/min);~~

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

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

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

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

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

(a) bidder name/Identification Code;

(b) the date for which the bid applies;

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

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

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

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

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

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

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

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

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

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

Where

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

$Requirement_t$ = the amount of Spinning Reserve capacity required

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

~~or external import of a System Resource concerned be the zonal market clearing price for Spinning Reserve calculated as follows:~~

~~$Psp_{xt} = MCP_{xt}$~~

~~Where the zonal market clearing price (MCP_{xt}) for Spinning Reserve is the highest priced winning Spinning Reserve capacity bid in Zone X based on the capacity reservation bid price, i.e.: $MCP_{xt} = Max(CapRes_{ijt})$ in zone x for Settlement Period t~~

~~The ISO's auction does not compensate a Scheduling Coordinator for the minimum Energy output of Generating Units, System Units or System resources bidding to provide Spinning Reserve. Therefore, any minimum Energy output associated with Spinning Reserve selected in the ISO's auction is the responsibility of the Scheduling Coordinator selling the Spinning Reserve.~~

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

2.5.16 [Not Used] ~~The Non-Spinning Reserve Auction.~~

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

~~(a) bidder name/Identification Code;~~

~~(b) Generating Unit or System Unit identification (name and Location Code);~~

~~(c) the date for which the bid applies;~~

~~(d) maximum operating level (MW);~~

~~(e) minimum operating level (MW);~~

(f) ramp rate (MW/Min);

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

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

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

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

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

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

(a) bidder name/Identification Code;

(b) the date for which the bid applies;

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

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

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

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

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

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

(a) bidder name/Identification Code;

(b) Load identification name and Location Code;

(c) the date for which the bid applies;

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

(e) to interruption following notification (min);

(f) maximum allowable curtailment duration (hr);

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

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

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

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

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

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

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

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

Where

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

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

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

$Pnonsp_{xt} = MCP_{xt}$

Where the zonal market clearing price (MCP_{xt}) for Non-Spinning Reserve is the highest priced winning Non-Spinning Reserve bid in Zone X based on the capacity reservation bid price, i.e.:

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

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

2.5.17 [Not Used] ~~The Replacement Reserve Auction.~~

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

~~(a) bidder name/Identification Code;~~

~~(b) Generating Unit or System Unit identification (name and Location Code);~~

~~(c) the date for which the bid applies;~~

~~(d) maximum operating level (MW);~~

~~(e) minimum operating level (MW);~~

~~(f) ramp rate (MW/Min);~~

~~(g) the MW capacity available within 60 minutes ($Cap_{i,t,max}$);~~

~~(h) the bid price of the capacity reserved ($CapRes_{i,t}$ ($/MW));~~

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

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

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

~~(a) bidder name/Identification Code;~~

~~(b) the date for which the bid applies;~~

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

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

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

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

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

(a) bidder name/Identification Code;

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

(c) the date for which the bid applies;

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

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

(f) maximum allowable curtailment duration (hr);

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

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

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

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

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

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

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

Where

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

$Requirement_t$ = the amount of Replacement Reserve capacity

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

$PRepRes_{xt} = MCP_{xt}$

Where the zonal market clearing price (MCP_{xt}) for Replacement Reserve is the highest priced winning Replacement Reserve bid in Zone X based on the capacity reservation bid price, i.e.:

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

The price payable to Scheduling Coordinators for Replacement Reserve Capacity not included in the ISO's Final Day-Ahead Schedules but made available in accordance with amended Ancillary

~~Services schedules issued in accordance with section 2.5.21 shall be the bid price of the Replacement Reserve capacity reserved ($CapRes_{jk}$($/MW$)).~~

2.5.18 Voltage Support.

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

In addition, any Participating Generator's **Generating Unit or Capacity Resource that** ~~who~~ is producing Energy shall, upon the ISO's specific request, provide reactive energy output outside the Participating Generator's Voltage Support obligation defined in Section 2.5.3.4.

The ISO shall select Participating Generator's Generating Units which have been certified for Voltage Support to provide this additional Voltage Support. Subject to any locational requirements, the ISO shall select the least costly Generating Units from a computerized merit order stack to back down to produce additional Voltage Support in each location where Voltage Support is needed.

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

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

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

2.5.19 Black Start Capability and Energy Output.

As of the ISO Operations Date, the ISO will contract for Black Start capability and Energy with owners of Reliability Must-Run Units and Black Start Generators. Public utilities under the FPA will be paid rates capped at the FERC authorized cost base rates unless and until FERC authorizes different pricing. The ISO shall pay owners of Reliability Must-Run Units for Black Start Energy output through their Scheduling Coordinators. The ISO shall pay Black Start Generators for Black Start Energy output directly.

2.5.20 Obligations for and Self Provision of Ancillary Services.

2.5.20.1 Ancillary Service Obligations. Each Scheduling Coordinator shall be assigned a share of the total Regulation, Spinning Reserve **and**~~,~~ Non-Spinning ~~and Replacement~~ Reserve requirements by the ISO. Any references in this Tariff to the Ancillary Service "Regulation" shall be read as referring to "Regulation Up or "Regulation Down". The share assigned to each Scheduling Coordinator is described in Section 2.5.20 and in Section 2.5.28 as that Scheduling Coordinator's obligation. Each Scheduling Coordinator's Regulation obligation in each **Ancillary Services Region**~~Zone~~ shall be pro rata based upon the same proportion as the Scheduling Coordinator's metered hourly Demand (excluding exports) bears to the total metered Demand (excluding exports) served in each hour in that **Ancillary Services Region**~~Zone~~. Each Scheduling Coordinator's Operating Reserve obligation in each **Ancillary Services Region**~~Zone~~ shall be pro rata based upon the same proportion as the ratio of the product of its percentage obligation based on metered output and the sum of its metered Demand and firm exports bears to the total of such products for all Scheduling Coordinators in the **Ancillary Services Region**~~Zone~~. The Scheduling Coordinator's percentage obligation based on metered output shall be calculated as the sum of 5% of its real time Demand (except the Demand covered by firm purchases from outside the ISO Control Area) met by Generation from hydroelectric resources plus 7% of its Demand (except the Demand covered by firm purchases from outside the ISO Control Area) met by

Generation from non-hydroelectric resources in that **Ancillary Services Region**~~Zone~~, plus 100% of any Interruptible Imports and on-demand obligations which it schedules. ~~Each Scheduling Coordinator's Replacement Reserve obligation in each Zone is calculated as described in Section 2.5.28.4.~~ Scheduling Coordinator obligations for each Ancillary Service will be calculated based on the requirement for each Ancillary Service as the ISO determines prior to the adjustment set forth in Section 2.5.3.6.

2.5.20.2 Right to Self Provide.

Each Scheduling Coordinator may choose to self provide all, or a portion, of its Regulation and~~,~~ Operating Reserve~~, and Replacement Reserve~~ obligation in each **Ancillary Services Region**~~Zone~~. The ISO shall schedule self provided Ancillary Services, Day-Ahead and Hour-Ahead, and Dispatch self provided Ancillary Services in real time. To the extent that a Scheduling Coordinator self provides, the ISO shall correspondingly reduce the quantity of the Ancillary Services concerned, which it procures as described in Sections **31.2.3.1.3** ~~2.5.14 to 2.5.17~~. In accordance with Section 2.5.22.11 and Section 2.5.26.2, if a Scheduling Coordinator uses capacity scheduled to self-provide Spinning Reserve**,** or~~,~~ Non-Spinning Reserve~~, or Replacement Reserve~~ to supply Uninstructed Imbalance Energy to the ISO from a Generating Unit, ~~Curtailable Demand~~ **Dispatchable Load**, or System Resource under circumstances that would cause the elimination of payments to the Scheduling Coordinator under Section 2.5.26.2 if the capacity had been bid and was selected by the ISO to supply the Ancillary Service, the Scheduling Coordinator shall pay to the ISO the amount of the payment that would be eliminated under that section. Scheduling Coordinators may trade Ancillary Services obligations so that any Scheduling Coordinator may reduce its Ancillary Services obligation through purchase of Ancillary Services capacity from another Scheduling Coordinator, or self-provide in excess of its obligation to sell Ancillary Services to another Scheduling Coordinator, subject to the limits specified under Section 2.5.20.5.2. If a Scheduling Coordinator's Day-Ahead self-provided Ancillary Service schedule is decreased in the Hour-Ahead

Market, such decrease shall be deemed to be replaced ~~at the Market Clearing Price in the Hour-Ahead Market,~~ pursuant to Section **31.3.4** ~~2.5.21~~.

2.5.20.3 [Not Used]

2.5.20.4 Services Which May Be Self Provided. The ISO shall permit Scheduling Coordinators to self provide the following Ancillary Services:

(a) Regulation;

(b) Spinning Reserve; **and**

(c) Non-Spinning Reserve.~~; and~~

(d) ~~Replacement Reserve.~~

The ISO may from time to time add other Ancillary Services to this list as it considers appropriate.

* * *

2.5.21 Scheduling of Units to Provide Ancillary Services.

The ISO shall prepare supplier schedules for Ancillary Services (both self provided and purchased by the ISO) for the Day-Ahead and the Hour-Ahead Markets. The ISO shall notify each Scheduling Coordinator no later than 1:00 p.m. of the day prior to the Trading Day of their Ancillary Services schedules for the Day-Ahead and no later than **forty-five (45) minutes** ~~one hour~~ prior to the operating hour of their Ancillary Services schedules for the Hour-Ahead. The ISO Protocols set forth the information, which will be included in these schedules. Where long-term contracts are involved, the information may be treated as standing information for the duration of the contract.

If, at any time after the issuance of Final Day-Ahead Schedules for the Trading Day and before the close of the Hour-Ahead Market for the first Settlement Period of the Trading Day, the ISO determines that it requires Ancillary Services in addition to those included in the Final Day-Ahead

Schedule (in the appropriate **Ancillary Services Region**~~zone~~ if procuring zonally), the ISO may procure such additional Ancillary Services by providing Scheduling Coordinators with amended supplier schedules for the Day-Ahead Markets that include Ancillary Services for which previously submitted (but not selected) bids remain available and have not previously been withdrawn. The ISO shall select such Ancillary Services in price merit order (and in the relevant **Ancillary Services Region**~~zone if the ISO is procuring Ancillary Services on a zonal basis~~). Such amended supplier schedules shall be provided to the Scheduling Coordinators no later than the close of the Hour-Ahead Market for the first Settlement Period of the Trading Day.

Once the ISO has given Scheduling Coordinators notice of the Day-Ahead and Hour-Ahead schedules, these schedules represent binding commitments made in the markets between the ISO and the Scheduling Coordinators concerned, subject to any amendments issued as described above. ~~Any minimum energy input and output associated with Regulation and Spinning Reserve services shall be the responsibility of the Scheduling Coordinator, as the ISO's auction does not compensate the Scheduling Coordinator for the minimum energy output of Generating Units bidding to provide these services. Accordingly the Scheduling Coordinators shall adjust their schedules to accommodate the minimum outputs required by the Generating Units included on the Schedules.~~

~~Notwithstanding the foregoing, 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 that capacity in whole or in part from the ISO if the scheduled self-provision is decreased between the Day-Ahead and Hour-Ahead Markets, or if the Ancillary Service associated with a Generating Unit, Curtailable Demand, or System Resource 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 Scheduling 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 the Market Clearing Price in the Hour-Ahead~~

~~Market for the Ancillary Service for the Settlement Period concerned for the Zone in which the Generating Units or other resources are located. The ISO will purchase the Ancillary Service concerned from another Scheduling Coordinator in the Hour-Ahead Market in accordance with the provisions of the ISO Tariff.~~

2.5.22 Rules For Real Time Dispatch of Imbalance Energy Resources.

2.5.22.1 Overview. During real time, the ISO shall dispatch Generating Units, Loads and System Resources **in accordance with Section 31.4.3** to procure Imbalance Energy. In addition, the ISO may also need to purchase additional Ancillary Services if the services arranged in advance are used to provide Imbalance Energy, and such depletion needs to be recovered to meet reliability contingency requirements.

2.5.22.2 [Not Used] ~~**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;~~

~~(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 IntervalDispatch Interval.~~

2.5.22.3 Ancillary Services Dispatch. The ISO may dispatch Generating Units, Loads, System Units and System Resources contracted to provide Ancillary Services (either procured through the ISO's competitive market, or self provided by Scheduling Coordinators) to supply Imbalance Energy.

During normal operating conditions, the ISO shall dispatch the following resources to supply Imbalance Energy: (i) those Generating Units, Loads, System Units and System Resources having offered Supplemental Energy bids, **and** (ii) ~~those Generating Units, Loads, System Units and System Resources contracted to provide Replacement Reserve and (iii)~~ those Generating Units, Loads, System Units and System Resources that have contracted to provide Spinning and Non-Spinning Reserve, except for

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

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

2.5.22.3.2 Dispatch of Self Provided Ancillary Services. Where a Scheduling Coordinator has chosen to self provide the whole of the additional Operating Reserve required to cover any Interruptible Imports which it has scheduled and has identified specific Generating Units, Loads, System Units or System Resources as the providers of the additional Operating Reserve concerned, the ISO shall Dispatch only the designated Generating Units, Loads, System Units or System Resources in the event of the ISO being notified that the Interruptible Import is being curtailed. For all other Ancillary Services which are being self provided the Energy Bid shall be used to determine the position of the Generating Unit, Load, System Unit or System Resource in the merit order for real time Dispatch, subject to the limitation on the Dispatch of Spinning Reserve and Non-Spinning Reserve set forth in Section 2.5.22.3.

2.5.22.4 Supplemental Energy Bids. In addition to the Generating Units, Loads and System Resources which have been scheduled to provide Ancillary Services in the Day-Ahead and Hour-Ahead

markets, the ISO may Dispatch Generating Units, Loads or System Resources for which Scheduling Coordinators have submitted Supplemental Energy bids **to the Hour-Ahead Energy Market**.

2.5.22.4.1 [Not Used]~~Timing of Supplemental Energy Bids.~~

~~Supplemental Energy bids must be submitted to the ISO no later than forty-five (45) minutes prior to the operating hour. Bids may also be submitted at any time after the Day-Ahead Market closes. These Supplemental Energy bids cannot be withdrawn after forty-five (45) minutes prior to the Settlement Period, except that a bid from a System Resource may specify that any portion of the bid that is not called prior to the beginning of the Settlement Period shall not be called after the beginning of the Settlement Period. The ISO may dispatch the associated resource at any time during the Settlement Period.~~

2.5.22.4.2 [Not Used] ~~Form of Supplemental Energy Bid Information.~~

~~Supplemental Energy bids must include the following:~~

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

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

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

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

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

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

2.5.22.5 [Not Used] ~~Information used in the Real Time Dispatch.~~ ~~The ISO shall place all the bid price information (except for Regulation bid prices and Adjustment Bids carried forward from the Day-~~

~~Ahead and Hour-Ahead Markets) received from available Generating Units, Loads, System Units and System Resources in a database for use in real time Dispatch of Balancing Energy. The database shall indicate:~~

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

~~(b) congestion zone;~~

~~(c) quantity bid;~~

~~(d) normal ramp rate;~~

~~(e) price;~~

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

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

2.5.22.6 **[Not Used]** ~~**Real Time Dispatch.** The ISO shall 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 Resources according to Energy Bid prices.~~

~~Once a bid has been accepted by the ISO, the database shall be adjusted to reflect the change in status of the bid. Once a decremental bid has been used by the ISO, it will then be included in the incremental part of the database with an incremental bid equal to its decremental price bid. Once an incremental bid has been used by the ISO it will then be included in the decremental part of the database with a decremental bid equal to its incremental price bid.~~

2.5.22.7 [Not Used]~~Inter-Zonal Congestion~~. ~~In the event of Inter-Zonal Congestion in real time, the ISO shall procure Imbalance Energy separately for each Zone, as described in Section 2.5.22.6.~~

2.5.22.8 [Not Used] ~~Intra-Zonal Congestion~~. ~~Except as provided in Section 5.2, in the event of Intra-Zonal Congestion in real time, the ISO shall adjust resources in accordance with Section 7.2.6.2.~~

2.5.22.9 [Not Used] ~~Replacement of Operating Reserve.~~ ~~If pre-arranged Operating Reserve is used to meet Imbalance Energy requirements, such Operating Reserve may be replaced by the ISO's dispatch of additional Imbalance Energy through available Supplemental Energy Bids.~~

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

2.5.22.10 Dispatch Instructions.

~~All Dispatch instructions except those for the Dispatch of Regulation (which will be communicated by direct digital control signals to Generating Units and, for System Resources, through dedicated~~

~~communication links which satisfy the ISO's standards for external imports of Regulation) will be communicated electronically, except that, at the ISO's discretion, Dispatch instructions may be communicated by telephone, or fax. Except in the case of deteriorating system conditions or emergency, and except for instructions for the Dispatch of Regulation, the ISO will send all Dispatch instructions to the Scheduling Coordinator for the Generating Unit, System Unit, Load or System Resource, which it wishes, to Dispatch. The recipient Scheduling Coordinator shall ensure that the Dispatch instruction is communicated immediately to the operator of the Generating Unit, System Unit, external import of System Resources or Load concerned. The ISO may, with the prior permission of the Scheduling Coordinator concerned, communicate with and give Dispatch instructions to the operators of Generating Units, System Units, external imports of System Resources and Loads directly without having to communicate through their appointed Scheduling Coordinator. The recipient of a Dispatch instruction shall confirm the Dispatch. The ISO shall record the communications between the ISO and Scheduling Coordinators relating to Dispatch instructions in a manner that permits auditing of the Dispatch instructions, and of the response of Generating Units, System Units, external imports of System Resources and Loads to Dispatch instructions.~~

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

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

unavailable or incapable of responding to a Dispatch instruction, or fails to respond to a Dispatch instruction in accordance with its terms, the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load** or System Resource: shall be declared and labeled as non-conforming to the ISO's instructions, unless it has notified the ISO of an event that prevents it from performing its obligations within 30 minutes of the onset of such event,cannot set the **Dispatch Interval Locational Marginal Price**~~BEEP Interval Ex Post Price~~ and

the Scheduling Coordinator for the Participating Generator, owner or operator of the ~~Curtailable Demand~~**Dispatchable Load** or System Resource concerned shall have Uninstructed Imbalance Energy due to the difference between the Generating Unit's, ~~Curtailable Demand~~**Dispatchable Load's** or System Resource's instructed and actual output (or Demand). The Uninstructed Imbalance Energy shall be subject to the settlement for Uninstructed Imbalance Energy in accordance with Section 11.2.4.1 and the Uninstructed Deviation Penalty in accordance with Section 11.2.4.1.2. This applies whether the Ancillary Services concerned are contracted or self provided.

The ISO will develop additional mechanisms to deter Generating Units, ~~Curtailable Demand~~**Dispatchable Load** and System Resources from failing to perform according to Dispatch instructions, for example reduction in payments to Scheduling Coordinators, or suspension of the Scheduling Coordinator's Ancillary Services certificate for the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load** or System Resource concerned.

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 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 the highest bid that is accepted by the ISO's BEEP Software for increased energy supply or the lowest bid that is accepted by the ISO's BEEP Software for reduced energy supply. In the event the lowest price decremental bid accepted by the ISO is greater and not equal to the highest priced incremental bid accepted, then the 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 **I**instructions issued by **SCED**~~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 **I**instructions issued by **SCED**~~the BEEP Software~~.

2.5.23.2 [Not Used] ~~Determining Ex Post Prices.~~

2.5.23.2.1 [Not Used] ~~BEEP Interval Ex Post Prices~~. ~~For each BEEP Interval, the ISO will compute updated supply and demand curves, 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 is:~~

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

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

~~c) smaller than or equal to the prices of 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 supply and demand curves separately for each Zone separated by congestion.

2.5.23.2.2 [Not Used] Hourly Ex Post Price. The Hourly Ex Post Price in Settlement Period t in each Zone will equal the Energy weighted average of the BEEP Interval Prices in each Zone, calculated as follows:

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

Where:

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_{bxt} is the total the Instructed Imbalance Energy during BEEP Interval b in Zone x.

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

2.5.23.3 [Not Used] Temporary Limitation on BEEP Interval Ex Post Prices

2.5.23.3.1 [Not Used] Limitation. Notwithstanding any other provision of the ISO Tariff, the BEEP Interval Ex Post Price shall not exceed $150. Scheduling Coordinators for Generating Units, System Units, and System Resources that submit bids above $150 for the supply of Imbalance Energy shall be paid in accordance with their bids if accepted for Dispatch by the ISO.

2.5.23.3.2 [Not Used] Charges for Certain Instructed Imbalance Energy. Amounts paid to Scheduling Coordinators in accordance with Section 2.5.23.3.1 for Instructed Imbalance Energy from

~~Generating Units, System Units and System Resources at bids above $150 shall be charged to Scheduling Coordinators such that the charge to each Scheduling Coordinator shall be pro rata based upon the same proportion as the Scheduling Coordinator's Net Negative Uninstructed Deviations for the BEEP Interval bears to the total Net Negative Uninstructed Deviations of all Scheduling Coordinators for the BEEP Interval. Such charge shall apply in lieu of any charge specified in the ISO Tariff for such Instructed Imbalance Energy based on the BEEP Interval Ex Post Price.~~

2.5.23.3.3 [Not Used]

* * *

2.5.25.4 [Not Used] ~~**Replacement Reserve.** The ISO may test the Replacement Reserve capability of a Generating Unit, Load, System Unit or System Resource by issuing unannounced Dispatch instructions requiring the Generating Unit, Load, System Unit or System Resource to come on line and ramp up or reduce Demand to its sixty minute capability. The ISO shall measure the response of the Generating Unit, Load, System Unit or System Resource to determine compliance with requirements. The Scheduling Coordinator for the Generating Unit, Load, System Unit or System Resource shall be paid the Energy or Demand reduction Bid price of the Generating Unit, Load, System Unit or System Resource for the output, or reduction, of the Generating Unit, Load, System Unit or System Resource under the Replacement Reserve test.~~

2.5.25.5 Voltage Support. The ISO shall monitor a Generating Unit's response to Voltage Support instructions in order to determine compliance with Dispatch Instructions.

2.5.25.6 Black Start. The ISO may test the Black Start capability of a Generating Unit by issuing unannounced Dispatch Instructions requiring the Generating Unit to start on a Black Start basis. The ISO shall measure the response of the Generating Unit to determine compliance with the terms of the Black Start contract. The Scheduling Coordinator or Black Start Generator ~~as stated in Section 2.5.27.6~~

for the Generating Unit shall be paid the Generating Unit's contract price for the output under the Black Start test **as set forth in Settlements and Billing Protocol Appendix G**.

2.5.26 Penalties for Failure to Pass Tests and Rescission of Payment for Non-Delivery.

2.5.26.1 Penalties for Failure to Pass Tests. A Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource that fails an availability test, as determined under criteria to be established by the ISO, shall be deemed not to have been available to provide the Ancillary Service concerned or the relevant portion of that Service for the entire period the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource was committed to provide the Service, unless appropriate documentation (i.e., daily test records) confirming the availability of that service during the committed period(s) is presented to the ISO. The "committed period" **for the purpose of rescinding payments for non-delivery** is defined as the total of all the hours/days the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource was scheduled by the ISO to provide the Ancillary Service beginning from: (i) the last successful availability test; or (ii) the last time the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource actually provided Energy or reduced Demand as part of the Ancillary Service; whichever results in a shorter committed period. The Scheduling Coordinator for a Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource that fails an availability test shall not be entitled to payment for the Ancillary Service concerned for the committed period and adjustments to reflect this shall be made in the calculation of payments to the Scheduling Coordinator, provided that any such penalty shall be reduced to reflect any adjustment made over the duration of the committed period under Section 2.5.26.2 or 2.5.26.3.

System Units engaged in self provision of Ancillary Services, or providing Ancillary Services to the ISO are subject to the same testing, compensation, and penalties as are applied to individual

Generating Units engaged in self provision or provision of Ancillary Services. To perform testing, the ISO will bias the MSS's MSRE to test the responsiveness of the System Unit.

If payments for capacity for a particular Ancillary Service in a particular Settlement Period would be rescinded under more than one provision of this Section 2.5.26, the total amount to be rescinded for a particular Ancillary Service in a particular Settlement Period shall not exceed the total payment due in that Settlement Period.

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

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

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

2.5.26.2.3 [Not Used]

2.5.26.2.4 This Section 2.5.26.2.4 shall not apply to the capacity payment for any particular Ancillary Service if the **relevant Ancillary Services Marginal Price** ~~Zonal Market Clearing Price~~ determined in accordance with Sections **31.2.3.1.4.3** ~~2.5.15, 2.5.16 or 2.5.17~~ is less than or equal to zero. For those Ancillary Services for which **such relevant Ancillary Services Marginal Prices** ~~Zonal Market Clearing Prices~~ are greater than zero, the payment for Ancillary Service capacity otherwise payable under Section **31.2.3.4.2.1 or 31.2.3.4.2.2** ~~2.5.27.2, 2.5.27.3, and/or 2.5.27.4~~ shall be reduced by one sixth of the product of the applicable prices and the amount of Ancillary Service capacity from which the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource has supplied Uninstructed Imbalance Energy in a ~~BEEP Interval~~**Dispatch Interval**. If a Scheduling Coordinator schedules Ancillary Services through both the Day-Ahead and Hour-Ahead Markets, capacity payments due the Scheduling Coordinator from each market will be rescinded in proportion to the amount of capacity sold to the ISO in each market. The amount of capacity for which payments will be rescinded shall equal the value $UnavailAncServMW_{ixt}$, as defined in Section 11.2.4.1, applied to each Generating Unit, System Unit and System Resource supplying the Ancillary Service or the value $UnavailDispLoadMW_{ixt}$, as also defined in Section 11.2.4.1, applied to the ~~Curtailable Demand~~**Dispatchable Load** supplying the Ancillary Service.

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

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

2.5.26.3 Rescission of Payments When Dispatch Instruction is Not Followed

If the total metered output of a Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource is insufficient to supply the amount of Instructed Imbalance Energy associated with a Dispatch Instruction issued in accordance with a bid on Spinning Reserve **or**, Non-Spinning Reserve~~, or Replacement Reserve~~ in any ~~BEEP Interval~~**Dispatch Interval**, then the capacity payment associated with the difference between the total scheduled amount of each Ancillary Service for which Insufficient Energy was delivered, and the actual output attributed to the response to the Dispatch Instruction on

each Ancillary Service, shall be rescinded. However, no capacity payment shall be rescinded if the shortfall in the metered output of the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit, or System Resource is less than a deadband amount published by ISO on the ISO Home Page at least twenty-four hours prior to the ~~BEEP Interval~~**Dispatch Interval**. For any ~~BEEP Interval~~**Dispatch Interval** with respect to which no deadband amount has been published by the ISO, the deadband amount shall be zero MWH. If the Generating Unit, ~~Curtailable Demand~~**Dispatchable Load**, System Unit or System Resource is scheduled to provide more than one Ancillary Service in the Settlement Period, then the actual output will be attributed first to ~~Replacement Reserve, then to~~ Non-Spinning Reserve~~,~~ and finally to Spinning Reserve, and the capacity payments associated with the balance of each Ancillary Service shall be rescinded. If the same Ancillary Service is scheduled in both the Day Ahead and Hour Ahead Markets, then payments shall be rescinded in proportion to the amount of each Ancillary Service scheduled in each market.

2.5.26.4 Penalties applied pursuant to Section 2.5.26.1, and payments rescinded pursuant to Section 2.5.26.2 and 2.5.26.3 shall be redistributed to Scheduling Coordinators in proportion to ISO Control Area metered Demand for the same Trading Day.

2.5.26.5 If the ISO determines that non-compliance of a Load, Generating Unit, System Unit or System Resource, with an operating order or Dispatch **I**instruction from the ISO, or with any other applicable technical standard under the ISO Tariff, causes or exacerbates system conditions for which the WSCC imposes a penalty on the ISO, then the Scheduling Coordinator of such Load, Generating Unit, System Unit or System Resource shall be assigned that portion of the WSCC penalty which the ISO reasonably determines is attributable to such non-compliance, in addition to any other penalties or sanctions applicable under the ISO Tariff.

2.5.26.6 Temporary Exemption from Rescission of Energy Payments Any Participating Load that has entered into a Participating Load Agreement and has responded to a Dispatch **I**instruction ~~will be~~

~~exempt from the requirements of Section~~ **shall be exempt from Uninstructed Deviation Penalties in Section 11.2.4.1.2 (d)** ~~2.5.26.2.3~~ in the hour of the Dispatch and for the following two (2) hours during the period beginning on June 15, 2000 and ending on the date specified in a notice ("Notice Terminating Temporary Exemption") to be issued by the ISO. Such notice shall be posted on the ISO Home Page and distributed to Market Participants via e-mail at least seven (7) calendar days in advance of the termination of this temporary exemption.

2.5.27 [Not Used] ~~**Settlements For Contracted Ancillary Services.**~~

~~Based on the prices and quantities determined in accordance with this Section, the ISO shall operate a daily Settlement function for Ancillary Services it contracts for with Scheduling Coordinators.~~

~~The ISO shall calculate imbalances between scheduled, instructed and actual quantities of Energy provided based upon Meter Data obtained pursuant to Section 10. Schedules between Control Areas shall be deemed as being delivered in accordance with Good Utility Practice. The difference between actual and scheduled interchange shall then be addressed in accordance with the WSCC and NERC inadvertent interchange practices and procedures. Following this practice, all dynamic schedules for Ancillary Services provided to the ISO by other Control Areas shall be deemed delivered to the ISO. The difference between the Energy requested by the ISO and that actually delivered by the other Control Area shall then be accounted for and addressed through the WSCC and NERC inadvertent interchange practices and procedures.~~

~~Separate payments shall be calculated for each Settlement Period t for each Generating Unit, System Unit, System Resource and . The ISO shall then calculate a total daily payment for each Scheduling Coordinator for all the Generating Units, System Units, System Resources and s that it represents for each Settlement Period t.~~

~~The settlements for the Hour-Ahead markets shall be calculated by substituting Hour-Ahead prices in the relevant formulae and deducting any amounts due to the ISO from Scheduling Coordinators~~

who buy back in the Hour-Ahead Market Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity they sold to the ISO in the Day-Ahead Market.

2.5.27.1 [Not Used] Regulation.

Regulation Up and Regulation Down payments shall be calculated separately.

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

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

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

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

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

Adjustment: penalty described in Section 2.5.26.1.

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

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

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

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

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

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

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

$$\sum_{i} [(EnQInst_{ixt} * BEEPIntervalExPostPriceinZoneX) + REPAi_{xt}]$$

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

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

Where

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

standards. The ISO shall post the weighting factors consistent with the ISO Weighting Procedure, posted on the ISO website.

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

C_{UP} = 0 to 1

C_{DN} = 0 to 1

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

The ISO may modify the value of the constants C_{UP} or C_{DN} within a range of 0-1 either generally in regard to all hours or specifically in regard to particular times of the day, after the ISO Governing Board approves such modification, by a notice issued by the Chief Executive Officer of the ISO and posted on the ISO Internet "Home Page," at http//www.caiso.com, or such other Internet address as the ISO may publish from time to time, specifying the date and time from which the modification shall take effect, which shall be not less than seven (7) days after the Notice is issued.

REPA shall not be payable unless the Generating Unit is available and capable of being controlled and monitored by the ISO Energy Management System over the full range of its Scheduled Regulation capacity for the entire Settlement Period at least the ramp rates (increase and decrease in MW/minute)

~~stated in its bid. In addition, the total Energy available (R_{UP} plus R_{DN}) may be adjusted to be only R_{UP} or only R_{DN}, a percentage of R_{UP} or R_{DN}, or the sum of R_{UP} and R_{DN}, depending on the needs of the ISO for each direction of Regulation service.~~

2.5.27.2 [Not Used] ~~Spinning Reserve.~~

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

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

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

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

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

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

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

~~$SpinPay_{xt} = SpinQDA_{xt} * PspDA_{xt} - Adjustment$~~

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

~~$EnQInst_{xt} * _{xt}$~~

2.5.27.3 [Not Used] ~~Non-Spinning Reserve.~~

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

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

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

~~Prices~~. ~~The prices in the Settlement process for Non-Spinning Reserve shall be those determined in Section 2.5.16 for bids at or below the level specified in Section 2.5.27.7 and prices determined in accordance with Section 2.5.27.7 for bids above that level.~~$Adjustment$ ~~= penalty described in section 2.5.26.1, or rescinded capacity payments described in Section 2.5.26.2 or 2.5.26.3.~~

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

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

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

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

~~$EnQInst_{xt} * _{xt}$~~

2.5.27.4 [Not Used] ~~Replacement Reserve.~~

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

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

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

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

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

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

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

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

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

~~$EnQInst_{ijt} * {}_{xt}$~~

2.5.27.5 [Not Used] ~~Voltage Support~~. ~~The total payments for each Scheduling Coordinator shall be the sum of the short-term procurement payments, based on opportunity cost, as described in Section 2.5.18, and the payments under long term contracts.~~

2.5.27.6 [Not Used] ~~Black Start~~.

~~Quantities~~. ~~The following quantities shall be used in the Settlement process:~~

~~$EnQBS_{ijt}$ = Energy output from Black Start made by Generating Unit i from Scheduling Coordinator j (or Black Start Generator j, as the case may be) for Settlement Period t, pursuant to the ISO's order to produce.~~

~~Prices~~. ~~The prices used in the Settlement process are those described in the contracts referred to in section 2.5.19.~~

~~$Adjustment$ = penalty described in section 2.5.26.1.~~

~~Payments~~.

~~Scheduling Coordinators for owners of Reliability Must-Run Units (or Black Start Generators, as the case may be) shall receive the following payments for Energy output from Black Start facilities:~~

~~$BSEN_{ijt}=(EnQBS_{ijt}*EnBid_{ijt})+BSSUP_{ijt\ Adjustment}$~~

~~where BSSUPijt is the start-up payment for a Black Start successfully made by Generating Unit i of Scheduling Coordinator j (or Black Start Generator j) in Trading Interval t calculated in accordance with the applicable Reliability Must-Run Contract (or the Interim Black Start agreement as the case may be).~~

2.5.27.7 [Not Used] ~~Temporary Limitation on Ancillary Service Prices.~~

~~Notwithstanding any other provision of the ISO Tariff, the Market Clearing Prices for Regulation Up, Regulation Down, Spinning Reserves, Non-Spinning Reserves, and Replacement Reserves shall not exceed $150. Scheduling Coordinators for Generating Units, System Units, Loads, and System Resources that submit bids above $150 for the supply of these Ancillary Services shall be paid in accordance with their bids if accepted by the ISO.~~

2.5.28 [Not Used] ~~Settlement for User Charges for Ancillary Services.~~

~~(a) The ISO shall determine a separate hourly user rate for Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve for each Settlement Period purchased in the Day-Ahead market, and in the Hour-Ahead Market. Each rate will be charged to Scheduling Coordinators on a volumetric basis applied to each Scheduling Coordinator's obligation for the Ancillary Service concerned which it has not self provided, as adjusted by any Inter-Scheduling Coordinator Ancillary Service Trades. Each Scheduling Coordinator's obligation for Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve for each Zone shall be calculated in accordance with Section 2.5.20.1, notwithstanding any adjustment to the quantities of each Ancillary Service purchased by the ISO in accordance with Section 2.5.3.6.~~

~~The cost of Voltage Support and Black Start shall be allocated to Scheduling Coordinators as described in Sections 2.5.28. Quantities and rates for the Hour-Ahead markets shall be calculated by substituting the Hour-Ahead quantities and prices in the relevant formulae (including self provided quantities of the Ancillary Service) except that the user rates for Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve capacity shall be calculated by dividing the net payments made by the ISO for each service by the MW quantity purchased for each service. The net payments are the total payments for each service net of sums payable by Scheduling Coordinators who have bought back in the Hour-Ahead Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity, as the case may be, which they had sold to the ISO in the Day-Ahead Market.~~

~~Ancillary Services obligations may be negative, and credits for such negative obligations will be in accordance with the rates calculated in Sections 2.5.28.1, 2.5.28.2, 2.5.28.3 and 2.5.28.4, except that a Scheduling Coordinator's credit shall be reduced by the greater of: a) the amount of any self-provision scheduled from resources which are deemed to meet the ISO's Ancillary Services standards, and which are not subject to the certification and testing requirements of the ISO Tariff; or b) if the ISO has no incremental requirement to be met in the Hour-Ahead Market for an Ancillary Service, the incremental amount of such service scheduled by that Scheduling Coordinator in the Hour-Ahead Market.~~

~~The ISO will allocate the Ancillary Services capacity charges, for both Day-Ahead and Hour-Ahead Markets, on a Zonal basis if the Day-Ahead Ancillary Services market is procured on a Zonal basis. The ISO will allocate the Ancillary Services capacity charges, for both the Day-Ahead and Hour-Ahead Markets, on an ISO Control Area wide basis if the Day-Ahead Ancillary Services market is defined on an ISO Control Area wide basis.~~

~~(b) If, in any Settlement Period, no quantity of Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve is purchased in the Day-Ahead Market or the Hour-Ahead Market due to the operation of Section 2.5.3.6, then in lieu of the user rate determined in accordance with Section 2.5.28.1, 2.5.28.2, 2.5.28.3, or 2.5.28.4, as applicable, the user rate for the affected Ancillary Service for that Settlement Period shall be determined as follows:~~

~~(i) If the affected market is a Day-Ahead Market, the user rate for the affected Ancillary Service shall be set at the lowest capacity reservation price for an unaccepted qualified capacity bid in the Day-Ahead Market for the same Settlement Period for that Ancillary Service or for another Ancillary Service that meets the requirements for the affected Ancillary Service. If there are no such unaccepted bids, the user rate for the affected Ancillary Service shall be the lowest Market Clearing Price for the same Settlement Period established in the Day-Ahead Market for another Ancillary Service that meets the requirements for the affected Ancillary Service.~~

(ii) If the affected market is an Hour-Ahead Market, the user rate for the affected Ancillary Service shall be set at the lowest capacity reservation price for an unaccepted qualified capacity bid in the Hour-Ahead Market for the same Settlement Period for that Ancillary Service or for another Ancillary Service that meets the requirements for the affected Ancillary Service. If there are no such unaccepted bids, the user rate for the affected Ancillary Service shall be the user rate for the same Ancillary Service in the Day-Ahead Market in the same Settlement Period.

(c) With respect to each Settlement Period, in addition to the user rates determined in accordance with Sections 2.5.28.1 through 2.5.28.4 or Section 2.5.28(b), as applicable, each Scheduling Coordinator shall be charged an additional amount equal to its proportionate share, based on total purchases by Scheduling Coordinators of Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve of the amount, if any, by which (i) the total payments to Scheduling Coordinators pursuant to Section 2.5.27.1 through 2.5.27.4, for the Day-Ahead Market and Hour-Ahead Market and all Zones, exceed (ii) the total amounts charged to Scheduling Coordinators pursuant to Section 2.5.28.1 through 2.5.28.4, for the Day-Ahead Market and Hour-Ahead Market and all Zones. If total amounts charged to Scheduling Coordinators exceed the total payments to Scheduling Coordinators, each Scheduling Coordinator will be refunded its proportionate share, based on total purchases by Scheduling Coordinators of Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve.

2.5.28.1 [Not Used] Regulation. Regulation Up and Regulation Down charges shall be calculated separately. The user rate per unit of purchased Regulation service for each Settlement Period in the Day-Ahead Market for each Zone shall be calculated by dividing the total Regulation capacity payments by the ISO's total MW purchases of Regulation for that Settlement Period for that Zone which has not been self provided by Scheduling Coordinators. The ISO will calculate the user rate for Regulation Up in each Zone for each Settlement Period as:

RegRateUpDA ($/MW) = AGCUpPayDA /AGCUpPurchDA

where:

~~*AGCUpPayDA* = Total Regulation Up payments for the Settlement Period in the Day-Ahead Market for the Zone.~~

~~*AGCUpPurchDA* = the total ISO Regulation Up MW purchases in the Day-Ahead Market for the Settlement Period for the Zone, excluding that which has been self provided by Scheduling Coordinators.~~

~~The ISO will calculate the user rate for Regulation Down in each Zone for each Settlement Period as:~~

~~*RegRateDownDA ($/MW) = AGCDownPayDA /AGCDownPurchDA*~~

~~where:~~

~~*AGCDownPayDA* = Total Regulation Down payments for the Settlement Period in the Day-Ahead Market for the Zone.~~

~~*AGCDownPurchDA* = the total ISO Regulation Down MW purchases in the Day-Ahead Market for the Settlement Period for the Zone, excluding that which has been self provided by Scheduling Coordinators.~~

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

~~*RegRateUpDA * AGCUpOblig*~~

~~where *AGCUpOblig* is the Scheduling Coordinator's obligation for Regulation Up in the Zone in the Settlement Period for which it has not self provided.~~

~~*RegRateDownDA * AGCDownOblig*~~

~~where *AGCDownOblig* is the Scheduling Coordinator's obligation for Regulation Down in the Zone in the Settlement Period for which it has not self provided.~~

2.5.28.2 [Not Used] ~~**Spinning Reserve.** The user rate per unit of purchased Spinning Reserve for each Settlement Period in the Day-Ahead Market for each Zone shall be calculated by dividing the total capacity payments for Spinning Reserve by the ISO's total MW purchases of Spinning Reserve for that~~

Settlement Period for that Zone which has not been self-provided by Scheduling Coordinators. The ISO will calculate the user rate for Spinning Reserve in each Zone for each Settlement Period as:

$$SpRateDA(\$/MW) = \frac{SpinPayDA}{SpinPurchDA}$$

where:

SpinPayDA = Total Spinning Reserve payments for the Settlement Period in the Market for the Zone Day-Ahead.

SpinPurchDA = the total ISO Spinning Reserve MW purchases in the Day-Ahead Market for the Settlement Period for the Zone, excluding that which has been self provided by Scheduling Coordinators.

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

*SPRateDA * SpinOblig*

where *SpinOblig* is the Scheduling Coordinator's obligation for Spinning Reserve in the Zone in the Settlement Period for which it has not self-provided.

2.5.28.3 [Not Used] Non-Spinning Reserve. The user rate per unit of purchased Non-Spinning Reserve for each Settlement Period in the Day-Ahead Market for each Zone shall be calculated by dividing the total capacity payments for Non-Spinning Reserve by the ISO's total MW purchases of Non-Spinning Reserve for that Settlement Period for that Zone which has not been self provided by Scheduling Coordinators. The ISO will calculate the user rate for Non-Spinning Reserve in each Zone for each Settlement Period as:

$$NonSpRateDA(\$/MW) = \frac{NonSpinPayDA}{NonSpinPurchDA}$$

where:

~~*NonSpinPayDA* = Total Non-Spinning Reserve payments for the Settlement Period in the Day-Ahead Market for the Zone.~~

~~*NonSpinPurchDA* = the total ISO Non-Spinning Reserve MW purchases for the Settlement Period for the Zone, excluding that which has been self-provided by Scheduling Coordinators.~~

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

~~*NonSpRateDA * NonSpinOblig*~~

~~where *NonSpinOblig* is the Scheduling Coordinator's obligation for Non-Spinning Reserve in the Zone in the Settlement Period for which it has not self provided.~~

2.5.28.4 [Not Used] ~~Replacement Reserve.~~ ~~The user rate per unit of Replacement Reserve obligation for each Settlement Period t for each Zone x shall be as follows:~~

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

~~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 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.~~

~~$DevReplOblig_{xt}$ 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:~~

$$RemRepl_{xjt} = \frac{MeteredDemand_{jxt}}{TotalMeteredDemand_{xt}} * TotalRemRepl_{xt}$$

~~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.~~

~~$TotalRemRepl_{xt} = Max[0,ReplObligTotal_{xt} + TotalSelfProv_{xt} - DevReplOblig_{xt}]$~~

2.5.28.5 [Not Used] ~~***[Refer to SABP Appendix G.]*Voltage Support.*** The short term market Voltage Support user rate for Settlement Period t for Zone x shall be calculated as follows:~~

$$VSSTRate_{xt} = \frac{\sum_{i,j} VSST_{xijt}}{\sum_{j} QChargeVS_{xjt}}$$

~~$VSST_{xijt}$ = Voltage Support payment to Scheduling Coordinator j in respect of Generating Unit i in Zone x in the short-term market applicable to Settlement Period t.~~

~~$QChargeVS_{xjt}$ = charging quantity for Voltage Support for Scheduling Coordinator j for Settlement Period t in Zone x equal to the total metered Demand in Zone x (including exports to neighboring Control Areas and excluding metered Demand inside an MSS) by Scheduling Coordinator j for Settlement Period t.~~

~~The monthly long term Voltage Support contract user rate for Settlement Period t for Zone x shall be calculated as follows:~~

$$VSLTRate_{xm} = \frac{\sum_{i,j} VSLT_{xijm}}{\sum_{jm} QChargeVS_{xjt}}$$

~~where:~~

~~$VSLT_{xijm}$ = long term Voltage Support contract payment to Scheduling Coordinator j for owner of Reliability Must-Run Unit i in Zone x for month m.~~

~~The short term market Voltage Support charges for Settlement Period t payable by Scheduling Coordinator j will be calculated as follows:~~

$$VSSTCharge_{jt} = VSSTRate_t * QChargeVS_{jt}$$

~~where $VSSTCharge_{jt}$ is the amount payable by Scheduling Coordinator j for short term market Voltage Support for Settlement Period t.~~

~~$VSSTRate_t$ is the short term market Voltage Support user rate for Settlement Period t.~~

~~The monthly long term Voltage Support contract charge for month m payable by Scheduling Coordinator j will be calculated as follows:~~

~~$$VSLTCharge_m = VSLTRate_m * \sum_m QChargeVS_{jt}$$~~

~~where $VSLTCharge_m$ is the amount payable by Scheduling Coordinator j for long term Voltage Support for month m.~~

~~$VSLTRate_m$ is the monthly long term Voltage Support contract user rate charged by the ISO to Scheduling Coordinators for month m.~~

2.5.28.6 [Not Used] ~~[Refer to SABP Appendix G.] Black Start.~~

~~$QChargeBlackstart_{jt}$ = charging quantity for Black Start for Scheduling Coordinator j for Settlement Period t equal to the total metered Demand (excluding exports to neighboring Control Areas and metered Demand of a MSS in accordance with Section 3.3.4.5) by Scheduling Coordinator j for Settlement Period t.~~

~~The Black Start Energy payment user rate for Settlement Period t will be calculated as follows:~~

~~$$BSRate_t = \frac{\sum_{i,j} BSEn_{ijt}}{\sum_j QChargeBlackstart_{jt}}$$~~

~~where $BSEn_{ijt}$ is the ISO payment to Scheduling Coordinator j for owner of Reliability Must-Run Unit (or to Black Start Generator j, as the case may be) for Generating Unit i providing Black Start Energy in Settlement Period t.~~

~~The Black Start Energy user charge for Settlement Period t for Scheduling Coordinator j will be calculated as follows:~~

~~$$BSCharge_{jt} = BSRate_t * QChargeBlackStart_{jt}$$~~

2.5.29 Public Dissemination of Information: Day-Ahead.

By 3:00 p.m. of the day preceding the Trading Day, the ISO shall make available to all Market Participants the following information on the scheduling of Ancillary Services:

Ancillary Service	Quantity Units	Period	**Ancillary Services Region**	**Ancillary Services Marginal Price** ~~Clearing Price~~
Regulation/AGC	MW	Hourly	**Region**	$/MW
Spinning Reserve	MW	Hourly	**Region**	$/MW
Non-spinning Reserve	MW	Hourly	**Region**	$/MW
~~Replacement Reserve~~	~~MW~~	~~Hourly~~		~~$/MW~~
~~Black Start~~	~~MW~~	~~Annual~~		~~$/MW~~

* * *

3. RELATIONSHIP BETWEEN ISO AND PARTICIPATING TOs.

* * *

3.3.4.2 provide the ISO Outage Coordination Office **by October 15 of** each year with a schedule **for the next calendar year** of upcoming maintenance of facilities forming part of the MSS that will affect or is reasonably likely to affect the ISO Controlled Grid in accordance with Section 2.3.3.5. **In addition, on the first day of every month the MSS shall provide an update of any known changes to any previously planned Maintenance Outages and additional Outages anticipated over the next two months (i.e. On January 1, the MSS would report updated information for February and March)**;

* * *

3.3.4.6 be responsible for ~~Intra-Zonal~~ Congestion Management and transmission line Outages within or at the boundary of the MSS, and all associated costs and not responsible for ~~Intra-Zonal~~ Congestion Management elsewhere in the **ISO Control Area**~~zone~~ except to the extent that a Scheduling Coordinator is delivering Energy to or from the MSS.

* * *

3.3.14.2.3 shall obtain ISO certification of the System Unit's Ancillary Service capabilities in accordance with Section 2.5.6 and 2.5.24 before the Scheduling Coordinator representing the MSS may self-provide its Ancillary Service obligations or bid into the ISO's markets from that System Unit;

* * *

4. RELATIONSHIP BETWEEN ISO AND UDCS.

* * *

4.3 UDC Responsibilities.

Recognizing the ISO's duty to ensure efficient use and reliable operation of the ISO Controlled Grid consistent with the Applicable Reliability Criteria, each UDC shall:

4.3.1 operate and maintain its facilities, in accordance with applicable safety and reliability standards, regulatory requirements, applicable operating guidelines, applicable rates, tariffs, statutes and regulations governing their provision of service to their End-Use Customers and Good Utility Practice so as to avoid any material adverse impact on the ISO Controlled Grid;

4.3.2 provide the ISO Outage Coordination Office each year with a schedule of upcoming maintenance that has a reasonable potential of impacting the ISO Controlled Grid in accordance with Section 2.3.3.5 of this ISO Tariff **and provide by the first day of every month an update of any known changes to the schedule anticipated over the next two months (i.e. on January 1, the UDC would report updated information for February and March)**; and

* * *

5. RELATIONSHIP BETWEEN ISO AND GENERATORS.

* * *

5.2.1.1 If the ISO, pursuant to Section 2.5.12(e), has elected to procure an amount of megawatts of its forecast needs for an Ancillary Service in the Hour-Ahead Markets and there is not an adequate amount of capacity bid into an Hour-Ahead Market for the ISO to procure such amount of megawatts of that Ancillary Service (excluding bids that exceed price caps imposed by the ISO or FERC), the ISO may call upon Reliability Must-Run Units under Must-Run Contracts to meet the remaining portion of that amount of megawatts for that Ancillary Service but only after accepting all available bids in the Hour-Ahead Market (including any unused bids that can be used to satisfy that particular Ancillary Services requirement under Section 2.5.3.6), except that the ISO shall not be required to accept bids that exceed price caps imposed by the ISO or the FERC.

5.2.1.2 If, at any time after the issuance of Final Day-Ahead Schedules for the Trading Day –

(1) the ISO determines that it requires more of an Ancillary Service than it has procured;

(2) all additional Day-Ahead bids for that Ancillary Service that have not been withdrawn (including any unused bids that can be used to satisfy that particular Ancillary Services requirement under Section 2.5.3.6) have been selected pursuant to Section 2.5.21, except that the ISO shall not be required to accept bids that exceed price caps imposed by the ISO or the FERC;

(3) the ISO has notified Scheduling Coordinators of the circumstances existing in paragraphs (1) and (2) of this Section 5.2.1.2; and

(4) after such notice, the ISO determines that a Bid Insufficiency condition exists in the Hour-Ahead Market for the Settlement Period in which the ISO requires more of an Ancillary Service;

the ISO may call upon Reliability Must-Run Units under Reliability Must-Run Contracts to meet the additional needs in addition to any amounts that the ISO has called upon under Section 5.2.1.1. The ISO must provide the notice specified in paragraph (3) of this Section 5.2.1.2 as soon as possible after the ISO determines that additional Ancillary Services are needed for which bids are not available. The ISO may only determine that a Bid Insufficiency exists in the Hour-Ahead Market after the close of the Hour-Ahead Market, unless an earlier determination is required in order to accommodate the Must-Run Unit's operating constraints. For the purposes of this Section, a Bid Insufficiency exists in an Hour-Ahead Market if, and only if –

(a) bids in the Hour-Ahead Market for the particular Ancillary Service (including any unused bids that can be used to satisfy that particular Ancillary Services requirement under Section 2.5.3.6) that remain after first procuring the megawatts of the Ancillary Service that the ISO had notified Scheduling Coordinators it would procure in the Hour-Ahead Market pursuant to Section 2.5.12 ("remaining Ancillary Service requirement") represent, in the aggregate, less than two times such remaining Ancillary Service requirement; or

(b) there are less than two unaffiliated bidders to provide such remaining Ancillary Service requirement.

If a Bid Insufficiency condition exists, the ISO may nonetheless accept available market bids if it determines in its sole discretion that the prices bid and the supply curve created by the bids indicate that the bidders were not attempting to exercise market power.

* * *

5.11 [Not Used] ~~Must-Offer Obligations~~

5.11.1 [Not Used]

5.11.2 [Not Used] ~~Available Generation~~

~~For the purposes of this Section 5.11, a Generating Unit's "Available Generation" 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 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 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]

5.11.4 [Not Used] ~~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 start-up times of greater than 10 minutes).~~

5.11.5 [Not Used]~~Submission of Bids and 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~~

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. **The ISO shall use unused Day-Ahead Energy Bids from** Scheduling Coordinators **for**~~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~~ **shall indicate to the ISO if they want any unused Day-Ahead Energy Bid to participate**~~bid~~ in ~~to~~ the Residual Unit Commitment Process as set forth in Section 5.12.5.1.

5.2.12.3 System Resources. Scheduling Coordinators **shall indicate to the ISO if they want any unused Day-Ahead Energy Bid from** ~~may submit~~ System Resources **to participate** ~~for participation~~ in the Residual Unit Commitment Process as set forth in Section 5.12.5.2.

5.12.2.4 Dispatchable Load~~**Curtailable Demand**~~**.** Scheduling Coordinators **shall indicate to the ISO if they want any unused Day-Ahead Energy Bid from** ~~may submit bids for~~ **Dispatchable Load**~~Curtailable Demand~~ **to participate** in the Residual Unit Commitment Process as set forth in Section 5.12.5.3.

5.12.2.5 System Units. Scheduling Coordinators **shall indicate to the ISO if they want any unused Day-Ahead Energy Bid from** ~~may submit bids for~~ System Units **to participate** 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 **participate in** ~~bid~~ or voluntarily **participating in** ~~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. **The Residual Unit Commitment Process uses bids submitted to the Day-Ahead Market.** Scheduling Coordinators **shall notify the ISO of whether they want unused Day-Ahead Energy Bids to participate in the Residual Unit Commitment Process when they submit their Bids to the Day-Ahead Market.**~~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 **one-half hour after Final Day-Ahead Schedules are published** ~~after bids are submitted~~ and shall notify Scheduling Coordinators for those Generating Units, System Units, **Dispatchable Loads**~~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.~~ **Transmission for System Resources in the Residual Unit Commitment Process**

(a) Transmission Outside the ISO Control Area

System Resources selected by the ISO in the Residual Unit Commitment Process must obtain transmission service to the ISO Control Area.

(b) ISO Control Area Transmission

The ISO shall provide transmission service within the ISO Control Area to System Resources selected by the ISO in the Residual Unit Commitment Process after the Day-Ahead or Hour-Ahead Energy Markets, as appropriate.

5.12.5.1 **[Not Used]~~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 **[Not Used]~~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 **[Not Used]~~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 [Not Used]~~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.~~

5.12.5.1.4 Default Bids. <u>The ISO shall use the same default bids for the Residual Unit Commitment Process that the ISO used in the Day-Ahead Market.</u> ~~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 [Not Used] ~~Gas-Fired Generating Units subject to a Participating Generating Agreement.~~

5.12.5.1.4.1.1 [Not Used] ~~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 [Not Used] ~~**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.=~~

5.12.5.1.4.1.3 [Not Used] ~~**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 [Not Used] ~~**Non-Gas-Fired Non-Hydroelectric Generating Units subject to a Participating Generating Agreement.**~~

5.12.5.1.4.2.1 [Not Used] ~~**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 [Not Used] ~~**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 [Not Used] ~~**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 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 [Not Used] ~~**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:~~

5.12.5.2.1 [Not Used] ~~**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 [Not Used] ~~**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 [Not Used] ~~**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 [Not Used]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 [Not Used] 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 [Not Used]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 [Not Used] 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 [Not Used] 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 [Not Used] ~~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 [Not Used] ~~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.**~~

5.12.5.4.5 [Not Used] ~~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 [Not Used]~~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 [Not Used] ~~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 **Dispatchable**~~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 **Dispatchable Load**~~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 **Dispatchable Load**~~Curtailable Demand~~ when selecting those resources in the Residual Unit Commitment Process.

5.12.7 Payments.

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5.12.7.1.1.2.5 Qualifying Hour. A Qualifying Hour shall be an Hour in the ISO Commitment Period in which 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 Interval~~**Dispatch 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~~**Locational Marginal Price** for that ~~BEEP Interval~~**Dispatch 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 Interval~~**Dispatch Intervals** in that hour, of **a)** the product of 1) the number that is the ~~Market Clearing Price~~**Locational Marginal Price** for that ~~BEEP Interval~~**Dispatch 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 **and b) the sum of the Day-Ahead, Hour-Ahead and real-time Ancillary Service payments.**

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5.12.7.1.3.3 Withdrawing Capacity Payments when Dispatched or Producing Uninstructed Imbalance Energy. The ISO shall make no capacity payment in a ~~BEEP Interval~~**Dispatch Interval** to

the Scheduling Coordinator for a Generating Unit for the capacity from which 1) 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 **or 2) Uninstructed Imbalance Energy is produced.**

5.12.7.1.3.4 Withdrawing Capacity Payments for Exports. The ISO shall make no capacity payment in a ~~BEEP Interval~~**Dispatch 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~~**Dispatch Interval Locational Marginal Prices**~~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~~**Dispatch Interval Locational Marginal Price** ~~Market Clearing Prices~~ for that hour.

5.12.7.3 ~~Curtailable Demand~~Dispatchable Load

5.12.7.3.1 Minimum Curtailment Payment. If the ISO selects ~~Curtailable Demand~~**Dispatchable Load** in the Residual Unit Commitment Process, the ISO shall pay the Scheduling Coordinator for that ~~Curtailable Demand~~**Dispatchable Load** the amount of the minimum curtailment payment in that ~~Curtailable Demand~~**Dispatchable Load**'s bid provided the ~~Curtailable~~

~~Demand~~**Dispatchable Load** 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 or Producing Uninstructed Imbalance Energy. The ISO shall make no capacity payment to the Scheduling Coordinator for a System Unit for the capacity from which 1) the ISO Dispatches Energy from a System Unit at a level above the operating point reflected in Final Day-Ahead Schedule **or 2) Uninstructed Imbalance Energy is produced.**

.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~~**Dispatchable Load** 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~~**Dispatchable Load** Commitment Costs shall be equal to the sum, for all ~~Curtailable Demand~~**Dispatchable Loads** Dispatched by the ISO in that hour, of the ~~Curtailable Demand~~**Dispatchable Load**'s ~~Curtailable Demand~~**Dispatchable Load** Commitment Costs divided by the number of hours the ~~Curtailable Demand~~**Dispatchable Load** was curtailed by the ISO.

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6. TRANSMISSION SYSTEM INFORMATION AND COMMUNICATIONS.

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6.1 WEnet.

6.1.1 The ISO shall engage the services of an Internet Service Provider (ISP) to establish, implement and operate WEnet as a wide-band, wide-area backbone which is functionally similar to the Internet.

6.1.2 [Not Used] **6.1.2.1** WEnet will provide an interface for data exchange between the ISO and Scheduling Coordinators who shall each have individually assigned login accounts on WEnet.

~~**6.1.2.2.1** Advisory Information: The following may be provided over such time scales as the ISO may in its discretion decide:~~

~~(a) Future planned transmission Outages;~~

(b) **[Not Used]** Generator Meter Multipliers.

6.1.2.2.2 Day-Ahead and Hour-Ahead Information:

(a) Date;

(b) Hour;

(c) Total forecast Demand by UDC; Inter-Zonal Congestion price per Congested path;Total Regulation and Reserve service capacity reservation cost by Zone;

(d) Total capacity of Inter-Zonal Interfaces; and

(e) Available capacity of Inter-Zonal Interfaces.

6.1.2.2.3 Ex Post Information:

(a) Date;

(b) Hour; and

(c) Hourly Ex Post Price.

6.1.2.3 WEnet shall be used by the ISO to post Usage Charges for Inter-Zonal Interfaces within the ISO Controlled Grid.

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6.1.2.6 WEnet shall be used by the ISO to provide information to Market Participants regarding the ISO Controlled Grid. Such information may include but is not limited to:

(a) Voltage control parameters;

(b) ISO historical data for Congestion;

(c) Forecasts of Usage Charges; and

~~(d) Generation Meter Multipliers to support seven (7) day advance submission of Schedules by Scheduling Coordinators. Additional Generation Meter Multipliers may be published for different seasons and loading patterns.~~

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7. TRANSMISSION PRICING.

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7.1.4 Wheeling.

Any Scheduling Coordinator or other such entity scheduling a Wheeling transaction shall pay to the ISO the product of (i) the applicable Wheeling Access Charge, and (ii) the total hourly schedules of Wheeling in kilowatt-hours for each month at each Scheduling Point associated with that transaction. Schedules that include Wheeling transactions shall be subject to the Congestion Management procedures and protocols in accordance with Sections **31.2.3.2.8**~~7.2 and 7.3~~.

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7.2 [Not Used] ~~Zonal Congestion Management.~~

~~7.2.1 The ISO Will Perform Congestion Management.~~

~~**7.2.1.1 Transmission Congestion.** Congestion occurs when there is insufficient transfer capacity to simultaneously implement all of the Preferred Schedules that Scheduling Coordinators submit to the ISO.~~

~~**7.2.1.2 Zone-Based Approach.** The ISO will use a Zone-based approach to manage Congestion. A Zone is a portion of the ISO Controlled Grid within which Congestion is expected to occur infrequently or have relatively low Congestion Management costs. Inter-Zonal Interfaces consist of transmission facilities that are expected to have relatively high Congestion Management costs, as described in~~

~~Section 7.2.7.1. For these interfaces, allocation of usage based on the value placed on these interfaces by the Scheduling Coordinators will increase efficient use of the ISO Controlled Grid.~~

~~**7.2.1.3 Types of Congestion.** Congestion that occurs on Inter-Zonal Interfaces is referred to as "Inter-Zonal Congestion." Congestion that occurs due to transmission system constraints within a Zone is referred to as "Intra-Zonal Congestion."~~

~~**7.2.1.4 Elimination of Potential Transmission Congestion.** The ISO's Day-Ahead and Hour-Ahead scheduling procedures will eliminate potential Congestion by:~~

~~**7.2.1.4.1** scheduling the use of Inter-Zonal Interfaces by the Scheduling Coordinators who place the highest value on those rights, based on the Adjustment Bids that are submitted by Scheduling Coordinators; and~~

~~**7.2.1.4.2** rescheduling Scheduling Coordinators' resources (but so that Intra-Zonal transmission limits are not violated) using the Adjustment Bids that are submitted by Scheduling Coordinators.~~

~~**7.2.1.5 Elimination of Real Time Inter-Zonal Congestion.** In its management of Inter-Zonal Congestion in real time, the ISO will make the minimum amount of adjustment necessary to relieve Inter-Zonal Congestion by incrementing or decrementing Generation or Demand, as necessary, based on the merit order stack, in accordance with Dispatch Protocol Section 8.3.~~

~~7.2.2 General Requirements for the ISO's Congestion Management. **The ISO's Congestion Management in the Day-Ahead Market and Hour-Ahead Market shall:**~~

~~**7.2.2.1** only operate if the Scheduling Coordinators do not eliminate Congestion voluntarily;~~

~~**7.2.2.2** adjust the Schedules submitted by Scheduling Coordinators only as necessary to alleviate Congestion;=~~

~~**7.2.2.3** maintain separation between the resource portfolios of different Scheduling Coordinators, by not arranging any trades between Scheduling Coordinators as part of the Inter-Zonal Congestion Management process;~~

~~**7.2.2.4** for Inter-Zonal Congestion Management, suggest, but not require, rescheduling within Scheduling Coordinators' portfolios of Schedules to produce a feasible Schedule by the conclusion of the scheduling procedure;~~

~~**7.2.2.5 [Not Used]**~~

~~**7.2.2.6** publish information and, if requested by Scheduling Coordinators will provide a mechanism to facilitate voluntary trades among Scheduling Coordinators;~~

~~**7.2.2.7 [Not Used]**~~

~~**7.2.2.8** adjust the Schedules submitted by Scheduling Coordinators on the basis of any price information voluntarily submitted through their Adjustment Bids; and~~

~~**7.2.2.9** for the hours when the ISO applies its Inter-Zonal Congestion Management apply the same Usage Charge to all Scheduling Coordinators for their allocated share of the Inter-Zonal Interface capacity.~~

~~7.2.3 Use of Computational Algorithms for Congestion Management and Pricing.~~

~~The ISO will use computer optimization algorithms to implement its Congestion Management process.~~

~~**7.2.4 Adjustment Bids Will Be Used by the ISO to Manage Congestion.**~~

~~**7.2.4.1 Uses of Adjustment Bids by the ISO.**~~

~~**7.2.4.1.1** The ISO shall use the Adjustment Bids, in both the Day-Ahead Market and the Hour-Ahead Market, to schedule Inter-Zonal Interface capacity to those Scheduling Coordinators which value it the most and to reflect the Scheduling Coordinators' implicit values for Inter-Zonal Interface capacity.~~

~~**7.2.4.1.2** The Adjustment Bids will be used by the ISO to determine the marginal value associated with each Congested Inter-Zonal Interface.~~

~~**7.2.4.1.3** **[Not used]**~~

~~**7.2.4.1.4** The ISO shall also use the Adjustment Bids (in addition to other resources), in the ISO's real time system operation, for Intra-Zonal Congestion Management and to decrement Generation in order to accommodate Overgeneration conditions, including Reliability Must-Run Generation which the ISO requests under Reliability Must-Run Contracts.~~

~~**7.2.4.1.5** To facilitate trades amongst Scheduling Coordinators, the ISO will develop procedures to publish Adjustment Bids of those Scheduling Coordinators who authorize the publication of their identity and/or Adjustment Bids. Scheduling Coordinators will then be able to utilize this information to conduct trades to aid Congestion Management.~~

~~**7.2.4.2 Submission of Adjustment Bids.**~~

~~**7.2.4.2.1** Each Scheduling Coordinator is required to submit a preferred operating point for each of its resources. However, a Scheduling Coordinator is not required to submit an Adjustment Bid for a resource.~~

~~**7.2.4.2.2** The minimum MW output level specified for a resource, which may be zero MW, and the maximum MW output level specified for a resource must be physically realizable by the resource.~~

~~**7.2.4.2.3** The Scheduling Coordinator's preferred operating point for each resource must be within the range of the Adjustment Bids.~~

~~**7.2.4.2.4** Adjustment Bids can be revised by Scheduling Coordinators after the Day-Ahead Market has closed for consideration in the Hour-Ahead Market and, after the Hour-Ahead Market has closed, for consideration in the Real Time Market provided that, if the ISO has accepted all, or a portion of, an~~

~~offered Adjustment Bid, the Scheduling Coordinator is obligated to provide the relevant capacity increase or decrease to the ISO at the price of the accepted Adjustment Bid.~~

~~**7.2.4.2.5** During the ISO's Day-Ahead scheduling process, the MW range of the Adjustment Bid, but not the price values, may be changed.~~

~~**7.2.4.2.6** An Adjustment Bid shall constitute a standing offer to the ISO until it is withdrawn.~~

~~**7.2.4.2.7** The ISO may impose additional restrictions and bidding activity rules on the form of Adjustment Bids, the updating of Adjustment Bids, and the Scheduling Coordinator that may submit Adjustment Bids in connection with Inter-SC Trades, as needed, to ensure that the ISO's computational algorithms can operate reliably and produce efficient outcomes.~~

~~7.2.5 Inter-Zonal Congestion Management.~~

~~**7.2.5.1** The scheduling procedures in the Day-Ahead Market and Hour-Ahead Market will first ascertain, through power flow calculations, whether or not Inter-Zonal Congestion would exist if all of the Preferred and Revised Schedules submitted by the Scheduling Coordinators were accepted by the ISO. If no Inter-Zonal Congestion would exist, then all Inter-Zonal Interface uses will be accepted and the Usage Charges will be zero.~~

~~**7.2.5.2** The purpose of Inter-Zonal Congestion Management is to allocate the use of, and determine the marginal value of, active Inter-Zonal Interfaces. Inter-Zonal Congestion Management will comply with the requirements stated in Sections 7.2.2, 7.2.4 and 7.2.5.~~

~~**7.2.5.2.1** Inter-Zonal Congestion Management will keep each Scheduling Coordinator's portfolio of Generation and Demand (i.e., the Scheduling Coordinator's Preferred Schedule) separate from the portfolios of the other Scheduling Coordinators, as the ISO adjusts the Schedules to alleviate Inter-Zonal Congestion.~~

~~**7.2.5.2.2** If Congestion would exist on one or more active Inter-Zonal Interfaces, then the ISO shall execute its Inter-Zonal Congestion Management algorithms to determine a set of tentative (in the Day-Ahead procedure) allocations of Inter-Zonal Interface rights and tentative (in the Day-Ahead procedure) Usage Charges, where the Usage Charges will be calculated as the marginal values of the Congested Inter-Zonal Interfaces. The marginal value of a Congested Inter-Zonal Interface is calculated by the ISO's computer optimization algorithm to equal the total change in redispatch costs (based on the Adjustment Bids) that would result if the interface's scheduling limit was increased by a small increment.~~

~~**7.2.5.2.3** As part of the Day-Ahead scheduling procedure, but not the Hour-Ahead scheduling procedure, Scheduling Coordinators will be given the opportunity to adjust their Preferred Schedules (including the opportunity to make trades amongst one another) and to submit Revised Schedules to the ISO, in response to the ISO's Suggested Adjusted Schedules and prices for Inter-Zonal Interfaces.~~

~~**7.2.5.2.4** If the ISO receives any Revised Schedules it will execute its Inter-Zonal Congestion Management algorithms using revised Preferred Schedules, to produce a new set of allocations and prices.~~

~~**7.2.5.2.5** All of the ISO's calculations will treat each Settlement Period independently of the other Settlement Periods in the Trading Day.~~

~~**7.2.5.2.6** **[Not Used]**~~

~~**7.2.5.2.7** If inadequate Adjustment Bids have been submitted to schedule Inter-Zonal Interface capacity on an economic basis and to the extent that scheduling decisions cannot be made on the basis of economic value, the ISO will allocate the available Inter-Zonal Interface capacity to Scheduling Coordinators in proportion to their respective proposed use of that capacity as indicated in their Schedules and shall curtail scheduled Generation and Demand to the extent necessary to ensure that each Scheduling Coordinator's Schedule remains balanced.~~

~~7.2.5.2.8 The ISO will publish information prior to the Day-Ahead Market, between the iterations of the Day-Ahead Market, and prior to the Hour-Ahead Market, to assist the Scheduling Coordinators to construct their Adjustment Bids so as to actively participate in the management of Congestion and the valuation of Inter-Zonal Interfaces. This information may include the ISO's most-current information regarding: potentially Congested paths, projected transmission uses, projected hourly Loop Flows across Inter-Zonal Interfaces, scheduled line Outages, forecasts of expected system-wide Load, the ISO's Ancillary Services requirements, Generation Meter Multipliers, and power flow outputs.~~

~~7.2.5.2.8 The ISO will also publish information, once it is available, regarding tentative prices for the use of Inter-Zonal Interfaces, and Generation shift factors for the use of Inter-Zonal Interfaces, which indicate the relative effectiveness of Generation shifts in alleviating Congestion.~~

~~7.2.6 Intra-Zonal Congestion Management.~~

~~**7.2.6.1 [Not used]**~~

~~**7.2.6.1.1 [Not used]**~~

~~**7.2.6.1.2 [Not Used]**~~

~~**7.2.6.1.3 [Not Used]**~~

~~**7.2.6.1.4 [Not Used]**~~

~~**7.2.6.1.5 [Not Used]**~~

~~**7.2.6.1.6 [Not Used]**~~

~~**7.2.6.2 Intra-Zonal Congestion During Initial Period.** Except as provided in Sections 5.2 and 11.2.4.2, the ISO will perform Intra-Zonal Congestion Management in real time using available Adjustment Bids and Imbalance Energy bids, based on their effectiveness and in merit order, to minimize the cost of alleviating Congestion. In the event no Adjustment Bids or Imbalance Energy bids~~

~~are available, the ISO will exercise its authority to direct the redispatch of resources as allowed under the Tariff, including Section 2.4.2 and 2.4.4.~~

~~**7.2.6.3 Cost of Intra-Zonal Congestion Management.** The net of the amounts paid by the ISO to the Scheduling Coordinators and the amounts charged to the Scheduling Coordinators will be calculated and charged to all Scheduling Coordinators through a Grid Operations Charge, as described in Section 7.3.2.~~

~~7.2.7 Creation, Modification and Elimination of Zones.~~

~~**7.2.7.1 Active Zones.** The Active Zones are as set forth in Appendix I to this ISO Tariff.~~

~~**7.2.7.2 Modifying Zones.** The ISO shall monitor usage of the ISO Controlled Grid to determine whether new Zones should be created, or whether existing Zones should be eliminated, in accordance with the following procedures.~~

~~**7.2.7.2.1** If over a 12-month period, the ISO finds that within a Zone the cost to alleviate the Congestion on a path is equivalent to at least 5 percent of the product of the rated capacity of the path and the weighted average High Voltage Access Charge and Low Voltage Access Charge, as applicable, of the Participating TOs, the ISO may announce its intention to create a new Zone. In making this calculation, the ISO will only consider periods of normal operations. A new Zone will become effective 90 days after the ISO Governing Board has determined that a new Zone is necessary.~~

~~**7.2.7.2.2** The ISO may, at its own discretion, shorten the 12-month and 90-day periods for creating new Zones if the ISO Governing Board determines that the planned addition of new Generation or Load would result in Congestion that would meet the criterion specified in Section 7.2.7.2.1.~~

~~**7.2.7.2.3 [Not Used]**~~

~~**7.2.7.2.4** If a new transmission project or other factors will eliminate Congestion between existing Zones, the ISO may modify or eliminate those Zones at its discretion.~~

~~**7.2.7.2.5** The ISO may change the criteria for establishing or modifying Zone boundaries, subject to regulatory approval by the FERC.~~

~~**7.2.7.3 Active and Inactive Zones.**~~

~~**7.2.7.3.1** An Active Zone is one for which a workably-competitive Generation market exists on both sides of the relevant Inter-Zonal Interface for a substantial portion of the year so that Congestion Management can be effectively used to manage Congestion on the relevant Inter-Zonal Interface. Pending the ISO's determination of the criteria for defining "workable competitive generation markets", the Inactive Zones will, as an interim measure, be those specified in Section 7.2.7.3.4.~~

~~**7.2.7.3.2** The Congestion Management described in this Section 7.2, and the Usage Charges stemming from the application of these procedures, shall not apply to Inter-Zonal Interfaces with Inactive Zones.~~

~~**7.2.7.3.3** For Inactive Zones, any costs associated with Congestion Management on the inactive Inter-Zonal Interface (for example, the above market costs associated with Generation "call" contracts) will be allocated to the Service Area of the Participating TOs who own the inactive Inter-Zonal Interface, as set forth in the TO Tariff and any Intra-Zonal Congestion Management costs within the Inactive Zone and the adjacent Zone will be combined and will be allocated as if the two Zones were a single Zone.~~

~~**7.2.7.3.4** The initial inactive Inter-Zonal Interfaces are the interface between the San Francisco Zone and the remainder of the ISO Controlled Grid, and the interface between the Humboldt Zone and the remainder of the ISO Controlled Grid. The initial Inactive Zones are the San Francisco Zone and the Humboldt Zone.~~

~~**7.2.7.3.5** The determination of whether a new Zone or an existing Inactive Zone should become an Active Zone and the determination of whether a workably-competitive Generation market exists for a substantial portion of the year, shall be made by the ISO Governing Board, using the same approval criteria as are used for the creation or modification of Zones. The ISO Governing Board shall adopt~~

~~criteria that defines a "workably competitive Generation" market. The ISO Governing Board will review the methodology used for the creation or modification of Zones (including Active Zones and Inactive Zones) on an annual basis and make such changes as it considers appropriate.~~

7.3 [Not Used]~~Usage Charges and Grid Operations Charges.~~

~~7.3.1 Usage Charges for Inter-Zonal Congestion.~~

~~The Usage Charge is used by the ISO to charge Scheduling Coordinators for the use of Congested Inter-Zonal Interfaces. Subject to Section 2.4.4.4.4.1, the Usage Charge shall be paid by all Scheduling Coordinators that use a Congested Inter-Zonal Interface. If a Scheduling Coordinator uses more than one Congested Inter-Zonal Interface, it will pay a Usage Charge for each Congested Inter-Zonal Interface that it uses.~~

~~**7.3.1.1 Calculation and Allocation of Usage Charge.** Those Scheduling Coordinators who are permitted by the ISO to use a Congested Inter-Zonal Interface will pay a Usage Charge. The Usage Charge is determined using Inter-Zonal Congestion Management described in Section 7.2.5, and is calculated as the hourly marginal value of an incremental kW of Inter-Zonal Interface capacity (in cents per kWh). The same Usage Charge will be used to compensate Scheduling Coordinators who, in effect, create transmission capacity through counter Schedules on Congested Inter-Zonal Interfaces.~~

~~**7.3.1.2 Calculation of Marginal Value of an Inter-Zonal Interface.** The marginal value of an Inter-Zonal Interface is the basis for the Usage Charge associated with the scheduled use of the Inter-Zonal Interface. This price is calculated from the Adjustment Bids of the Scheduling Coordinators and the ISO's computer optimization algorithms, using the procedures described in Section 7.2.~~

~~**7.3.1.2.1** The price used to determine the Usage Charge will be the Day-Ahead price for those scheduling in the Day-Ahead Market, or the Hour-Ahead price for those Schedules submitted after the Day-Ahead Market closed.~~

~~**7.3.1.2.2** The Day-Ahead prices are calculated based on the Adjustment Bids of the Scheduling Coordinators who participate in the Day-Ahead Market. These Day-Ahead prices are used to calculate Usage Charges for Schedules accepted in the Day-Ahead Market.~~

~~**7.3.1.2.3** The Hour-Ahead prices are calculated based on Adjustment Bids submitted or otherwise still in effect after the Day-Ahead procedures have concluded. These prices are applied to all Schedules for the use of the Congested Inter-Zonal Interfaces that have been submitted and accepted after the ISO's Day-Ahead scheduling and Congestion Management have concluded.~~

~~**7.3.1.3 Default Usage Charge.** If inadequate or unusable Adjustment Bids have been submitted to the ISO to enable the ISO's Congestion Management to schedule Inter-Zonal Interface capacity on an economic basis, then the ISO will calculate and impose a default Usage Charge, in accordance with Sections 7.3.1.3.1 through 7.3.1.3.4.~~

~~**7.3.1.3.1** The default Usage Charge will be calculated within a range having an absolute floor of $0/MWh and an absolute ceiling of $500/MWh; provided that the ISO may vary the floor within the absolute limits, with day-prior notice (e.g., applicable to next day's Day-Ahead Market) to Scheduling Coordinators, and vary the ceiling within the absolute limits, with at least seven (7) days notice to Scheduling Coordinators.~~

~~**7.3.1.3.2** The default Usage Charge will be calculated, in accordance with this Section 7.3.1.3, by applying a pre-set adder, ranging from $0/MWh to $99/MWh, to the highest incremental Adjustment Bid used, less the applicable decremental Adjustment Bid used; provided that in all cases where there are insufficient decremental Adjustment Bids or no decremental Adjustment Bids available, in the exercise of mitigating Congestion, the applicable decremental price will be set equal to $0/MWh; provided, further, that the ISO may vary the pre-set adder with day-prior notice to Scheduling Coordinators (*e.g.*, applicable to next day's Day-Ahead Market).~~

~~**7.3.1.3.3** Upon the ISO Operations Date, and until such time as the ISO determines otherwise, the ceiling price for the default Usage Charge will be set at $250/MWh; the floor price for the default Usage Charge will be set at $30/MWh; and the pre-set adder that is to be applied in accordance with section 7.3.1.3.2 will be set at $0/MWh.~~

~~**7.3.1.3.4** The ISO will develop and implement a procedure for posting default Usage Charges on the WEnet or ISO Home Page.~~

~~**7.3.1.3.5** If the Congestion Management software is not capable of calculating the default Usage Charge upon the ISO Operations Date in accordance with Sections 7.3.1.3.1 through 7.3.1.3.4, the ISO will establish a fixed default Usage Charge within the absolute limits of $0/MWh and $500/MWh, which may be changed by the ISO with day-prior notice. Initially, the default Usage Charge would be capped at $100/MWh. As soon as tested and available, the ISO will implement the Congestion Management software to calculate the default Usage Charge in accordance with Sections 7.3.1.3.1 through 7.3.1.3.4 after giving at least seven (7) days notice to Scheduling Coordinators, by way of a notice 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.~~

~~**7.3.1.4 Determination of Usage Charges to be Paid by Scheduling Coordinator.** All Scheduling Coordinators whose Schedules requiring use of a Congested Inter-Zonal Interface have been accepted by the ISO, shall pay a Usage Charge for each hour for which they have been scheduled to use the Inter-Zonal Interface. The amount payable shall be the product of the Usage Charge referred to in Section 7.3.1.2 for the particular hour, multiplied by the Scheduling Coordinator's scheduled flows (in kW) and capacity, if any, reserved for Ancillary Services over the Inter-Zonal Interface for that particular hour.~~

~~**7.3.1.5 Determination of Usage Charges to be Paid to Scheduling Coordinators Who Counter-Schedule.**~~

~~**7.3.1.5.1** Scheduling Coordinators who in effect create additional Inter-Zonal Interface transmission capacity on Congested Inter-Zonal Interfaces will receive from the ISO a Usage Charge for each hour they have counter-scheduled on the Congested Inter-Zonal Interfaces. The amount payable shall be the product of the Usage Charge referred to in Section 7.3.1.2 for that particular hour, multiplied by the Scheduling Coordinator's scheduled flows.~~

~~**7.3.1.5.2** If a Scheduling Coordinator fails to provide the scheduled flows in a counter direction, it must reimburse the ISO for the ISO's costs of buying or selling Imbalance Energy in each of the Zones affected by the non-provided scheduled flows in a counter direction, at the ISO's Zonal Imbalance Energy prices. That is, for any Scheduling Coordinator that does not produce, in real time, the amount of Energy scheduled in the Day-Ahead Market or Hour-Ahead Market will be deemed to have purchased/sold the amount of Energy under/over produced in the real time imbalance market at the real time price.~~

~~**7.3.1.6 ISO Disbursement of Net Usage Charge Revenues.** The ISO will determine the net Usage Charges on an interface-by-interface basis by subtracting the Usage Charge fees paid to Scheduling Coordinators from the Usage Charge fees paid by Scheduling Coordinators. The net Usage Charge revenues collected by the ISO for each Inter-Zonal Interface shall be, subject to the provisions of Section 7.3.1.7 of the ISO Tariff, paid to: (i) FTR Holders, in accordance with Section 9.6; and (ii) to the extent not paid to FTR Holders, to Participating TOs who own the Inter-Zonal Interfaces (to be credited in turn by them to their Transmission Revenue Balancing Accounts, or, for those Participating TOs that do not have such accounts, to their transmission revenue requirements).~~

~~**7.3.1.7 ISO Debit of Net Usage Charge Revenues.** If, after the issuance of Final Day-Ahead Schedules by the ISO, (a) Participating TOs instruct the ISO to reduce interface limits based on operating conditions or (b) an unscheduled transmission outage occurs and as a result of either of those events, Congestion is increased and Available Transfer Capacity is decreased in the Inter-Zonal~~

~~Interface in the Hour-Ahead Market, the ISO shall: (1) charge each Participating TO and FTR Holder with an amount equal to its proportionate share, based on its financial entitlement to Usage Charges in the Day-Ahead Market in accordance with Section 7.3.1.6, of the product of (i) the Usage Charge in the Day-Ahead Market and (ii) the reduction in Available Transfer Capacity across the Inter-Zonal Interface in the direction of the Congestion (such amount due to the Participating TOs to be debited by them in turn from their Transmission Revenue Balancing Accounts or, for those Participating TOs that do not have such accounts, to their transmission revenue requirements); (2) charge each Scheduling Coordinator with its proportionate share, based on Schedules in the Day-Ahead Market across the Inter-Zonal Interface in the direction of the Congestion, of the difference between the amount charged to Participating TOs and FTR Holders under clause (1) and the Usage Charges in the Hour-Ahead Market associated with the reduced Available Transfer Capacity across the Congested Inter-Zonal Interface; and (3) credit each Scheduling Coordinator whose Schedule in the Hour-Ahead Market for the transfer of Energy across the Congested Inter-Zonal Interface was adjusted due to the reduction in Available Transfer Capacity an amount equal to the product of the adjustment (in MW) and the Usage Charge in the Hour-Ahead Market (in$/MW).~~

~~The ISO will issue a notice to Scheduling Coordinators of the operating hour, and extent, for which the derate will apply in the relevant Hour-Ahead Markets. The timing and form of such notices shall be set forth in ISO procedures.~~

~~7.3.2 Grid Operations Charge for Intra-Zonal Congestion.~~

~~Scheduling Coordinators whose resources are redispatched by the ISO, in accordance with Intra-Zonal Congestion Management, will be paid or charged based on the Adjustment Bids or Imbalance Energy bids that they have provided to the ISO. The net redispatch cost will be recovered for each Settlement Period through the Grid Operations Charge, which shall be paid to the ISO by all Scheduling Coordinators in proportion to their metered Demands within the Zone with Intra-Zonal Congestion, and~~

~~scheduled exports from the Zone with Intra-Zonal Congestion to a neighboring Control Area, provided that, with respect to Demands within an MSS in the Zone and scheduled exports from the MSS to a neighboring Control Area, a Scheduling Coordinator shall be required to pay Grid Operations Charges only with respect to Intra-Zonal Congestion, if any, that occurs on an interconnection between the MSS and the ISO Controlled Grid, and with respect to Intra-Zonal Congestion that occurs within the MSS, to the extent the Congestion is not relieved by the MSS Operator.~~

7.4 [Not Used]~~Transmission Losses.~~

~~7.4.1 Obligation to Provide for Transmission Losses.~~

~~Each Scheduling Coordinator shall ensure that it schedules sufficient Generation to meet both its Demand and Transmission Losses responsibilities as determined in accordance with this Section 7.4.~~

~~7.4.2 Determination of Transmission Losses.~~

~~The total Demand that may be served by a Generating Unit, in a given hour, taking account of Transmission Losses, is equal to the product of the total Metered Quantity of that Generating Unit in that hour and the Ex Post Generation Meter Multiplier calculated by the ISO in the hour for that Generator location except in accordance with Section 7.4.3. The Ex Post Generation Meter Multiplier shall be greater than one (1) where the Generating Unit's contribution to the ISO Controlled Grid reduces Transmission Losses and shall be less than one (1) where the Generating Unit's contribution to the system increases Transmission Losses. All Generating Units supplying Energy to the ISO Controlled Grid at the same electrical bus shall be assigned the same Ex Post Generation Meter Multiplier.~~

~~7.4.2.1 Procedures for Calculating Generation Meter Multiplier.~~

~~7.4.2.1.1~~ ~~By 6:00 p.m. two days preceding a Trading Day, the ISO will calculate, and post on WEnet, an estimated Generation Meter Multiplier for each electrical bus at which one or more Generating Units may supply Energy to the ISO Controlled Grid. The Generation Meter Multipliers shall be determined~~

~~utilizing the Power Flow Model based upon the ISO's forecasts of total Demand for the ISO Controlled Grid and Demand and Generation patterns throughout the ISO Controlled Grid. The ISO shall continuously update the data to be used in calculating the Generation Meter Multipliers to reflect changes in system conditions on the ISO Controlled Grid, and the ISO shall provide all Scheduling Coordinators with access to such data. The ISO shall not be required to determine new Generation Meter Multipliers for each hour; the ISO will determine the appropriate period for which each set of Generation Meter Multipliers will apply, which period may vary based upon the expected frequency and magnitude of changes in system conditions on the ISO Controlled Grid.~~

~~**7.4.2.1.2** The ISO will calculate the Ex Post Generation Meter Multiplier for each electrical bus at which one or more Generating Units may supply Energy to the ISO Controlled Grid. The Ex Post Generation Meter Multipliers shall be determined utilizing the Power Flow Model based upon the ISO's total Demand for the ISO Controlled Grid and Demand and Generation patterns throughout the ISO Controlled Grid. The ISO's total Demand shall be determined using real time power flow data based on a state-estimation result.~~

~~**7.4.2.2 Methodology for Calculating Generation Meter Multiplier.** The ISO shall calculate the Generation Meter Multiplier for each Generating Unit location in a given hour by subtracting the Scaled Marginal Loss Rate from 1.0.~~

~~**7.4.2.2.1** The Scaled Marginal Loss Rate for a given Generating Unit location in a given hour shall equal the product of (i) the Full Marginal Loss Rate for each Generating Unit location and hour, and (ii) the Loss Scale Factor for such hour.~~

~~**7.4.2.2.2** The ISO shall calculate the Full Marginal Loss Rate for each Generating Unit location for an hour by utilizing the Power Flow Model to calculate the effect on total Transmission Losses for the ISO Controlled Grid of injecting an increment of Generation at each such Generating Unit location to serve an equivalent incremental MW of Demand distributed on a pro-rata basis throughout the ISO Controlled Grid.~~

~~7.4.2.2.3 The ISO shall determine the Loss Scale Factor for an hour by determining the ratio of forecast Transmission Losses to the total Transmission Losses which would be collected if Full Marginal Loss Rates were applied to each Generating Unit in that hour.~~

~~7.4.3 In the event that the Power Flow Model fails to determine Ex Post GMMs, for example if GMMs are outside the range of reasonability (typically 0.8 to 1.1), the ISO will use Default GMMs in their place.~~

7.5 FERC Annual Charges.

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8. **GRID MANAGEMENT CHARGE.**

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8.3.3 ~~The Market Operations~~ Ancillary Services and Real-Time Energy Operations Charge.

The Ancillary Services and Real-Time Energy Operations Charge for each Scheduling Coordinator or Other Appropriate Party is calculated as the product of the rate for the Ancillary Services and Real-Time Energy Operations Charge and the Scheduling Coordinator's or Other Appropriate Party's total purchases and sales (including out-of-market transactions) of Ancillary Services (including the capacity selected by the ISO in the Residual Unit Commitment Process for which an SC receives a capacity payment), Real-Time Energy, and Imbalance Energy (both instructed and uninstructed), plus 50% of effective self-provision of Ancillary Services. The rate for the Ancillary Services and Real-Time Energy Operations Charge is determined by dividing the GMC costs allocated to this service category by the total purchases and sales of Ancillary Services plus the total RUC Capacity, Real-time Energy and Imbalance Energy (both instructed and uninstructed) and 50% of effective self-provision of Ancillary Services according to the formula in Appendix F, Schedule 1, Part A of this Tariff. Energy procured to cover line losses or

other transmission losses also shall be assessed this charge. ~~The Market Operations Charge for each Scheduling Coordinator is calculated as the product of the rate for the Market Operations Charge and the Scheduling Coordinator's total purchases and sales of Ancillary Services, Supplemental Energy, and Imbalance Energy (both instructed and uninstructed). The rate for the Market Operations Charge is determined by dividing the GMC costs allocated to this service category by the total purchases and sales of Ancillary Services, Supplemental Energy and Imbalance Energy (both instructed and uninstructed) according to the formula in Schedule 1 of this Tariff.~~

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9. FIRM TRANSMISSION RIGHTS

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10. METERING.

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10.2.2 Duty to Install and Maintain Meters.

The ISO may require ISO Metered Entities to install, at their cost, additional meters and relevant metering system components, including real time metering, at ISO specified Meter Points or other locations as deemed necessary by the ISO, in addition to those connected to or existing on the ISO Controlled Grid at the ISO Operations Date, including requiring the metering of transmission interfaces **between UDCs and the ISO Control Area and other Control Areas**. ~~connecting Zones.~~ ISO Metered Entities, at their cost, shall install and maintain, or cause to be installed and maintained, metering equipment and associated communication devices at ISO designated Meter Points to meet the requirements of this Section 10 and the ISO metering protocols. Nothing in this Section 10 shall preclude ISO Metered Entities from installing additional meters, instrument transformers and associated communications facilities at their own cost.

* * *

10.3 Meter Service Agreements for ISO Metered Entities.

10.3.1 Requirement for Meter Service Agreements.

The ISO shall establish meter service agreements with ISO Metered Entities for the collection of Meter Data. Such agreements shall specify that ISO Metered Entities shall make available to the ISO's revenue meter data acquisition and processing system, Meter Data meeting the requirements of these Sections 10.1 to 10.5 inclusive and the ISO metering protocols. The meter service agreement and the ISO metering protocols shall specify the format of Meter Data to be submitted, which shall be identified by TO, Distribution System, ~~Zone~~ **Location**, ISO Controlled Grid interface point and other information reasonably required by the ISO. Meter service agreements will identify other authorized users which are

allowed to access the Settlement Quality Meter Data held by the ISO. The ISO will ensure that the relevant UDCs and TOs are included as other authorized users.

* * *

11. ISO SETTLEMENTS AND BILLING.

* * *

11.1.6 The ISO shall settle the following charges in accordance with Section 11.2 of this ISO Tariff:

(1) Grid Management Charge;

~~(2) Grid Operations Charge;~~

(2~~3~~) Ancillary Services charges;

(3~~4~~) Imbalance Energy charges;

(4~~5~~) Usage Charges;

(5~~6~~) High Voltage Access Charges and Transition Charges;

(6~~7~~) Wheeling Access Charges;

(7~~8~~) Voltage Support and Black Start charges; and

(8~~9~~) Reliability Must-Run Charges

11.2 Calculations of Settlements.

The ISO shall calculate, account for and settle the following charges in accordance with this ISO Tariff.

11.2.1 Grid Management Charge.

The Grid Management Charge will be levied in accordance with Section 8 of this ISO Tariff.

11.2.2 [Not Used] ~~Grid Operations Charge.~~

~~The Grid Operations Charge will be levied in accordance with Section 7.3.2 of this ISO Tariff.~~

11.2.3 Ancillary Services

The ISO shall calculate, account for and settle charges and payments for Ancillary Services as set out in the **Settlement and Billing Protocol Appendix C**.~~Sections 2.5.27.1 to 4, and 2.5.28.1 to 4 of this ISO Tariff.~~

11.2.4 Imbalance Energy.

The ISO shall calculate, account for and settle Imbalance Energy in the Real Time Market for each **Dispatch Interval**~~BEEP Interval Period~~ for the relevant **Location**~~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 Iinstructions. The Instructed Imbalance Energy will be calculated based on all Dispatch Iinstructions taking into account applicable ramp rates and time delays. All Dispatch Iinstructions 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 **Location**~~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 **Dispatch**~~BEEP~~ Interval in accordance with **Section 31.4.3.4.2 and the Settlement and Billing Protocol Appendix D**~~Section 2.5.23.2.1~~.

11.2.4.1.1 Settlement for Instructed Imbalance Energy

Instructed Imbalance Energy attributable to each Scheduling Coordinator in each **Dispatch**~~BEEP~~ Interval shall be deemed to be sold or purchased, as the case ay 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 **Dispatch**~~BEEP~~ Interval in accordance with **Section 31.4.3.4.1 and the Settlement and Billing Protocol Appendix D**~~Section 2.5.23~~.

11.2.4.1.2 Penalties for Uninstructed Imbalance Energy

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

a) The Uninstructed Deviation Penalty will be calculated and assessed for in each ~~BEEP Interval~~**Dispatch Interval**. ~~that Section 5.6.3 is not in effect and the ISO has not declared a staged System Emergency;~~

b) The Uninstructed Deviation Penalty will not be assessed for positive Uninstructed Imbalance Energy in hours in which the ISO has declared a System Emergency;

c~~b~~) The Uninstructed Deviation Penalty will apply to Interconnection Schedules if a pre-**D**~~d~~ispatch **I**instruction is declined or not delivered. ~~Uninstructed Imbalance Energy resulting from declining intra-hour Instructions, however, will not be subject to Uninstructed Deviation Penalty.~~ Dynamic Interconnection Schedules, to the extent they deviate without instruction from their final Hour-Ahead Schedule, and real-time instructions for Energy from Interconnection Schedule bids that are declined, will be subject to the Uninstructed Deviation Penalty;

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

e~~d~~) The Uninstructed Deviation Penalty will not apply to constrained resources for the duration of the relevant start-up/shutdown and Minimum Up/Down Times;

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

g~~f~~) For Metered Subsystems (MSS), the Uninstructed Deviation Penalty will apply to the net injection (System Unit generation plus import minus MSS load and export) into the ISO Controlled Grid;

h~~g~~) The Uninstructed Deviation Penalty will not apply to Generators providing Regulation to the extent that the Generators' Uninstructed Deviations are within the range of their actual Regulation range;

i~~h~~) The Uninstructed Deviation Penalty will be calculated and assessed for each resource separately, however, resources represented by the same Scheduling Coordinator and connected to the same ISO Controlled Grid bus and voltage level can be aggregated for purposes of Uninstructed Deviation Penalty determination. Other levels of aggregation for purposes of the Uninstructed Deviation Penalty will be considered on a case-by-case basis based on an ISO review of impact on the ISO Controlled Grid;

j~~i~~) The tolerance band for the application of the Uninstructed Deviation Penalties to Generating Units or aggregated groups of Generating Units initially will be the Energy produced in a ~~BEEP Interval~~**Dispatch Interval** by the greater of five (5) MW or three percent (3%) of the relevant generating unit's maximum output (P_{max}), as registered in the Master File;

k~~j~~) The tolerance band for the application of the Uninstructed Deviation Penalties to **Dispatchable**~~Participating~~ Loads initially will be equal to the Energy produced in a ~~BEEP Interval~~**Dispatch Interval** by the greater of five (5) MW or three percent (3%) of the relevant final Hour-Ahead Schedule;

l~~k~~) The Uninstructed Deviation Penalty will not apply when the ~~BEEP Interval~~**Dispatch Interval Locational Marginal Price** ~~Ex Post Price~~ is negative or zero;

m~~l~~) The Uninstructed Deviation Penalty for positive Uninstructed Imbalance Energy will be the amount of the Uninstructed Imbalance Energy in excess of the tolerance band multiplied by a price that initially will be equal to 100% of the corresponding ~~BEEP Interval~~**Dispatch Interval Locational Marginal Price**~~Ex Post Price~~; and the net effect of the Uninstructed Deviation Penalty and the Settlement for positive Uninstructed Imbalance Energy beyond the tolerance band will be that the ISO will not pay for such Energy;

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

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

po) The Uninstructed Deviation Penalty will apply to **Exceptional Dispatches** ~~Out of Market (OOM) transactions~~;

qp) Generating Units, **Dispatchable Load** ~~Curtailable Demand~~ and dispatchable Interconnection resources with negative Uninstructed Imbalance Energy will be exempted from the Uninstructed Deviation Penalty if the Generating Unit, **Dispatchable Load** ~~Curtailable Demand~~ or dispatchable Interconnection resource was physically incapable of delivering the expected Energy, provided that the Generating Unit, **Dispatchable Load** ~~Curtailable Demand~~ or dispatchable Interconnection resource had notified the ISO within 30 minutes of the onset of an event that prevents the resource from performing its obligations. A Generating Unit, **Dispatchable Load** ~~Curtailable Demand~~ or dispatchable Interconnection resource must notify ISO operations staff of its reasons for failing to deliver the expected Energy in accordance with Section 2.3.3.9.2 and must provide information to the ISO that verifies the reason the resource failed to comply with the Dispatch **I**~~i~~nstruction within 72 hours of the operating hour in which the instruction is issued; and

rq) Operational adjustments associated **with** interchange schedules making use of Existing Contract rights shall not be subject to the **U**~~u~~ninstructed **D**~~d~~eviation **P**~~p~~enalty.

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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 5.12.8.3. 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~~**Dispatch Interval** pursuant to Section 11.2.4.2.2. Any remaining portion of amounts collected as Uninstructed Deviation Penalties after satisfying these sequential commitments shall be treated in accordance with SABP 6.5.2.

11.2.4.2 Payment Options for ISO Dispatch Orders

With respect to all resources with no bids (either submitted or inserted by the ISO) in the Imbalance Energy or Ancillary Services markets but which have been dispatched by the ISO to avoid an intervention in market operations, to prevent or relieve a System Emergency, or to satisfy a locational requirement, the ISO shall calculate, account for and, if applicable, settle deviations from the Final Hour-Ahead Schedule, with the relevant Scheduling Coordinator for each Settlement Period for each such resource by application of either of the following payment options described below. For resources subject to a Reliability Must-Run Contract, the ISO will dispatch such resources according to the terms of the RMR Contract. In circumstances where an RMR Unit would be used to resolve Congestion and there are no such RMR Units available, a resource may be called upon and paid under this Section to resolve the Congestion.

By December 31 of each year for the following calendar year, each Scheduling Coordinator for a resource shall select one of the following payment options for each resource it schedules:

(a) the Hourly Ex Post Price as calculated in accordance with SABP Appendix D or

(b) a calculated price:

(i) for decremental dispatch orders that is an Energy payment to the ISO that is equal to the Locational Marginal Price for the relevant Dispatch Interval less verifiable daily gas imbalance charges, if any, that are solely attributable to the ISO's Dispatch Instruction and that the Scheduling Coordinator or Generator was not able to eliminate or reduce despite the application of best efforts, if the

Scheduling Coordinator provides the resource's daily gas imbalance charges to the ISO within thirty (30) Business Days from the Settlement Period for which the resource is dispatched; and

(ii) for incremental dispatch orders is the sum of: 1) a capacity payment equal to the average Day-Ahead Ancillary Service Marginal Prices for Spinning Reserve and Non-Spinning Reserve for the three (3) most recent similar days for the same Settlement Period for which the resource is dispatched; 2) an Energy payment equal to the average calculated using the Day-Ahead, Hour-Ahead and Real-Time Locational Marginal Prices for the three (3) most recent similar days for the same Settlement Period for which the resource is dispatched; 3) such resource's verifiable start-up fuel costs, if the start-up was solely attributable to the ISO's dispatch instruction and if the Scheduling Coordinator provides the resource's start-up fuel costs to the ISO within thirty (30) Business Days from the Settlement Period for which the resource is dispatched; and 4) verifiable daily gas imbalance charges, if any, that are solely attributable to the ISO's Dispatch Instruction and that the Scheduling Coordinator or Generator was not able to eliminate or reduce despite the application of best efforts, if the Scheduling Coordinator provides the resource's daily gas imbalance charges to the ISO within thirty (30) Business Days from the Settlement Period for which the resource is dispatched. References to "similar days" in this Section refer to Business Days when the resource is dispatched on a Business Day and otherwise to days that are not Business Days.

To the extent a Scheduling Coordinator does not specify a payment option, the ISO will apply the payment provisions of payment option (a).

11.2.4.2.1 [Not Used] ~~Allocation of Costs Resulting From Dispatch Instructions~~

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

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

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

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

11.2.4.2.2 Allocation of Above-MCP Costs

For each ~~BEEP Interval~~**Dispatch 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~~**Dispatch 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~~**Dispatch 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 **Dispatch Interval** ~~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 **Bid Ceiling**~~NECPL~~.

11.2.4.3 Unaccounted For Energy (UFE)

For settlement purposes, UFE is treated as Imbalance Energy. For each ~~BEEP Interval~~**Dispatch Interval**, the ISO will calculate UFE on the ISO Controlled Grid, for each UDC Service Area. The UFE will be settled as Imbalance Energy at the ~~BEEP Interval~~**Dispatch Interval Locational Marginal Price** ~~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.

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

11.2.4.5 Participating Intermittent Resources

11.2.4.5.1 Uninstructed Energy by Participating Intermittent Resources

Uninstructed Imbalance Energy associated with deviations by a Participating Intermittent Resource shall be settled as provided in this Section 11.2.4.5.1 for every Settlement Period in which such Participating Intermittent Resource meets the scheduling requirements established in the technical standards for Participating Intermittent Resources adopted by the ISO and published on the ISO Home Page. In each Settlement Period such requirements are met, the Participating Intermittent Resource shall be exempt from the charges (payments) for Uninstructed Imbalance Energy. Instead, the net Uninstructed Imbalance Energy in each ~~BEEP Interval~~**Dispatch Interval** shall be assigned to a deviation account specific to each Participating Intermittent Resource. The net balance in each deviation account at the end of each calendar month shall be paid (or charged) to the Scheduling Coordinator for the associated Participating Intermittent Resource at the average price specified in **Settlement and Billing Protocol Appendix D**~~Section 2.5.23.2.3 of the ISO Tariff~~. If the above- referenced scheduling requirements for Participating Intermittent Resources are not met, then charges (payments) for Uninstructed Imbalance Energy during such Settlement Periods shall be determined in accordance with Section 11.2.4.1.

11.2.4.5.2 Adjustment of Other Charges Related to Participating Intermittent Resources

Charges pursuant to ~~Section 2.5.28.4 or~~ Section 11.2.4.2.2 to Scheduling Coordinators representing Participating Intermittent Resources shall exclude the effect of uninstructed deviations by Participating Intermittent Resources that have scheduled in accordance with the technical standards for Participating

Intermittent Resources adopted by the ISO and published on the ISO Home Page. The amount of such adjustments shall be accumulated and settled as provided in Section 11.2.4.5.3.

11.2.4.5.3 Allocation of Costs From Participating Intermittent Resources

The charges (payments) for Uninstructed Imbalance Energy that would have been calculated if the ~~BEEP Interval~~**Dispatch Interval** deviations by each Participating Intermittent Resource were priced at the appropriate ~~BEEP Interval~~**Dispatch Interval Locational Marginal Price** ~~Ex Post Price~~ specified in **Settlement and Billing Protocol Appendix D**~~Section 2.5.23.2.1~~ shall be assigned to a monthly balancing account for all Participating Intermittent Resources in the ISO Control Area. The balance in such account at the end of each month shall be netted against the aggregate payments (charges) by Scheduling Coordinators on behalf of Participating Intermittent Resources pursuant to Section 11.2.4.5.1. The resulting balance, together with the adjustments to charges in each ~~BEEP Interval~~**Dispatch Interval** or Settlement Period pursuant to Section 11.2.4.5.2 shall be assigned to each Scheduling Coordinator in the same proportion that such Scheduling Coordinator's aggregate Net Negative Uninstructed Deviations in that month bears to the aggregate Net Negative Uninstructed Deviations for all Scheduling Coordinators in the Control Area in that month.

11.2.4.5.4 Payment of Forecasting Fee

A fee to defray the costs of the implementation of the technical standards for Participating Intermittent Resources shall be assessed to Scheduling Coordinators for Participating Intermittent Resources as specified in Schedule 4 of Appendix F.

11.2.4.6 [Not Used]

11.2.5 [Not Used]~~Usage Charges.~~

~~Usage Charges will be levied in accordance with Section 7.3.1 of this Tariff.~~

11.2.6 Wheeling Through and Wheeling Out Transactions.

The ISO shall calculate, account for and settle charges and payments for Wheeling Through and Wheeling Out transactions in accordance with Section 7.1.4 of this Tariff.

11.2.7 Voltage Support and Black Start Charges.

The ISO shall calculate, account for and settle charges and payments for Voltage Support and Black Start as set out in **Settlement and Billing Protocol Appendix G**~~Sections 2.5.27.5, 2.5.27.6, 2.5.28.5 and 2.5.28.6 of this ISO Tariff~~.

11.2.8 Reliability Must-Run Charges

The ISO shall calculate and levy the charges for Reliability Must-Run Contract costs in accordance with Section 5.2.7 of this ISO Tariff.

11.2.9 Neutrality Adjustments

The ISO shall be authorized to levy additional charges or payments as special adjustments in regard to:

(a) amounts required to round up any invoice amount expressed in dollars and cents to the nearest whole dollar amount in order to clear the ISO Clearing Account. These charges will be allocated amongst Scheduling Coordinators over an interval determined by the ISO and pro rata based on metered Demand (including exports) during that interval;

(b) amounts in regard to penalties which may be levied by the ISO in accordance with the ISO Tariff. These charges will be levied on the Market Participants liable for payment of the penalty;

(c) amounts required to reach an accounting trial balance of zero in the course of the Settlement process in the event that the charges calculated as due from ISO Debtors are lower than payments calculated as due to the ISO Creditors for the same Trading Day. These charges will be allocated amongst the Scheduling Coordinators who traded on that Trading Day pro rata to their metered Demand (including exports) in MWh of Energy for that Trading Day. In the event

that the charges due from ISO Debtors are higher than the payments due to ISO Creditors, the ISO shall allocate a payment to the Scheduling Coordinators who traded on that Trading Day pro rata to their metered Demand (including exports) in MWh of Energy for that Trading Day;

(d) amounts required with respect to payment adjustments for regulating Energy as calculated in accordance with **Settlement and Billing Protocol Appendix C**~~Section 2.5.27.1~~. These charges will be allocated amongst the Scheduling Coordinators who traded on that Trading Day pro rata to their metered Demand (excluding exports) in MWh for that Trading Day; and

(e) awards payable by or to the ISO pursuant to good faith negotiations or ISO ADR Procedures that the ISO is not able to allocate to or to collect from a Market Participant or Market Participants in accordance with Section 13.5.3. These charges will be allocated amongst Scheduling Coordinators over an interval determined by the ISO and pro rata based on metered Demand (including exports) during that interval.

11.2.9.1 The total annual charges levied under Section 11.2.9 shall not exceed $0.095/MWh, applied to Gross Loads in the ISO Control Area and total exports from the ISO Controlled Grid, unless: (a) the ISO Governing Board reviews the basis for the charges above that level and approves the collection of charges above that level for a defined period; and (b) the ISO provides at least seven days' advance notice to Scheduling Coordinators of the determination of the ISO Governing Board.

11.2.10 Payments Under Section 2.3.5.1 Contracts

The ISO shall calculate and levy charges for the recovery of costs incurred under contracts entered into by the ISO under the authority granted in Section 2.3.5.1 in accordance with Section 2.3.5.1.8 of this ISO Tariff.

11.2.11 FERC Annual Charge Recovery Rate

The ISO shall calculate and levy the rates for recovery of FERC Annual Charges in accordance with Section 7.5 of this ISO Tariff.

11.2.12 Creditworthiness Surcharge

Notwithstanding anything to the contrary in the ISO Tariff, and until the FERC issues any order to the contrary, the following payments and charges shall be increased by a surcharge of 10%:

a) payments at the **Ancillary Services Marginal Price** ~~Market Clearing Price for Ancillary Services~~ as determined in accordance with **Settlement and Billing Protocol Appendix C**~~Sections 2.5.27.1 to 2.5.27.4~~;

b) charges at the **Ancillary Services Marginal Price** ~~Market Clearing Price for Ancillary Services~~ as determined in accordance with **Settlement and Billing Protocol Appendix C**~~Sections 2.5.28.1 to 2.5.28.4~~;

c) payments for Energy delivered in response to incremental Dispatch Iinstructions at the Marginal Proxy Clearing Price **at the Location** or the **Locational Marginal Price**~~Non-Emergency Clearing Price~~, as applicable; and

d) charges for Net Negative Uninstructed Deviations.

11.2.13 Emissions ~~and Start-Up Fuel~~ Cost Charges

The ISO shall calculate, account for and settle charges and payments for Emissions Costs ~~and Start-Up Fuel Costs~~ in accordance with Sections 2.5.23.3.6 ~~and 2.5.23.3.7~~ of this ISO Tariff.

* * *

11.4.3 Data Files.

Settlement Statements relating to each Scheduling Coordinator shall be accompanied by a data file of supporting information that includes the following for each Settlement Period of the Trading Day on a Load Zone~~-by-Zone~~ basis:

(a) the aggregate quantity (in MWh) of Energy supplied or withdrawn by the Metered Entities represented by the Scheduling Coordinator;

(b) the aggregate quantity (in MW) and type of Ancillary Services capacity provided or purchased;

(c) the relevant prices that the ISO has applied in its calculations;

(d) details of the Scheduled quantities of Energy and Ancillary Services accepted by the ISO in the Day-Ahead Market and the Hour-Ahead Market;

(e) details of Imbalance Energy and penalty payments; and

(f) detailed calculations of all fees, charges and payments allocated amongst Scheduling Coordinators and each Scheduling Coordinator's share.

11.5 Calculation in the Event of Lack of Meter Data for the Balancing of Market Accounts.

Settlements shall not be cleared for final processing until the accounting trial balance is zero. In order to publish a Settlement Statement, the ISO may use estimated, disputed or calculated Meter Data . When actual verified Meter Data is available and all of the disputes raised by Scheduling Coordinators during the validation process described in Section 11.7 of this ISO Tariff have been determined, the ISO shall recalculate the amounts payable and receivable by the affected Scheduling Coordinators or by all Scheduling Coordinators, if applicable, as soon as reasonably practical and shall show any required adjustments as a debit or credit in the next Settlement Statement.

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21. [Not Used] ~~GENERATION METER MULTIPLIERS.~~

~~21.1 Temporary Simplification Relating to GMM Loss Factors.~~

~~Notwithstanding any other provision in the ISO Tariff, including the ISO Protocols, in determining whether a Schedule is a Balanced Schedule, no allowance shall be made for Transmission Losses (i.e. the Generation Meter Multiplier shall be set at 1.0) for the PX and all other Scheduling Coordinators.~~

~~21.2 Application.~~

~~Notwithstanding any other provision in this Tariff, including the ISO Protocols, the temporary simplification measure specified in this Section 21 shall have effect until discontinued by a Notice of Full-Scale Operations issued by the Chief Executive Officer of the ISO.~~

~~21.2.1 Pursuant to Subsections 21.3.1 and 21.3.2, the Chief Executive Officer of the ISO shall give notice to all Scheduling Coordinators, except the PX, that such Scheduling Coordinators shall use forecasted Generation Meter Multipliers, as published by the ISO, in their Schedules. Such notice shall be given only after the Chief Executive Officer determines that the ISO is capable of accepting schedules using the forecasted Generation Meter Multipliers without adversely affecting operations or reliability.~~

~~21.2.2 Pursuant to Subsections 21.3.1 and 21.3.2, the Chief Executive Officer of the ISO shall give notice to the PX that the PX shall use forecasted Generation Meter Multipliers, as published by the ISO, in its Schedules, upon mutual agreement by the Chief Executive Officers of the ISO and PX that the PX is capable of providing schedules pursuant to this Tariff using the ISO's forecasted Generation Meter Multipliers without adversely affecting operations or reliability.~~

~~21.3 Notices of Full-Scale Operations.~~

~~21.3.1 When the Chief Executive Officer of the ISO determines that the ISO is capable of implementing this Tariff, including the ISO Protocols, without modification in accordance with a temporary simplification measure specified in this Section 21, he shall issue a notice ("Notice of Full-Scale Operations") and shall specify the relevant temporary simplification measure and the date on which it will permanently cease to apply, which date shall be not less than seven (7) days after the Notice of Full-Scale Operations is issued.~~

~~21.3.2 A Notice of Full-Scale Operations shall be issued when it is 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.~~

22. [Not Used] ~~SCHEDULE VALIDATION TOLERANCES.~~

~~**22.1 Temporary Simplification of Schedule Validation Tolerances.**~~

~~Notwithstanding any other provision in the ISO Tariff, including the ISO Protocols, a Schedule shall be treated as a Balanced Schedule when aggregate Generation, adjusted for Transmission Losses, is within 20 MW of aggregate Demand, or such lower amount, greater than 1 MW, as may be established from time to time by the ISO. The ISO may establish the Schedule validation tolerance level at any time, between a range from 1 MW to 20 MW, by giving seven days' notice published on the ISO's "Home Page," at http://www.caiso.com or such other Internet address as the ISO may publish from time to time.~~

~~**22.2 Application.**~~

~~Notwithstanding any other provision in this Tariff, including the ISO Protocols, the temporary simplification measure specified in this Section 22 shall have effect until discontinued by a Notice of Full-Scale Operations issued by the Chief Executive Officer of the ISO.~~

~~**22.3 Notices of Full-Scale Operations.**~~

~~**22.3.1** When the Chief Executive Officer of the ISO determines that the ISO is capable of implementing this Tariff, including the ISO Protocols, without modification in accordance with a temporary simplification measure specified in this Section 22, he shall issue a notice ("Notice of Full-Scale Operations") and shall specify the relevant temporary simplification measure and the date on which it will permanently cease to apply, which date shall be not less than seven (7) days after the Notice of Full-Scale Operations is issued.~~

~~**22.3.2** A Notice of Full-Scale Operations shall be issued when it is 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.~~

23. [NOT USED]

24. [NOT USED]

25. [NOT USED]

26. [Not Used]

~~26.1 Application and Termination~~

~~The temporary change, respecting Ancillary Services penalties, set out in Section 26.2 shall continue in effect until such time as the Chief Executive Officer of the ISO issues a Notice of Full-Scale Operations, 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 on which this Section 26 shall cease to apply, which date shall be not less than seven (7) days after the Notice of Full-Scale Operations is issued.~~

~~**26.2** For so long as this Section 26.2 remains in effect, Scheduling Coordinators shall not be liable for the penalties specified in Section 2.5.26 of the ISO Tariff if, as a result of limitations associated with the ISO's Congestion Management software, the scheduled output of the resource from which the Scheduling Coordinator has committed to provide an Ancillary Service is adjusted by the ISO to a level that conflicts with the Scheduling Coordinator's Ancillary Service capacity commitments, thereby resulting in a failed availability test.~~

27. [Not Used]

28. RULES LIMITING CERTAIN ENERGY AND ANCILLARY SERVICE BIDS

* * *

28.2.1.1 The 12MMCI is a 12-month rolling price-cost markup index that compares actual average market cost (AAMC) as specified in Section 28.2.1.2 to a competitive baseline average cost (CBAC) as specified in Section 28.2.1.3, using the following formula:

$$12MMCI = (AAMC - CBAC).$$

28.2.1.2 Computation of the AAMC. The actual average market cost is computed as the weighted average of ~~short-term forward~~**Day-Ahead, Hour-Ahead,** and real-time **E**energy prices.

1. ~~The short-term forward e~~**E**nergy prices and quantities ~~use~~ **from the ISO** ~~the~~ ~~d~~**D**ay-**A**~~a~~head and ~~hour~~**Hour**-**A**~~a~~head Energy market**s**. ~~if one is in place. In the absence of forward energy market, the California Energy Resource Scheduler (CERS) day-ahead and hour-ahead scheduled quantities and the corresponding short-term contract prices will be used.~~

2. The real-time prices and quantities pertain to the real-time incremental Dispatch Instructions issued by the ISO.

3. The hourly total MWh quantity of the above short-term forward Energy and real-time incremental Imbalance Energy will be used as the quantity for calculating total hourly competitive baseline market costs as described in Section 28.2.1.4.

28.2.1.3 Computation of the CBAC. The competitive baseline average cost is based on competitive baseline prices that represent the estimated variable operating cost of the marginal (highest cost) thermal generation unit within the ISO system needed to meet system Demand each hour. The calculation procedure is as follows:

1. The actual supply from Final Hour-Ahead net import schedules, Utility Retained Generation (URG), and other must-take resources within the ISO Control Area are excluded from the computation (i.e. netted out from both Supply and Demand) for each hour.

2. The operating costs of major non-utility owned thermal generating units within the ISO system are estimated based on unit heat rates, spot market gas prices, opportunity costs for certain Energy limited resources, and estimated variable O&M costs of $4/MWh for combustion turbines and $2/MWh for other thermal units.

3. Only the available capacity of the generating units (considering partial or total outages based on ISO's outage coordination database) are used.

4. A thermal supply curve is developed based on the available capacity of non-utility owned thermal units and their average heat rate.

5. A composite supply curve is constructed by combining the thermal supply curve of Step 4 with real-time import bids that were dispatched, at their bid price, and any Exceptional Dispatch purchases capped at a price corresponding to a 12,000 MMBTU heat rate (plus the O&M adder)

6. The net Demand that must be met by these sources of Supply is calculated for each hour t as follows:

$$\text{Net Demand}_t = \text{System Energy Demand}_t - \text{HA Net Imports}_t - \text{Residual ISO Supply}_t - \text{Estimated System Losses and Unaccounted for Energy}_t$$

where:

$$\text{System Energy Demand}_t = 1.07 * \text{Actual ISO System Load}_t + \text{Upward Regulation Requirements}_t$$

$$\text{HA Net Imports}_t = \text{SUMi (Final Hour Ahead Energy Schedule}_{i,t})$$

$$\text{Residual ISO Supply}_t = \text{SUMj (Max [Metered Output}_{j,t}, \text{Final Hour Ahead Energy Schedule}_{j,t} + \text{Upward Regulation Capacity Scheduled}_{j,t} + \text{Real Time Energy Dispatched}_{i,t}$$

+ RMR Schedule Change$_{j,t}$])

i = All Hour-ahead net import schedules into the ISO control area
j = All generating resources within the ISO control area other than non-utility thermal units

7. System losses and Unaccounted For Energy in each hour t are estimated using the difference between: (1) hourly system loads reported by the ISO based on telemetered data and (2) the sum of estimated generation from all sources within the ISO control area plus final (Hour-Ahead) import schedules.

8. A competitive baseline price is calculated based on the supply curve of non-utility thermal generating units and real-time energy import bids and the net demand that must be met from these sources of supply.

9. For energy-limited resources, estimates of opportunity cost shall be used in computing the competitive baseline cost as described below.

   A) Unit owners shall report to the ISO Outage Coordination office when energy-limited resources are not available (for example, once a unit has used up its energy production or its available hours). Annual environmental limitations shall be reported to the ISO Outage Coordination office. The unit will then be flagged so that it is not considered to be physically withholding. Once flagged, the unit will not be included in the calculation of the competitive baseline cost for the relevant period.

B) The opportunity cost for an energy-limited generation resource is calculated based on the maximum available hours during the constrained period and the corresponding price on the price duration curve of the hourly competitive baseline prices for the constrained period. The estimated opportunity cost for the energy-limited generation resource will remain constant for all hours in this constrained period. The opportunity cost may be increased to account for other constraints on the resource.

10. The Hourly Competitive Baseline Cost is the product of:

A) the competitive baseline price defined in this section, and

B) the total ~~short term~~ **Day-Ahead and Hour Ahead scheduled Demand** and real-time incremental Energy as defined in 28.2.12.

28.2.1.4 Computation of the Price-cost Markup.

The Price-cost markup shall be :

$(SUM_h(\text{Hourly Actual Market Cost}) - SUM_h(\text{Hourly Competitive Baseline Cost})) / SUM_h(\text{Hourly Competitive Baseline Cost})$

where h is each hour in the month;

The 12-Month Market Competitiveness Index (12MMCI) is computed as:

$(SUM_M(\text{Monthly Actual Market Cost}) - SUM_M(\text{Monthly Competitive Baseline Cost})) / SUM_M(\text{Monthly Competitive Baseline Cost})$

where M is each month of the previous 12 months.

* * *

28.2.3.4 Notification to the Commission

It the 12MMCI threshold in Section 28.2.1 is exceeded, the ISO will, in addition to the reinstitution of the California-only mitigation measures contained in Section 28.2.3.1, 28.2.3.2, and 28.2.3.3, notify the Commission as soon as is practical and request the Commission re-institute the West-wide mitigation components of its June 19, 2001 Order in Docket No. EL00-95. The ISO shall also request that, to the extent not already provided, FERC establish liability for refunds in future periods based on the principles provided for in FERC's June 19 2001 Order until FERC makes a finding that rates are just and reasonable.

* * *

29. [NOT USED]

30. YEAR 2000 COMPLIANCE

* * *

~~31. EXPIRATION OF COMMISSION MITIGATION MEASURES~~

~~The limitations on prices specified in Sections 2.5.22, 2.5.23, and 2.5.27, and the must-offer obligation specified in Section 5.11, shall expire on September 30, 2002.~~

31. MARKET DESIGN 2002

31.1 Two-Days-Ahead Advisory Information

By 6:00 p.m. two days prior to each Trading Day, the ISO shall publish on OASIS information for each Settlement Period of the Trading Day as set forth in Scheduling Protocol Section 3.2.1.

31.2 Day-Ahead Market

The ISO shall publish on OASIS information for each Settlement Period of the Trading Day as set forth in Scheduling Protocol Section 3.2.2.

31.2.1 Transmission Rights Information

Participating Transmission Owners shall provide, and the ISO shall publish information regarding transmission rights as set forth in Scheduling Protocol Sections 3.2.4 and 3.2.5.

31.2.2 Reliability Must-Run Requirements

By no later than two hours before the deadline for submitting Initial Preferred Day-Ahead Schedules on the day ahead of the Trading Day, the ISO will notify Scheduling Coordinators of the amount and time of Energy Requirements from specific Reliability Must-Run Units that the ISO requires to deliver Energy in the Trading Day to the extent that the ISO is aware of such requirements (the "RMR Dispatch Notice"). In those instances where a Reliability Must-Run unit requires more than one day's notice, the ISO may notify the applicable Scheduling Coordinator more than one day in advance of the Trading Day. The Energy to be delivered for each hour of the Trading Day pursuant to the RMR Dispatch Notice (including Energy the RMR Owner is entitled to substitute for Energy from the Reliability Must-Run Unit pursuant to the RMR Contract) shall be referred to as the RMR Energy.

31.2.2.1 Selection of Payment Option for Reliability Must-Run Requirements

No later than one hour following the receipt of the RMR Dispatch Notice described in Section 2.2 from the ISO, any RMR Owner receiving an RMR Dispatch Notice as indicated in this Section

31.2.2.1 (the "Applicable RMR Owner") must notify the ISO through the RMR Owner's Scheduling Coordinator (the "Applicable RMR SC"), with regard to each hour of the Trading Day identified in the RMR Dispatch Notice whether it intends to satisfy its obligation to deliver RMR Energy (i) by delivering RMR Energy pursuant to a market transaction, and receiving only market compensation therefore (the "RMR Market Option"), or (ii) by delivering the RMR Energy as a contract transaction, and accepting payment under the relevant RMR Contract (the "RMR Contract Option"). If the Applicable RMR Owner so notifies the ISO by January 1 of any calendar year, the RMR Owner may during that calendar year notify the ISO directly of its choice of payment option, rather than through the Applicable RMR Owner's Scheduling Coordinator. If the Applicable RMR Owner elects to provide notice of its choice of payment option directly, the ISO will not accept notice from the Applicable RMR Owner's Scheduling Coordinator during the relevant calendar year. Notwithstanding anything to the contrary in any RMR Contract, the Applicable RMR Owner may not elect to satisfy its obligation to deliver the RMR Energy specified in the RMR Dispatch Notice by delivering that RMR Energy pursuant to a transaction in the Real Time Market.

31.2.2.1.1. RMR Contract Option

For each hour for which the Applicable RMR Owner elects the RMR Contract Option ("Contract Hour"), it shall schedule at least the entire amount of the RMR Energy for that hour into the Day-Ahead Market as a Supply Price Taker in accordance with section 31.2.3.1.4.2.3. RMR Energy for each Contract Hour shall receive the highest scheduling priority during the Day-Ahead Market. If there is insufficient scheduled Demand to accommodate all RMR Energy in the Day-Ahead Market, however, some RMR schedules may be reduced and the unscheduled RMR Energy will be predispatched for real time through the Day-Ahead Residual Unit Commitment Process. Whether or not the RMR Energy is in the Final Schedule, the Applicable RMR Owner must deliver the RMR Energy pursuant to the RMR Dispatch Notice. All RMR Energy delivered under this option shall be deemed delivered under a Non-market Transaction for the purposes of the RMR Contract.

31.2.2.1.2 RMR Market Option

For each hour for which an Applicable RMR Owner has selected the Market Option ("Market Hour"), the Applicable RMR Owner (i) may bid into the ISO's Day-Ahead Market any amount of the RMR Energy and (ii) may schedule as a bilateral Day-Ahead transaction any amount of RMR Energy. Energy bids for any amount of RMR Energy during each Market Hour shall be submitted pursuant to Section 31.2.3.2.3.3.1.3. Any amount of RMR Energy not included in the Final Day-

Ahead Energy Schedules must be bid into the Hour-Ahead Market as a Supply Price Taker. Any amount of RMR Energy not included in the Final Hour-Ahead Energy Schedules shall be pre-dispatched for real-time through the Hour-Ahead Residual Unit Commitment process. Notwithstanding anything to the contrary in the RMR Contract, neither the Applicable RMR Owner nor the Applicable RMR SC shall be entitled to any payment from any source for RMR Energy that is not bid and scheduled as required by this Section 31.2.2.1.2.

In the event that the RMR Energy is not delivered, (i) if the RMR Energy had been scheduled, the Applicable RMR Owner shall not be entitled to an Availability Payment under the RMR Contract and the Applicable RMR SC shall pay for the Imbalance Energy necessary to replace that RMR Energy, or (ii) if the RMR Energy had not been scheduled, the Applicable RMR Owner shall not be entitled to an Availability Payment under the RMR Contract and, if the variable costs saved by the Owner's failure to deliver the RMR Energy (which shall be equal to the Variable Cost Payment determined pursuant to Schedule C in the RMR Contract) are greater than the foregone Availability Payment under the RMR Contract, the Applicable RMR Owner shall pay the difference between the variable costs saved and the Availability Payment.

31.2.2.1.2.1 The Applicable RMR SC's Preferred Hour-Ahead Schedule for each Market Hour shall include all RMR Energy specified in the RMR Dispatch Notice for that Market Hour. If the Final Hour-Ahead Schedule of the Applicable RMR SC for any Market Hour includes Energy Bids for the RMR Unit, the Energy Bids shall specify the RMR Energy as the minimum MW output to which the Applicable RMR SC will allow the RMR Unit to be redispatched for that Market Hour.

31.2.2.1.2.2. Whether or not the RMR Energy is in the Final Hour-Ahead Schedule, the Applicable RMR Owner must deliver the RMR Energy pursuant to the RMR Dispatch Notice. If the RMR Owner has bid and scheduled the RMR Energy as required by this Section 31.2.2.1.2, any RMR Energy provided but not included in the Final Schedule will be paid as Uninstructed Imbalance Energy. Notwithstanding anything to the contrary in the RMR contract, neither the Applicable RMR Owner nor the Applicable RMR SC shall be entitled to any payment from any source for RMR Energy that is not bid and scheduled as required by this Section 31.2.2.1.2.

31.2.2.1.3 Supplemental RMR Dispatch Notice

If, at any time after the two hours before the deadline for submitting Initial Preferred Day-Ahead Schedules the ISO determines that it requires additional Energy from specific Reliability Must-

Run Units during the Trading Day, the ISO will notify Scheduling Coordinators for such Reliability Must-Run Units of the amount and time of the additional Energy requirements from such Reliability Must-Run Units (the Supplemental RMR Dispatch Notice). If the ISO issues the Supplemental RMR Dispatch Notice less than two hours before the deadline for submitting Hour-Ahead Preferred Schedules for any particular hour of the Trading Day, the Energy specified in the Supplemental Dispatch Notice for such particular hour shall be exempt from the bidding and scheduling requirements and the pricing provisions of this Section 31.2.2.1.3, except that, if the owner of the RMR Unit has already selected a payment option for any hour, the RMR Owner will be paid for that RMR Energy in that particular hour according to that payment option. If the owner of the RMR Unit specified in the Supplemental RMR Dispatch Notice has not already notified the ISO of a payment option for any hour of the Trading Day included in the Supplemental Dispatch Notice at the time the Supplemental Dispatch Notice is issued, the RMR Owner shall do so no later than one hour after receipt of the RMR Dispatch Notice and the elected payment option for such hour shall apply to RMR Energy bid into that and subsequent ISO markets for such hour during the Trading Day.

31.2.2.1.4 ISO Analysis of RMR Preferred Schedules

On receipt of the Preferred Schedules, the ISO will analyze the Preferred Schedules of Applicable RMR SCs to determine the compatibility of such Preferred Schedules with the RMR Dispatch Notices.

31.2.3 Day-Ahead Energy and Ancillary Services Market

31.2.3.1 Security Constrained Unit Commitment

The Day-Ahead Energy and Ancillary Services market shall clear simultaneously for all the hours of the Trading Day. A multi-hour optimization methodology, referred to as Security Constrained Unit Commitment (SCUC), shall be employed to simultaneously perform the following tasks:

a) Conduct a Day-Ahead Energy market to clear Supply and Demand bids for each hour of the Trading Day to yield final Day-Ahead Energy Schedules;

b) Clear the Day-Ahead Ancillary Services market by selecting capacity for each hour of the Trading Day to meet that hour's Ancillary Services requirements;

c) Efficiently allocate transmission capacity to final Day-Ahead Energy and Ancillary Services Schedules by resolving transmission Congestion; and

d) Commit unscheduled resources at least cost to meet the Energy, Ancillary Services, and Congestion Management requirements throughout the Trading Day.

These tasks will be described in detail in the following sections.

31.2.3.1.1 Formulation

The objective of the Security Constrained Unit Commitment shall be to minimize the overall cost of Day-Ahead Energy and Ancillary Services procurement over the entire set of hours that shall consist of the time horizon, subject to network constraints and resource operating constraints. The overall procurement cost shall be determined by the total of the start-up and minimum load costs of ISO-committed resources, the Energy bids of all scheduled resources, and the Ancillary Services bids of resources selected to provide Ancillary Services. Network constraints include power flow limits on transmission facilities, voltage limits, and limits on other transmission controls. Resource constraints include operating limits and inter-temporal constraints. The technical formulation of SCUC is given and discussed in Appendix B.

31.2.3.1.2 Unit Commitment

31.2.3.1.2.1 Unit Commitment Definitions

The following definitions are used in this Tariff in association with Unit Commitment:

- *Time period.* The unit of time for scheduling activities, currently an hour. Resource Schedules are constant throughout the time period.
- *Time horizon.* A number of contiguous time periods over which an optimal Schedule is produced.
- *Commitment status.* The dual on/off state for each unit in each time period. A unit is off when it is offline or in the process of starting up or shutting down. A unit is on when it is online and synchronized with the grid. An off-on transition signifies a start-up and an on-off transition signifies a shutdown.
- *Unit operating constraints.* The feasible scheduling of generating resources over a time horizon requires consideration of a multitude of operating constraints:
    - *Availability status.* The status of a unit with respect to planned or forced outages.
    - *Start-up time.* The time required for a unit to start up after notification.

- *Minimum up time (MUT).* The minimum time that a unit must stay on after a start-up.
- *Minimum and maximum operating limits.* The power output limits of a unit while it is on. The minimum operating limit is also referred to as the *minimum load.*
- *Shutdown time.* The time required for a unit to shut down.
- *Minimum down time (MDT).* The minimum time that a unit must stay off after a shutdown. The minimum down time includes the shutdown and start-up time.
- *Maximum number of daily start-ups.* The maximum number of times that a unit is allowed to start up within a day.
- *Ramp rate.* The rate at which a unit increases or decreases its power output to perform schedule changes across time periods.
- *Energy limit.* The limit on the total Energy output of an energy-limited resource over the time horizon.
- *Operational dead-bands.* Operating ranges in which the resource produces Energy but is not dispatchable.

Availability, and start-up and minimum up/down times (rounded up to the next integer multiple of the time period) affect the commitment status, whereas ramp rate and operating/energy limits affect the schedule of units. The maximum number of daily start-ups limits unit cycling within a day.

- *Unit costs.* The optimal scheduling of generating resources over a time horizon requires consideration of a multitude of unit costs:
  - *Start-up cost.* The cost incurred when a unit starts up. This cost is a function of past down time. The start-up cost generally increases as down time increases.
  - *Shutdown cost.* The cost incurred when a unit shuts down. For simplicity, the shutdown cost is included in the start-up cost.
  - *Minimum load cost.* The cost incurred when a unit is operating at minimum load.

- *Incremental energy cost.* The incremental Energy cost (the cost of producing the next increment of power) of a unit at a given operating point.

The optimal Schedules produced by SCUC minimize the start-up and Energy cost of all resources over the entire time horizon. The Energy cost is calculated as the minimum load cost plus the integral of the incremental Energy cost from minimum load to final schedule.

- *Commitment period.* The time span of contiguous time periods where a unit is on. The commitment period extends from a start-up to a shutdown and it may span several days. The commitment period may not be less than the MUT, however, for practical reasons, the commitment period will be limited to a single day, in which case it may split over several contiguous commitment periods.
- *Self-commitment period.* The portion of the commitment period of a unit that submits Energy Schedules or is selected to provide Ancillary Services, except for units providing Non-Spinning Reserve that can start and synchronize to the grid in less than ten minutes, typically hydro units and combustion turbines (CTs). The self-commitment period may include time periods where the unit does not submit Schedules or is awarded Ancillary Services, if it is determined by inference that the unit must be on due to MUT/MDT constraints. For example, the self-commitment period of a unit that self-commits in hour h will be $[h, h + MUT]$. Similarly, the self-commitment period of a unit that self-commits in hours h and $h + n$ will be $[h, h + \max(n, MUT)]$ if $n < MUT + MDT$.
- *ISO-commitment period.* The portion of the commitment period that is not a self-commitment period.
- *Qualifying hour.* The hour of an ISO-commitment period when a unit is not Dispatched under its RMR Contract.
- *Unit Commitment cost.* The unit commitment cost over a commitment period is composed of the minimum load cost for each qualifying hour in ISO-commitment periods, plus the start-up cost if 1) there is no self-commitment within the commitment period; 2) the unit is required to start and 3) it actually starts up. A unit that incurs start-up costs at the direction of the ISO but does not complete the start-up shall be treated in accordance with Section 5.12.7.1.2. The unit may not be required to start if the commitment period immediately follows a previous commitment period. Units are not

eligible to recover start-up costs that they do not actually incur. For example, a unit may remain on from a prior commitment period or may fail to start-up as instructed.

- *Unrecovered Commitment Cost.* The portion of the unit commitment cost over all qualifying hours in a commitment period that is not recovered from market revenues from the Day-Ahead and Hour-Ahead Energy and Ancillary Services markets and the Real-Time Imbalance Energy market during the same hours, as calculated in SABP Appendix H.

31.2.3.1.2.2 Time Horizon

Although the objective of SCUC is to produce optimal Schedules for each hour of the Trading Day, a time horizon longer than 24 hours is required for efficient scheduling. The time horizon should include at the minimum the peak hours of the day that follows the Trading Day so that SCUC will not unnecessarily cycle long-start units at the end of the Trading Day. To consider the lower Demand levels during weekends and holidays, and also the Energy limits of Energy-limited resources, the time horizon would need to be even longer. Depending on the capability and performance of the software and hardware that the ISO will procure and use for the SCUC implementation, the time horizon shall be a *rolling window* of up to five (5) days (120 hours), starting with the Trading Day. The SCUC shall replicate Schedules and Bids submitted for the Trading Day shall be for the following four days (with appropriate adjustments for Demand Forecast changes) to provide for continuity. The resulting optimal Schedules for the Trading Day shall constitute the final Day-Ahead Energy and Ancillary Services Schedules. The optimal Schedules for the remaining four days past the Trading Day will be for the ISO's advisory use only. The ISO shall provide sufficient advance notice to Units with start-up times greater than 24 hours that the Advisory schedules indicate should be started. The resource shall be required to remain committed as set forth in Section 2.3.1.2.

31.2.3.1.2.3 Self-Commitment

Resources that submit preferred Energy Schedules in a given hour, or are selected to provide Ancillary Services (bid or self-provided), except for units providing Non-Spinning Reserve that can start and synchronize to the grid in less than ten minutes, shall be deemed self-committed by SCUC in that hour. SCUC will enforce operating constraints for self-committed resources. As a result, these resources may be deemed self-committed (and scheduled to at least their minimum load) also during hours that they do not submit preferred Energy Schedules, if the resources are required to be on due to their MUT and/or MDT constraints. Furthermore,

preferred Energy Schedules across consecutive hours must be consistent with the relevant ramp rate capabilities, otherwise the Energy Schedules will be adjusted accordingly.

The preferred Energy Schedules of self-committed resources shall be optimized using submitted Energy bids. The adjustments shall bound the final Energy Schedules within the capacity range of the submitted Energy bids and within the relevant minimum and maximum operating limits, taking into account Ancillary Services commitments. However, if the submitted Energy bids are insufficient to resolve Congestion, preferred Energy Schedules may be adjusted, outside the capacity range of submitted Energy bids, or even when no Energy bids are submitted, but within the resource's operating capability, due to pro rata Schedule adjustments in accordance with Section 31.2.3.1.4.2. Moreover, SCUC may de-commit self-committed resources if this measure is necessary to address overgeneration conditions.

SCUC will not consider start-up and minimum load cost bids from self-committed units. Resources shall not be eligible for Unrecovered Commitment Cost compensation during self-committed periods, as set forth in Section 31.2.3.1.2.1.

31.2.3.1.2.4 ISO-Commitment

Resources may submit three-part bids in accordance with Section 31.2.3.1.4.4 so that SCUC may optimally commit and schedule these resources to meet Energy, Ancillary Services, or Congestion Management requirements. SCUC will enforce operating constraints for ISO-committed resources. The final Energy Schedules shall be within the capacity range of the submitted Energy bids and within the relevant minimum and maximum operating limits, taking into account Ancillary Services commitments. However, if the submitted Energy bids are insufficient to resolve Congestion, final Energy Schedules may exceed the upper range of submitted Energy bids due to pro rata Schedule adjustments in accordance with Section 31.2.3.1.4.2 but may not exceed the maximum capability of the resources as expressed to the ISO via the outage coordination process.

Resources may be eligible for Unrecovered Commitment Cost compensation during ISO-committed periods, as set forth in Section 31.2.3.4.4.1.1.1.

31.2.3.1.3 Ancillary Services Procurement

SCUC shall procure Ancillary Services at least cost simultaneous with the scheduling of Day-Ahead Energy for each hour of the Trading Day. Scheduling Coordinators may either self-provide Ancillary Services or they may submit a capacity reservation bid.

31.2.3.1.3.1 Ancillary Services Requirements

Ancillary Services prices and procurement may vary regionally due to regional Ancillary Services procurement constraints that may be enforced in SCUC for reliability purposes. The Ancillary Services requirements, Ancillary Services Regions, and regional procurement constraints shall be determined based on the Day-Ahead Demand Forecast and anticipated Congestion conditions, in accordance with the Ancillary Services Requirements Protocol. This information shall be published prior to the Day-Ahead market in accordance with Section 31.2.1.2. The Ancillary Services regional constraints may impose a minimum or a maximum of Ancillary Services requirements in a given region. These constraints can be used to enforce a minimum regional requirement for reliability purposes, or limit Ancillary Services imports from inter-ties.

31.2.3.1.3.2 Ancillary Services Self-Provision

Scheduling Coordinators may self-provide Ancillary Services as set forth in Section 2.5.7.4.

31.2.3.1.3.3 Ancillary Services Substitutability

SCUC shall allow a) that amount of Regulation Up that can be delivered in ten minutes to satisfy Spinning and Non-Spinning Reserve requirements, and b) Spinning Reserve to satisfy Non-Spinning Reserve requirements, if this substitution would result in a lower overall Ancillary Services and Energy procurement cost.

31.2.3.1.4 Energy Market and Congestion Management

SCUC shall perform Congestion Management simultaneous with Ancillary Services procurement and the scheduling of Day-Ahead Energy for each hour of the Trading Day. Congestion Management is the process where Energy schedules are adjusted to eliminate network constraint violations and minimize the cost of serving Demand.

31.2.3.1.4.1 Modeling

31.2.3.1.4.1.1 Network Model

SCUC shall use the Full Network Model. The Full Network Model will be continuously updated to reflect new transmission and generation projects. Transmission and generation facilities shall be in or out of service in the Full Network Model to reflect the expected system conditions in each hour of the Trading Day.

The Full Network Model shall include a reduced equivalent network for systems external to the ISO Controlled Grid. The modeling detail of the external systems will depend on the level of information available about external Schedules (Supply and Demand outside the ISO Controlled Grid).

31.2.3.1.4.1.2 Transmission Losses

The Full Network Model shall be an AC network model that includes resistances to reasonably account for transmission losses. Therefore, the final Day-Ahead Energy Schedules for Supply shall exceed the final Day-Ahead Energy Schedules for Demand and exports by the amount of transmission losses in the interconnected network. SCUC shall optimally adjust resource Schedules to cover transmission losses.

31.2.3.1.4.1.3 Network Constraints

SCUC shall enforce constraints on transmission lines, transformers, and groups of transmission branches that compose transmission interfaces. Most of these constraints shall be thermal limits on the power flow through the transmission facilities. However, certain constraints may impose more restrictive limits on power flow. These limits will take into account contingencies and reliability considerations, some of which are represented by Nomograms.

31.2.3.1.4.1.4 SCUC Controls

To the extent practical, SCUC controls shall consist of the following: generator real and reactive power output, import and export levels, Demand side management, transformer tap controls, switched reactive devices, High Voltage Direct Current controls, and others.

31.2.3.1.4.2 Default Energy Bids

To alleviate Congestion and produce feasible final Day-Ahead Energy and Ancillary Services Schedules, SCUC may need to adjust resource schedules outside the capacity range of submitted Energy bids. The resource schedule adjustments outside of the capacity range of submitted Energy bids are referred to as "uneconomic adjustments." Uneconomic adjustments shall be priced at the applicable Bid Caps, in accordance with Section 28.1. Incremental uneconomic adjustments for generation and decremental uneconomic adjustments for load and exports shall be priced at the Bid Ceiling, whereas decremental uneconomic adjustments for generation and imports shall be priced at the Bid Floor. Incremental uneconomic adjustments for generating units shall extend up to their upper operating limit as listed in the Master File and as modified by any limitations reported to the ISO, less any self-provided Ancillary Services capacity. The upper regulating limit shall be used if the unit is scheduled to provide Regulation

Up. Decremental uneconomic adjustments for generating units shall extend down to their lower operating limit plus capacity selected for Regulation Down. The lower regulating limit shall be used if the unit is scheduled to provide Regulation Down. Decremental uneconomic adjustments for imports, exports, and Demand shall extend down to zero MW.

Although all uneconomic adjustments shall be priced at the applicable bid limits, SCUC shall enforce different scheduling priorities among them. Therefore, uneconomic adjustments shall take place in increasing scheduling priority order, from lowest to highest, as needed to resolve Congestion. The different classes of uneconomic adjustments are described in the following subsections in decreasing scheduling priority.

31.2.3.1.4.2.1 Existing Contract Sources and Sinks

Existing Contract Schedules shall be balanced supply and demand Schedules with specified supply sources and demand sinks, and no Energy bids, in accordance with Section 31.2.3.2.6. Existing Contract Schedules shall be given the highest scheduling priority among uneconomic adjustments. Therefore, Existing Contract Schedules may be adjusted only after all other resource adjustments are exhausted. If adjusted, Existing Contract Schedules shall remain balanced.

31.2.3.1.4.2.2 Point-To-Point Firm Transmission Right Sources and Sinks

Point-To-Point (PTP) Firm Transmission Rights (FTRs) optionally provide FTR holders scheduling priority in the Day-Ahead market, in accordance with Section 9.1.1. PTP FTR Schedules are balanced supply and demand Schedules with specified Sources and Sinks, and no Energy bids, in accordance with Section 31.2.3.2.7. PTP FTR Schedules shall be given the second highest scheduling priority among penalty adjustments after Existing Contract Schedules. Therefore, PTP FTR Schedules may be adjusted only after all other effective non-Existing Contract Schedule adjustments are exhausted. If adjusted, PTP FTR Schedules shall remain balanced.

31.2.3.1.4.2.3 RMR Energy

RMR Energy bid as a Price Taker shall be given the next highest scheduling priority after Existing Contract Schedules and FTR Schedules.

31.2.3.1.4.2.4 Supply and Demand Price Takers