**ARTICLE III – MARKET OPERATIONS**

**27 OVERVIEW OF MARKETS.**

**27.1 Congestion Management.**

**27.1.1 Zonal Congestion Management.**

**27.1.1.1 The ISO Will Perform Congestion Management.**

**27.1.1.1.1 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.

**27.1.1.1.1.1** Transmission Capacity Reserved under Existing Contracts will not be Subject to the ISO's Congestion Management Procedures.

**27.1.1.1.2 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. 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.

**27.1.1.1.3 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." Inter-Zonal Congestion Management will ignore Intra-Zonal Congestion. Intra-Zonal Congestion will be managed in accordance with Tariff Section 27.1.1.6.

**27.1.1.1.4 Elimination of Potential Transmission Congestion.**

The ISO's Day-Ahead and Hour-Ahead scheduling procedures will eliminate potential Inter-Zonal

Congestion by:

**27.1.1.1.4.1** 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

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

**27.1.1.1.5 Elimination of Real-Time Inter-Zonal Congestion.**

In its management of Inter-Zonal Congestion in real time, the ISO will issue Dispatch Instructions as necessary to relieve Inter-Zonal Congestion by Dispatching Generation or Demand, as necessary, based on the Energy Bids in accordance with Section 34.3.2. The ISO will use the RTD Software to alleviate Inter-Zonal Congestion as described in Section 34.3.2.

**27.1.1.2 General Requirements for the ISO's Congestion Management.**

The ISO's Congestion Management in the Day-Ahead Market and Hour-Ahead Market shall:

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

**27.1.1.2.2** adjust the Schedules submitted by Scheduling Coordinators only as necessary to alleviate Congestion;

**27.1.1.2.3** 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;

**27.1.1.2.4** 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;

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

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

**27.1.1.2.7** 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.

**27.1.1.3 Use of Computational Algorithms for Congestion Management and Pricing.**

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

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

**27.1.1.4.1 Uses of Adjustment Bids by the ISO.**

**27.1.1.4.1.1** 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 to reflect the Scheduling Coordinators' implicit values for Inter-Zonal Interface capacity and to determine the prices for the use of Congested Inter-Zonal Interfaces.

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

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

**27.1.1.4.1.4** 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.

**27.1.1.4.2 Submission of Adjustment Bids.**

**27.1.1.4.2.1** 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.

**27.1.1.4.2.2** 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.

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

**27.1.1.4.2.4** 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.

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

**27.1.1.4.2.6** The Adjustment Bids that the Scheduling Coordinators submit constitute implicit bids for transmission between Zones on either side of a Congested Inter-Zonal Interface. An Adjustment Bid shall constitute a standing offer to the ISO until it is withdrawn.

**27.1.1.4.2.7** 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-Scheduling Coordinator trades, as needed, to ensure that the ISO's computational algorithms can operate reliably and produce efficient outcomes.

**27.1.1.5 Inter-Zonal Congestion Management.**

**27.1.1.5.0** Inter-Zonal Congestion Management will use a DC optimal power flow (OPF) program that uses linear optimization techniques with active power (MW) controls only.

**27.1.1.5.0.1** Inter-Zonal Congestion Management will involve adjusting Schedules to remove potential violations of Inter-Zonal Interface Constraints, minimizing the Redispatch cost, as determined by the

submitted Adjustment Bids that accompany the submitted Schedules.

**27.1.1.5.1** 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.

**27.1.1.5.2** The purpose of Inter-Zonal Congestion Management is to allocate the use of, and determine the marginal value of, active Inter-Zonal Interfaces. The ISO's Inter-Zonal Congestion Management process will allocate Congested transmission to those users who value it the most and will charge all Scheduling Coordators for their allocated usage of Congested Inter-Zonal Interfaces on a comparable basis. All Scheduling Coordators within a Zone will see the same price for transmitting Energy across a Congested Inter-Zonal Interface, irrespective of the particular locations of their Generators, Demands and external imports/exports. Inter-Zonal Congestion Management will comply with the requirements stated in Sections 27.1.1.2, 27.1.1.4 and 27.1.1.5.

**27.1.1.5.2.1** 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. Inter-Zonal Congestion Management will not involve arranging or modifying trades between Scheduling Coordinators. Each Scheduling Coordinator's portfolio will be kept in balance (i.e., its Generation plus external imports, as adjusted for Transmission Losses, and Inter-Scheduling Coordinator Energy Trades (whether purchases or sales) will still match its Demand plus external exports) after the adjustments. Market Participants will have the opportunity to trade with one another and to revise their Schedules during the first Congestion Management iteration in the Day-Ahead Market, and between the Day-Ahead Market and Hour-Ahead Market. Inter-Zonal Congestion Management will also not involve the optimization of Scheduling Coordinator portfolios within Zones (where such apparently non-optimal Schedules are submitted by Scheduling Coordinators). Adjustments to individual Scheduling Coordinator portfolios within a Zone will be either incremental (i.e., an increase in Generation and external imports

and a decrease in Demand and external exports) or decremental (i.e., a decrease in Generation and external imports and an increase in Demand and external exports), but not both.

**27.1.1.5.2.2** 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.

**27.1.1.5.2.3** 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.

**27.1.1.5.2.4** 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.

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

**27.1.1.5.2.6** 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, except for those uses of transmission service under Existing Contracts, which are curtailed in accordance with Sections 16.2.4.2 and 16.2.4.3.

**27.1.1.5.2.7** 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.

**27.1.1.5.2.8** 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.

**27.1.1.6 Intra-Zonal Congestion Management.**

(a) In the hour prior to the beginning of the Settlement Period the ISO may adjust Scheduling Coordinators' Final Schedules to alleviate Intra-Zonal Congestion. Except in those instances where the ISO calls Reliability Must-Run Units as provided in Section 30.6.1 of the ISO Tariff, the ISO will adjust resources in accordance with subsections (b) and (c) of this Section 27.1.1.6.

(b) Except as provided in Section 30.6.1 of the ISO Tariff, in the event of Intra-Zonal Congestion, the ISO shall adjust Generating Units and Curtailable Demands (or Interconnection schedules of System Resources in the Control Areas) to alleviate the Constraints as described in subsection (d) below.

(c) Additional Congestion Relief. In the event that there are insufficient resources which provide financial bids to mitigate Inter-Zonal and Intra-Zonal Congestion, Final Schedules which do not rely on Existing Contracts will be adjusted in real time by allocating transmission capacity on a pro rata basis. Final Schedules which rely on Existing Contracts will be adjusted in real time by allocating transmission capacity in accordance with the operating instructions submitted under Section 16.2.4. With respect to facilities financed with Local Furnishing Bonds the ISO shall adjust Final Schedules in real time in a fashion consistent with Sections 3 and 26.4 of the ISO Tariff, Appendix B of the TCA, and Operating Procedures governing the use of such facilities.

(d) Any Generating Unit dispatched to manage Intra-Zonal Congestion shall: (1) if dispatched to

increase its output, be paid the greater of its bid price (or mitigated bid if applicable) or the relevant Market Clearing Price; (2) if dispatched to decrease its output, be charged the lesser of its decremental reference price of the relevant Market Clearing Price. The ISO shall not re-dispatch MSS resources to manage Intra-Zonal congestion as set forth in this Section 27.1.1.6, as provided for in the MSS Agreement. The ISO shall treat hydroelectric resources the same as MSS resources for purposes of managing Intra-Zonal congestion under this Section 27.1.1.6.

**27.1.1.6.1 Decremental Bids.**

With regard to decremental bids, if Final Hour-Ahead Schedules cause Congestion on the Intra-Zonal interface, the ISO shall, after Dispatching available and effective Reliability Must-Run Units to manage the Congestion, apply the decremental reference prices determined by the independent entity that determines the reference prices for the Automatic Mitigation Procedure (AMP) as described in Appendix P, Attachment A. The ISO shall Dispatch Generating Units according to the decremental reference prices thus established, the resource's effectiveness on the Congestion, and other relevant factors such as Energy limitations, existing contractual restrictions, and Regulatory Must-Run or Regulatory Must-Take status, to alleviate the Congestion after Final Hour-Ahead Schedules are issued. Where the ISO must reduce a Generating Unit's output, the ISO shall Dispatch Generating Units according to the decremental reference prices and not according to Adjustment Bids or Supplemental Energy Bids to alleviate Intra-Zonal Congestion. No Generating Unit shall be Dispatched below its minimum operating level or above its maximum operating level. No Reliability Must-Run Unit shall be Dispatched below the operating level determined by the ISO as necessary to maintain reliability. If Congestion still exists after all Generating Units are Dispatched to their minimum operating levels, the ISO shall instruct Generating Units to shut off in merit order based on their total shut-down costs, beginning with the most expensive unit, where such shut-down costs include the lesser of the cost to start up the Generating Unit or to keep the Generating Unit warm for each Generating Unit with a non-zero Final Day-Ahead Schedule for Energy for the next day. Units shut off due to Congestion as set forth in this Section 27.1.1.6.1 shall be charged the lesser of the decremental reference price for the operating range between zero MW output and the unit's minimum operating level or the relevant Market Clearing Price.

If a Generating Unit shut down according to this Section 27.1.1.6.1 cannot start up in time to meet its next day's Energy Schedules, the ISO shall charge the Scheduling Coordinator for that Generating Unit the lesser of the decremental reference price or the Market Clearing Price at the operating level set forth in the relevant Energy Schedule for any deviation from the next day's Final Day-Ahead Schedules for Energy caused by such shut-down. Charges set forth in this Section 27.1.1.6.1 shall not apply to (1) Reliability Must-Run Units operating solely under their Reliability Must-Run Contracts or (2) units operating during a Waiver Denial Period in accordance with the must-offer obligation.

The ISO shall apply the decremental reference prices to thermal Generating Units and to non-thermal Generating Units. If a Generating Unit is instructed by the ISO to shut down to manage Intra-Zonal Congestion, and is subsequently re-started, the Owner of that Generating Unit may invoice the ISO for the lesser of (1) the Start-Up Costs incurred and (2) the costs of keeping the Generating Unit warm to meet its Energy Schedules as set forth in Section 40.12.6. If the ISO Dispatches System Resources or Dispatchable Loads to alleviate Intra-Zonal Congestion, the ISO shall Dispatch those resources in merit order according to the resource's Day-Ahead or Hour-Ahead Adjustment Bid or Imbalance Energy bid.

The ISO shall only Redispatch Regulatory Must-Take or Regulatory Must-Run Generation, Intermittent Resources, or Qualifying Facilities to manage Intra-Zonal Congestion after Redispatching all other available and effective generating resources, including Reliability Must-Run Units.

**27.1.1.6.1.1 Decremental Bid Reference Levels.** Decremental bid reference levels shall be determined for use in managing Intra-Zonal Congestion as set forth above in Section 27.1.1.6.1.

(a) Determination. Decremental bid reference levels shall be determined by applying the following steps in order as needed:

1. Excluding non-positive bids, proxy bids, mitigated bids, and bids used out of merit order for managing Intra-Zonal Congestion, the accepted decremental bid, or the lower of the mean or the median of a resource's accepted decremental bids if such a resource has more than one accepted decremental bid in competitive periods over the previous 90 days for peak and off-peak periods, adjusted for daily changes in fuel prices using gas price determined by Equation C1-8 (Gas) of the Schedules to the Reliability Must-Run Contract for the relevant Service Area (San Diego Gas & Electric Company, Southern California

Edison Company, or Pacific Gas and Electric Company), or, if the resource is not served from one of those three Service Areas, from the nearest of those three Service Areas. There will be a six-day time lag between when the gas price used in the daily gas index is determined and when the daily gas index based on that gas price can be calculated. For the purposes of this Section 27.1.1.6.1, to determine whether accepted decremental bids over the previous 90 days were accepted during competitive periods, the independent entity responsible for determining reference prices will apply a test to the prior 90-day period. The test will require that the ratio of a unit's accepted out-of-sequence decremental bids (MWh) for the prior 90 days to its total accepted decremental bids (MWh) for the prior 90 days be less than 50 percent. If this ratio is greater or equal to 50%, accepted decremental bids will be determined to have been accepted in non-competitive periods and cannot be used to determine the decremental reference price. This test would be applied each day on a rolling 90-day basis. One ratio would be calculated for each unit with no differentiation for various output segments on the unit. Accepted and justified decremental bids below the applicable soft cap, as set forth in Section 39.3 of this Tariff, will be included in the calculation of reference prices;

2. A level determined in consultation with the Market Participant submitting the bid or bids at issue, provided such consultation has occurred prior to the occurrence of the conduct being examined, and provided the Market Participant has provided sufficient data in accordance with specifications provided by the independent entity responsible for determining reference prices;

3. 90 percent of the unit's default Energy Bid determined monthly as set forth in Section 40.7.5 (based on the incremental heat rate submitted to the independent entity responsible for determining reference prices, adjusted for gas prices, determined according to paragraph (a)(1) above, and the variable O&M cost on file with the independent entity responsible for determining reference prices, or the default O&M cost of $6/MWh);

4. 90 percent of the mean of the economic Market Clearing Prices for the units' relevant location during the lowest-priced 25 percent of the hours that the unit was dispatched or scheduled over the previous 90 days for peak and off-peak periods, adjusted for changes in fuel prices determined according to paragraph (a)(1) above; or

5. If sufficient data do not exist to calculate a reference level on the basis of the first, second, or fourth methods and the third method is not applicable or an attempt to determine a reference level in consultation with a Market Participant has not been successful, the independent entity responsible for determining reference prices shall determine a reference level on the basis of:

i. the independent entity's estimated costs of an electric facility, taking into account available operating costs data, opportunity cost, and appropriate input from the Market Participant, and the best information available to the independent entity; or

ii. an appropriate average of competitive bids of one or more similar electric Facilities.

(b) Monotonicity. The decremental bid reference levels ($/MWh bid price) for the different bid segments of each resource shall be made monotonically non-decreasing by the independent entity responsible for determining reference prices by proceeding from the highest MW bid segment moving through each lower MW bid segment. The reference level of each succeeding bid segment, moving from right to left in order of decreasing operating level, shall be the lower of the reference level of the preceding bid segment or the reference level determined according to paragraph (a) above.

**27.1.1.6.2 Incremental Bids.**

With regard to incremental bids, except as provided in Sections 30.6, 27.1.1.6.1 and 11.2.4.2, the ISO will perform Intra-Zonal Congestion Management in real time using available Imbalance Energy bids, based on their effectiveness and in merit order, to minimize the cost of alleviating Congestion. In the event no Imbalance Energy bids are available, the ISO will exercise its authority to direct the Redispatch of resources as allowed under the Tariff, including Section 16.2.

**27.1.1.6.3 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 27.1.3.

**27.1.1.6.4 [Deletion pending FERC approval]**

**27.1.1.7 Creation, Modification and Elimination of Zones.**

**27.1.1.7.1 Active Zones.**

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

**27.1.1.7.2 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.

**27.1.1.7.2.1** 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.

**27.1.1.7.2.2** 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 27.1.1.7.2.1.

**27.1.1.7.2.3** 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.

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

**27.1.1.7.3 Active and Inactive Zones.**

**27.1.1.7.3.1** 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 27.1.1.7.3.3.

**27.1.1.7.3.2** The Congestion Management described in this Section 27.1.1, and the Usage Charges stemming from the application of these procedures, shall not apply to Inter-Zonal Interfaces with Inactive Zones.

**27.1.1.7.3.3** 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.

**27.1.1.7.3.4** 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.

**27.1.2 Usage Charges and Grid Operations Charges.**

**27.1.2.0.1** The ISO will collect Usage Charges from Scheduling Coordinators for their Scheduled use of Congested Inter-Zonal Interfaces. If Adjustment Bids are exhausted and

Schedules are adjusted pro rata, the ISO will apply a default Usage Charge calculated in accordance with Section 27.1.2.1.3.1

**27.1.2.1 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 16.2.3.4.1, 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.

**27.1.2.1.1 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 27.1.1.5, 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.

**27.1.2.1.2 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 27.1.1.

**27.1.2.1.2.1** 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.

**27.1.2.1.2.2** 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.

**27.1.2.1.2.3** 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.

**27.1.2.1.3 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 27.1.2.1.3.1 through 27.1.2.1.3.4.

**27.1.2.1.3.1** 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.

**27.1.2.1.3.2** The default Usage Charge will be calculated, in accordance with this Section 27.1.2.1.3, 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).

**27.1.2.1.3.3** 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 27.1.2.1.3.2 will be set at $0/MWh.

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

**27.1.2.1.3.5** If the Congestion Management software is not capable of calculating the default Usage Charge upon the ISO Operations Date in accordance with Sections 27.1.2.1.3.1 through 27.1.2.1.3.4, 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 27.1.2.1.3.1 through 27.1.2.1.3.4 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.ISO.com or such other Internet address as the ISO may publish from time to time.

**27.1.2.1.4 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 27.1.2.1.2 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.

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

**27.1.2.1.5.1** 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 27.1.2.1.2 for that particular hour, multiplied by the Scheduling Coordinator's scheduled flows.

**27.1.2.1.5.2** 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, 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.

**27.1.2.1.6 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 27.1.2.1.7 of the ISO Tariff, paid to: (i) FTR Holders, in accordance with Section 36.6; and (ii) to the extent not paid to FTR Holders, to Participating TOs who

own the Inter-Zonal Interfaces and Project Sponsors as provided in Section 24.7.3 (in proportion to their respective ownership rights). If a New Participating TO has received FTRs, pursuant to Section 36.4.3, over an Inter-Zonal Interface, the MW of FTRs received shall not be eligible for the disbursement of Usage Charge revenues under part (ii) of this section. Participating TOs will credit in turn the Usage Charge revenue to their Transmission Revenue Balancing Accounts, or, for those Participating TOs that do not have such accounts, to their Transmission Revenue Requirements.

**27.1.2.1.7 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 Project Sponsor(s) as provided in Section 24.7.3, 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 27.1.2.1.6, 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 Project Sponsors as provided in Section 24.7.3, 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.

**27.1.3 Grid Operations Charge for Intra-Zonal Congestion.**

Scheduling Coordinators whose resources are Redispatched by the ISO, in accordance with Intra-Zonal Congestion Management as set forth in Section 27.1.1.6, will be paid or charged as set forth in Appendix N, Part B. 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.

**27.2.1 Transmission Losses.**

**27.2.1.1 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 27.2.1. Scheduling Coordinators for Generators, System Units and System Resources are responsible for their respective proportion of Transmission Losses as determined in accordance with Section 27.2.1.2. For each Final Hour-Ahead Schedule, each Scheduling Coordinator representing Generators, dynamically scheduled System Resources or System Units shall elect through the flag described in Section 30.2.2 to either: 1) generate sufficient additional energy to meet its respective Transmission Losses or 2) be financially responsible for its respective transmission loss obligation based on the Imbalance Energy procured on its behalf by the ISO. Scheduling Coordinators for non-dynamically scheduled System Resources may self-provide transmission losses by scheduling an additional balanced quantity of Energy, both Supply and Demand, equal to their expected transmission loss obligation above their committed

delivery quantities in their Hour-Ahead Schedules. In the ISO Imbalance Energy market, all Scheduling Coordinators for Generators, System Units, and System Resources must be financially responsible for all respective Transmission Losses associated with their respective Imbalance Energy Dispatch Instructions in real time, based on the Imbalance Energy procured on their behalf by the ISO. A Scheduling Coordinator for an MSS Operator that has elected to follow Load will be responsible for its transmission loss obligation pursuant to Sections 4.9.9.1 and 4.9.16.4.

**27.2.1.1.1 Settlement of Transmission Loss Obligations.**

For a Scheduling Coordinator that elects to not or may not, self-provide for its transmission loss obligation, the ISO will procure Imbalance Energy on the Scheduling Coordinator's behalf for each relevant Dispatch Interval and explicitly settle its transmission loss obligation for each applicable Settlement Interval. For a resource under an ISO Dispatch Instruction for Imbalance Energy, transmission loss obligations shall be settled at the Resource-Specific Settlement Interval Ex Post Price. For a resource not under an ISO Dispatch Instruction for Imbalance Energy, transmission loss obligations shall be settled at the simple average of the two applicable Dispatch Interval Ex Post Prices as defined in Section 34.9.2.1. Allocation of transmission loss obligation settlement shall be treated consistent with Instructed Imbalance Energy pursuant to Section 11.2.4.2.1.

**27.2.1.2 Determination of Transmission Losses.**

The ISO will specify GMMs for each Energy supply source (Generating Units and external imports at Scheduling Points) to account for the Energy lost in transmitting power from Generating Units and/or Scheduling Points to Load. 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 27.2.1.2.3. 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. Inter-

Scheduling Coordinator Energy Trades will not be subject to such adjustments, beyond the impact of GMMs on the respective Scheduling Coordinator's Generation and external imports.

**27.2.1.2.1 Procedures for Calculating Generation Meter Multiplier.**

**27.2.1.2.1.1** At all times, the ISO will make available Generating Meter Multipliers for the seven Trading Days starting with the Trading Day after the next Trading Day before Scheduling Coordinators submit Day-Ahead Preferred Schedules. 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. In other words, if the current Trading Day is day 0, the ISO will publish at 6:00 pm today, via WEnet, the GMMs for Trading Days 2 through 8. On Trading Day 1, at 6:00 pm, the ISO will drop the GMMs for Trading Day 1 and add the newly calculated GMMs for Trading Day 9, with the GMMs for Trading Days 3 through 8 remaining the same.

**27.2.1.2.1.1.1** 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 will calculate and publish GMMs for each Settlement Period to reflect different expected Generation and Demand patterns and expected operations and maintenance requirements, such as line Outages, which could affect Transmission Loss determination and allocation. 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.

**27.2.1.2.1.2** 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 real-time 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. Any difference between scheduled and Ex Post Transmission Losses will be considered as an Imbalance Energy deviation and will be purchased or sold in the Real Time Market at the Settlement Interval Ex Post Price.

**27.2.1.2.2 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.

**27.2.1.2.2.1** 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.

**27.2.1.2.2.2** 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.

**27.2.1.2.2.3** 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.

**27.2.1.2.3** 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.

**27.2.2 Generation Meter Multipliers**

**27.2.2.1 Temporary Simplification Relating to GMM Loss Factors Application**

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 all Scheduling Coordinators.

**27.2.2.2 Application.**

Notwithstanding any other provision in this Tariff, including the ISO Protocols, the temporary simplification measure specified in this Section 27.2.2 shall have effect until discontinued by a Notice of Full-Scale Operations issued by the Chief Executive Officer of the ISO.

**27.2.2.2.1** Pursuant to Subsections 27.2.2.3.1 and 27.2.2.3.2, the Chief Executive Officer of the ISO shall give notice to all Scheduling Coordinators 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.

**27.2.2.3 Notices of Full-Scale Operations.**

**27.2.2.3.1** 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 27.2.2, 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.

**27.2.2.3.2** A Notice of Full-Scale Operations shall be issued when it is posted on the ISO Internet "Home Page," at http://www.ISO.com or such other Internet address as the ISO may publish from time to time.

**28 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;

**29 [NOT USED]**

**30 BIDS AND BID SUBMISSION.**

**30.1 ISO Operations.**

**30.1.1 Scheduling.**

**30.1.3 ISO Scheduling Responsibilities.**

To fulfill its obligations with respect to scheduling Energy and Ancillary Services, the ISO shall:

(a) provide Scheduling Coordinators with operating information and system status on a Day-Ahead and Hour-Ahead, Zonal and/or Scheduling Point basis to enable Scheduling Coordinators to optimize Generation, Demand and the provision of Ancillary Services;

(b) determine whether Preferred Schedules submitted by Scheduling Coordinators meet the requirements of Section 4.5.4.2, and whether they will cause Congestion;

(c) prepare Suggested Adjusted Schedules on a Day-Ahead basis and Final Schedules on a Day-Ahead and Hour-Ahead basis;

(d) validate all Ancillary Services bids and self-provided Ancillary Services;

(e) reduce or eliminate Inter-Zonal Congestion based on Adjustment Bids and in accordance with the Congestion Management procedures, and Intra-Zonal Congestion in accordance with Section 27.1.1.6; and

(f) if necessary, make mandatory adjustments to Schedules in accordance with the Congestion Management procedures.

**30.2 Information to Be Submitted by Scheduling Coordinators to the ISO.**

Scheduling Coordinators must comply with the ISO Data Templates and Validation Rules Document, which contains the format for submission of Schedules and bids.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:

**30.2.1 For Demand:**

**30.2.1.1 Designated Location Code.** For all Demand the Location Code of the Take-Out Point

(which must be the name of a Demand Zone, Load group or bus);

**30.2.1.2 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;

**30.2.1.3 Flexibility.** Whether the Preferred Schedule is flexible for adjustment to eliminate Congestion;

**30.2.1.4 Adjustment Bids.** The MW and $/MWh values representing the Adjustment Bid curve for any Dispatchable Load;

**30.2.1.5** Scheduling Coordinator's ID code;

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

**30.2.1.7** type of Schedule: Preferred or Revised;

**30.2.1.8** hourly scheduled MWh for each Settlement Period of the Trading Day that uses the Existing Contract (which values should be less than or equal to the values indicated in (i) 30.2.1.12 below);

**30.2.1.9 Congestion Management flag.** "Yes" indicates that any Adjustment Bid submitted for a Dispatchable Load under item 30.2.1.12 below should be used;

**30.2.1.10** publish Adjustment Bid flag, which will not be functional on the ISO Operations Date. In the future, "Yes" will indicate that the Scheduling Coordinator wishes the ISO to publish its Adjustment Bids;

**30.2.1.11** hourly scheduled MWh, including any zero values, for each Settlement Period of the Trading Day (in the case of a Day-Ahead Schedule) and for the relevant Settlement Period (in the case of an Hour-Ahead Schedule);

**30.2.1.12** the MW and $/MWh values for each Dispatchable Load for which an Adjustment Bid is being submitted;

**30.2.1.13** requisite NERC tagging data.

**30.2.2 For Generation:**

**30.2.2.1 Location of Generating Units.** The Location Code of all Generating Units scheduled, if applicable, or the source Control Area and Scheduling Point;

**30.2.2.2 Quantity Scheduled.** The aggregate quantity (in MWh) being scheduled from each Generating Unit and System Resource;

**30.2.2.3 Notification of Flexibility.** Notification of whether the Preferred Schedule is flexible for adjustment to eliminate Congestion;

**30.2.2.4 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;

**30.2.2.5 Operating Characteristics.** Operating characteristics for each Generating Unit and System Resource for which an Adjustment Bid has been submitted; and

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

**30.2.2.7** Scheduling Coordinator's ID code;

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

**30.2.2.9** name of Generating Unit scheduled;

**30.2.2.10** type of Schedule: Preferred or Revised;

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

**30.2.2.12** contract reference number for Reliability Must-Run Generation;

**30.2.2.13 Transmission loss self-provision flag (LOSS CMP FLG):** "Yes" indicates that Dispatch Instructions provided to the Generating Unit will include Transmission Losses associated with the unit's Final Hour-Ahead Schedule as determined by the relevant GMM;

**30.2.2.14 Congestion Management flag.** "Yes" indicates that any Adjustment Bid submitted

under 30.2.2.15 should be used in the Day-Ahead or Hour-Ahead Market;

**30.2.2.14A Publish Adjustment Bid flag, which will not be functional on the ISO Operations Date.** In the future, "Yes" will indicate that the Scheduling Coordinator wishes the ISO to publish its Adjustment Bids;

**30.2.2.15** Generating Unit ramp rate in MW/minute;

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

**30.2.2.17** The MW and $/MWh values for each Generating Unit for which an Adjustment Bid is being submitted.

**30.2.2A** The Generation section of a Balanced Schedule, and any associated Adjustment Bids, must accurately reflect the physical capability of each Generating Unit identified in the Schedule (including each Generating Unit's ability to ramp from one hour to the next). For example, a 500 MW Generating Unit specified with a ramp rate of 2 MW/min and an operating point of 100 MWh for the current operating hour is not physically capable of generating 300 MWh in the next operating hour. Likewise, Adjustment Bids submitted for a Generating Unit, applicable to a particular operating hour, should be physically achievable within the applicable operating hour.

**30.2.3 For deliveries to/from other Scheduling Coordinators:**

In the event of an Inter-Scheduling Coordinator Energy Trade, the Scheduling Coordinators who are parties to that trade must agree on a Zone in which the trade will be deemed to take place and notify the ISO accordingly. The purpose of designating a Zone is to provide for the allocation of Usage Charges which may arise in connection with the trade. The Inter-Scheduling Coordinator Energy Trades section of a Schedule will include the following information for each Inter-Scheduling Coordinator Trade:

**30.2.3.1 Identification Code.** Identification Code of Scheduling Coordinator to which Energy is provided or from which Energy is received;

**30.2.3.2 Quantity of Energy.** Quantity (in MWh) of Energy being received or delivered;

**30.2.3.3 Zone.** The Zone within which Energy is deemed to be provided by one Scheduling Coordinator to another under the Inter-Scheduling Coordinator Energy Trades.

**30.2.3.4 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.

**30.2.3.5** The Generating Unit or Dispatchable Load that the source or recipient of Energy traded.

**30.2.3.6** 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.

**30.2.3.7 [Not Used]**

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

**30.2.3.9** trading Scheduling Coordinator (buyer or seller);

**30.2.3.10** type of Schedule: Preferred or Revised;

**30.2.3.11** Schedule type – Energy (ENGY);

**30.2.3.12** hourly scheduled MWh, including any zero values, for each Settlement Period of the Trading Day (in the case of a Day-Ahead Schedule) and for the relevant Settlement Period (in the case of an Hour-Ahead Schedule), with internal imports into the Scheduling Coordinator reported as negative quantities and internal exports from the Scheduling Coordinator reported as positive quantities;

**30.2.3.13** Congestion Management flag – "Yes" indicates that Adjustment Bid submitted under (k) below should be used:

**30.2.3.14** publish Adjustment Bid flag – "Yes" indicates that the Scheduling Coordinator wishes the ISO to publish its Adjustment Bid.

**30.2.4 For Self-Provided Ancillary Services:**

Scheduling Coordinators electing to self-provide Ancillary Services shall supply the information referred to in Section 8.6.4 in relation to each Ancillary Service to be self-provided.

**30.2.5 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 8.2.3.2 to cover such Interruptible Imports or to purchase such Operating Reserve from the ISO.

**30.2.6 For External Imports/Exports:**

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

**30.2.6.1** Scheduling Coordinator's ID code;

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

**30.2.6.3** Scheduling Point (the name);

**30.2.6.4** type of Schedule: Preferred or Revised

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

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

**30.2.6.7** external Control Area ID;

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

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

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

**30.2.6.11** Schedule ID (NERC ID number);

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

**30.2.6.13** publish Adjustment Bid flag, which will not be functional on the ISO Operations Date. In the future, "Yes" will indicate that the Scheduling Coordinator wishes the ISO to publish its Adjustment Bids;

**30.2.6.14** Complete NERC tag;

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

**30.2.6.16** the MW and $/MWh values for each external import/export for which an Adjustment Bid is being submitted consistent with Section 30.2.8;

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

**30.2.7 Contract Usage Template Associated with a Balanced Schedule that Includes the Use of Existing Contract Rights or Firm Transmission Rights.**

The contract usage template can be submitted seven days in advance. However, the contract usage template will not be validated till the trade day. Each contract usage template must include the following information, in compliance with the ISO Data Templates and Validation Rules document which contains the format for submission of contract usage templates:

**30.2.7.1** Scheduling Coordinator's ID code:

**30.2.7.2** Type of market (Day-Ahead or Hour-Ahead) and Trading Day;

**30.2.7.3** From Zone (must be different than "to Zone"), is the Zone in which all sources specified in the contract usage template must be located;

**30.2.7.4** To Zone (must be different than "from Zone"), is the Zone in which all sinks specified in the contract usage template must be located;

**30.2.7.5** Contract reference number for each Inter-Zonal Interface for which transmission capacity has been reserved under Existing Contract or Firm Transmission Right. Up to four contract reference numbers can be specified in this field, delimited by commas, for either Existing Contract usage or Firm Transmission Right usage, but not for both (i.e. Existing Contract rights and Firm Transmission Rights cannot be used together in linking sources and sinks on contract usage template). If the use of multiple Inter-Zonal Interfaces are being scheduled, the contract reference numbers must represent a contiguous string of contracts rights from one Zone to the next (although the contract reference numbers need not be listed in any particular order since they will be arranged by the ISO's scheduling program to connect the "from Zone" to "to Zone");

**30.2.7.6** Usage ID (a unique identifier that allows a Scheduling Coordinator to submit multiple usages for a given Inter-Zonal Interface);

**30.2.7.7** Contract usage, in hourly scheduled MW, for the 24 hours of the Trading Day (for Generators, contract usage can be either positive or negative (i.e., for pumps); for loads, contract usage must be positive; for external imports and inter-Scheduling Coordinator trade imports, contract usage

must be negative; for external exports, contract usage must be positive). Each contract usage amount must be less than or equal to the amount of Existing Contract rights specified by the relevant Participating Transmission Owner(s) of Firm Transmission Rights, whichever the case may be. Additionally, any Adjustment Bids that may also be submitted for any particular resource (source or sink) that is also identified on a contract usage template must not overlap the contract usages specified for a particular resource in a contract usage template;

**30.2.7.8** Priority usage, relative to all contract usages specified in a Scheduling Coordinator's Balanced Schedule, as expressed on a scale of one to ten (with 1 having least priority and 10 having highest priority). For Existing Contracts, this priority will be used to adjust usage quantities when scheduled usages exceed the reserved existing transmissions reservations; and

**30.2.7.9** Sources or sinks, of hourly scheduled MWh (in the case of Energy usages) or MW (in the case of Ancillary Services usages), specified on the contract usage template must be balanced (except for Ancillary Services which need not be specified with sinks). Each Energy schedule or Ancillary Service bid or self-provided schedule associated with a particular source or sink must have an hourly usage schedule that is greater than or equal to the amounts specified on contract usage templates. The source/sink section of a contract usage template will include the following information (up to five combinations of sources and sinks can be specified on a single contract usage template if an Scheduling Coordinator is submitting the templates in accordance with Section 6.4.1A.3, or up to 20 combinations of sources and sinks if an Scheduling Coordinator is submitting the templates in accordance with Section 6.4.1A.3;

(1) Type of resource – Generation (GEN), load (LOAD), interchange (INTRCHNGE) or inter-Scheduling Coordinator trade (INTER_Scheduling Coordinator);

(2) Resource_ID – generator_ID, load_ID, tie_point or trading Scheduling Coordinator;

(3) Resource_ID2 (required only for individual interchange schedules and inter-Scheduling Coordinator trades);

(4) Energy type – firm (FIRM), non-firm (NFIRM), Wheeling (WHEEL), dynamic (DYN),

Energy (ENGY), Spinning Reserve (CSPN), Non-Spinning Reserve (CNSPN) or Replacement Reserve (CRPLC); and

(5) Hourly scheduled Energy or Ancillary Service, utilizing the same sign convention as set forth in (g) above.

**30.2.8 Content and Format of Adjustment Bids**

**30.2.8.1** Adjustment Bids are contained in Preferred Schedules and Revised Schedules submitted by Scheduling Coordinators for particular Generating Units (including Physical Scheduling Plants), Dispatchable Loads, external imports/exports, and Generating Units and Dispatchable Loads supporting Inter-Scheduling Coordinator Energy Trades. Each Scheduling Coordinator is required to submit a preferred operating point for each Generating Unit, Dispatchable Load and external import/export (these quantities are presented in the Scheduling Coordinator's submitted Schedule as "Hourly MWh"). The Scheduling Coordinator's preferred operating point for each Generating Unit, Dispatchable Load and external import/export must be within the range of any Adjustment Bids to be used by the ISO. The minimum MW output level, which may be zero MW (or negative for pumped storage resources), and the maximum MW output level must be physically achievable.

**30.2.8.2** Adjustment Bids will be presented in the form of a monotonically non-decreasing staircase function for Generating Units and external imports. Adjustment Bids will be presented in the form of a monotonically non-increasing staircase function for Dispatchable Loads and external exports. These staircase functions will be composed of up to eleven (11) ordered pairs (i.e., ten (10) steps or price bands) of quantity/price information. Adjustment Bids are submitted as an integral part of the Scheduling Coordinator's Balanced Schedule and must be related to each Generating Unit, Dispatchable Load and external import/export.

**30.2.9** Scheduling Coordinators must comply with the ISO Data Templates and Validation Rules document, which contains the format for submission of Schedules and bids.

**30.3 The Scheduling Process.**

The ISO scheduling process is described for information purposes only in tabular form in Appendix C.

The scheduling process by nature will need constant review and amendment as the market develops and matures and, therefore, is subject to change. The description in Appendix C aids understanding of the implementation and operation of the various markets administered by the ISO and is filed for information purposes only.

**30.3.1 Preferred Schedule.**

A Preferred Schedule is the initial Schedule submitted by a Scheduling Coordinator in the Day-Ahead Market or Hour-Ahead Market. A Preferred Schedule shall be a Balanced Schedule 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 8.5.2 and, where they elect to self-provide Ancillary Services pursuant to Section 8.6.1, an Ancillary Service schedule meeting the requirements set forth in Section 8.6.4.2A.

**30.3.1A** The Preferred Schedule shall also include Adjustment Bids as an indication of which resources (Generation or Load) if any may be adjusted by the ISO to eliminate Congestion. Adjustment Bids will be used by the ISO for Inter-Zonal Congestion Management as described in the SP and are initially valid only for the markets into which they are bid, being the Day-Ahead Market or the Hour-Ahead Market. During the ISO's Day-Ahead scheduling process, in accordance with the SP, the MW range of the Adjustment Bids specified in the Preferred Day-Ahead Schedule, but not the price values, may be changed by the Scheduling Coordinator in its Revised Day-Ahead Schedule, if any. These Adjustment Bids will not be transformed into Supplemental Energy bids.

**30.3.2 Seven-Day Advance Schedules.**

Scheduling Coordinators may submit Balanced Schedules for up to seven (7) Trading Days at a time, representing the Scheduling Coordinator’s Preferred Schedule for each Day-Ahead Market and/or Hour-Ahead Market. These advance Schedules can be overwritten by new Preferred Schedules at any time prior to the deadline for submitting Day-Ahead Schedules and Hour-Ahead Schedules, as described in the SP. If not overwritten by the Scheduling Coordinator, a Schedule submitted in advance of this deadline for submission will become the Scheduling Coordinator’s Preferred Schedule at the deadline for submitting Day-Ahead Schedules and/or Hour-Ahead Schedules. There is no validation of Schedules

submitted in advance of the deadline for submitting Preferred Schedules.

**30.3.3 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. These Suggested Adjusted Schedules will not apply to uses of transmission owned by Non-Participating TOs nor to uses of Existing Rights. A modification flag, set by the ISO, will indicate whether the scheduled output in a Settlement Period has been modified as a result of Congestion Management.

**30.3.4 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. There are no Revised Schedules in the Hour-Ahead Market.

**30.3.4.1 Final Schedules.**

If the ISO notifies a Scheduling Coordinator that there will be no Congestion on the ISO Controlled Grid based on the Preferred Schedules submitted by all Scheduling Coordinators, then subject to Section 30.2.3.4, the Preferred Schedule shall become that Scheduling Coordinator's Final Schedule. If the ISO has issued Suggested Adjusted Schedules and if no Scheduling Coordinator submits any changes to the Suggested Adjusted Schedules, all of the Suggested Adjusted Schedules shall become the Final Schedules. If the ISO has adjusted the Scheduling Coordinator's Preferred Schedule to match Inter-Scheduling Coordinator Energy Trades then the adjusted Preferred Schedule shall become that Scheduling Coordinator's Final Schedule.

If the ISO notifies a Scheduling Coordinator that there will be no Congestion on the ISO Controlled Grid

based on the Revised Schedules submitted by all Scheduling Coordinators, the Revised Schedule shall become that Scheduling Coordinator's Final Schedule. If the ISO has adjusted the Scheduling Coordinator's Revised Schedule to match Inter-Scheduling Coordinator Energy Trades then the adjusted Revised Schedule shall become that Scheduling Coordinator's Final Schedule. If there is Congestion based on the Revised Schedules or mismatches in Inter-Scheduling Coordinator Energy Trades, the ISO shall adjust the Revised Schedules and issue Final Schedules. The Scheduling Coordinators will be notified, via WEnet, that their Schedules have become final. The ISO will also publish a final set of Usage Charges for Energy transfers between Zones, applicable to all Scheduling Coordinators. The Final Schedules shall serve as the basis for Settlement between the ISO and each Scheduling Coordinator.

**30.3.4.2 Scheduling and Real-Time Information.**

**30.3.4.3 Final Schedules.**

The scheduling process described in Section 30.3 will produce for the ISO real-time dispatchers for each Settlement Period of the Trading Day a Final Schedule consisting of the combined commitments contained in the Final Day-Ahead Schedules and the Final Hour-Ahead Schedules for the relevant Settlement Period.

**30.3.4.4 The Final Schedule will include information with respect to:**

(a) Generation schedules;

(b) Demand schedules;

(c) Ancillary Services schedules based on the ISO's Ancillary Services auction;

(d) Ancillary Services schedules, based on Scheduling Coordinators ISO accepted schedules and forecast load, for self-provided Ancillary Services;

(e) Interconnection schedules between the ISO Control Area and other Control Areas; and

(f) Inter-Scheduling Coordinator Energy Trades.

**30.3.5 Prohibition on Scheduling Across Out-of-Service Transmission Paths.**

Scheduling Coordinators shall not submit any Schedule using a transmission path for any Settlement Period for which the Operating Transfer Capability for that path is zero MW. The ISO shall reject Schedules submitted for transmission paths on which the Operating Transfer Capability is zero MW. If the Operating Transfer Capability of a transmission path is reduced to zero after Final Day-Ahead Schedules have been submitted, then, if time permits, the ISO shall direct the responsible Scheduling Coordinators to reduce all Schedules on such zero-rated transmission paths to zero in the Hour-Ahead Market. As necessary to comply with Applicable Reliability Criteria, the ISO shall reduce any non-zero Final Hour-Ahead Schedules across zero-rated transmission paths to zero after the close of the Hour-Ahead Market. No Usage Charges will be assessed, nor will any Usage Charges for counter-flow be paid, for Schedules across a path with an Operating Transfer Capability of zero.

**30.3.5A No Scheduling Coordinator shall submit a Circular Schedule.** The ISO may periodically provide examples of such Circular Schedules under the ISO Home Page.

**30.4 Verification of Information.**

The ISO shall be entitled to take all reasonable measures to verify that Scheduling Coordinators meet the technical and financial criteria set forth in Section 4.5.1 hereof and the accuracy of information submitted to the ISO pursuant to Section 30.2.

**30.4.1 Validation of Balanced Schedules.**

Each Scheduling Coordinator will be assigned a workspace within the ISO's scheduling system. Each workspace will have a work area for Day-Ahead and Hour-Ahead Schedules, Adjustment Bids and Supplemental Energy bids. The Scheduling Coordinator shall only be allowed to access and manipulate its Schedule and bid data within this workspace. Each area is organized into segments. A segment is used to hold the Scheduling Coordinator's Schedules relating to the same Trading Day. The Schedule validation process is divided into two stages. The ISO shall carry out the first stage validation immediately after it has received a Schedule. The ISO shall carry out the second stage validation ten (10) minutes before (pre-validation) and immediately after each deadline (as specified in the Scheduling Protocol) for submission of Schedules. However, a Scheduling Coordinator can also initiate the stage two validation at any time prior to that deadline, as described in more detail in the Scheduling Protocol. If

the Scheduling Coordinator adds a new Schedule or modifies an existing Schedule, that Schedule must be re-validated. Scheduling Coordinators must comply with the ISO Data Templates and Validation Rules document, which contains the validation criteria for Balanced Schedules.

**30.4.1.1 Stage One Validation.**

During stage one validation, each incoming Schedule will be validated to verify proper content, format and syntax. The ISO will check that the Scheduling Coordinator had not exceeded its Aggregate Credit Limit and verify that the Scheduling Coordinator is certified in accordance with the ISO Tariff. The ISO will further verify that the Scheduling Coordinator has inputted valid Generating Unit and Demand location identification. Scheduled Reliability Must-Run Generation will be verified against the contract reference numbers in the ISO's Scheduling Coordinator database. A technical validation will be performed verifying that a scheduled Generating Unit's output is not beyond it's declared capacity and/or operating limits. If there is an error found during stage one validation, the Scheduling Coordinator will be notified immediately through WEnet. The Scheduling Coordinator can then look at the notification messages to review the detailed list of errors, make changes, and resubmit the Schedule if it is still within the ISO's timing requirements. Additionally, if the ISO detects an invalid contract usage (of either Existing Contract rights or Firm Transmission Rights), the ISO will issue an error message in similar manner to the Scheduling Coordinator and allow the Scheduling Coordinator to view the message(s), to make changes, and to resubmit the contract usage template(s) if it is still within the ISO's timing requirements. The Scheduling Coordinator is also notified of successful validation via WEnet.

**30.4.1.2 Stage Two Validation.**

During stage two validation, Schedules will be checked to determine whether each Scheduling Coordinator's aggregate Generation and external imports (adjusted for Transmission Losses) and Inter-Scheduling Coordinator Energy Trades (whether purchases or sales) equals the Scheduling Coordinator's aggregate Demand, including external exports. The Scheduling Coordinator must take into account the applicable Generation Meter Multipliers (GMMs). The Scheduling Coordinator will be notified if the counterpart trade to any Inter-Scheduling Coordinator Ancillary Service Trade has not been submitted, or is infeasible (i.e., if both Scheduling Coordinators are selling or both are buying).

Mismatches in Inter-Scheduling Coordinator Ancillary Service Trades shall be adjusted to be equal to the amount specified by the selling Scheduling Coordinator. A Scheduling Coordinator can also check whether its Schedules will pass the ISO's stage two validation by manually initiating validation of its Preferred Schedules or Revised Schedules, at any time prior to the deadline for submission of Preferred Schedules or Revised Schedules (as the case may be). It is the Scheduling Coordinator's responsibility to perform such checks, if desired. The Scheduling Coordinator will be notified immediately through WEnet of any validation errors. For each error detected, an error message will be generated by the ISO in the Scheduling Coordinator's notification screen which will specify the nature of the error. If the ISO detects a mismatch in Inter-Scheduling Coordinator Trades, the ISO will notify both Scheduling Coordinators of the mismatch in Energy quantity and/or location. The Scheduling Coordinator can then look at the notification messages to review the detailed list of errors, make changes, and resubmit the Schedule if it is still within the ISO's timing requirements. The Scheduling Coordinator is also notified of successful validation via WEnet.

**30.4.2 Validation of Existing Contract Schedules.**

Each Schedule submitted to the ISO by a Scheduling Coordinator representing a rights holder to an Existing Contract must include a valid contract reference number in accordance with Section 16.2.4A.1. If the Schedule includes an Inter-Scheduling Coordinator Trade, only one of the Scheduling Coordinators should submit a contract reference number. If a match of the Schedule's contract reference number is found in the ISO's database and the Schedule is consistent with the instructions submitted previously by the Responsible PTO, the Schedule will be implemented in accordance with the instructions. If a match of the Schedule's contract reference number cannot be found in the ISO's database or if both Scheduling Coordinators which are parties to an Inter-Scheduling Coordinator Trade submit contract reference numbers, the ISO will issue an error message to the Scheduling Coordinator via the WEnet (as described in Section 30.4.1.1) and indicate the nature of the problem. The ISO will assist the Scheduling Coordinator, within reason, in resolving the problem so that the Scheduling Coordinator is able to submit the Schedule successfully as soon as possible within the ISO's timing requirements of the SP. If the Scheduling Coordinator uses a contract reference number for which the responsible PTO has not reserved transmission capacity on a particular path (i.e., the contract reference Number(s) included on a

contract usage template cannot be found in the ISO's scheduling applications table of contract reference numbers), the Scheduled use will be invalidated and the Scheduling Coordinator notified by the ISO's issuance of an invalidated usage information template.

**30.4.3 Validation of Adjustment Bids.**

**30.4.3.1 Invalidation.**

The absence of an Adjustment Bid in a Scheduling Coordinator's Preferred Schedule or Revised Schedule will not affect the validation since Scheduling Coordinators are not required to submit Adjustment Bids. If an Adjustment Bid is contained in the Scheduling Coordinator's Preferred Schedule or Revised Schedule but is not in the form described above, both the Schedule and the Adjustment Bid will be rejected. The Scheduling Coordinator will be notified immediately, via WEnet, of any validation errors. For each error detected, an error message will be generated by the ISO in the Scheduling Coordinator's notification screen which will specify the nature of the error. The Scheduling Coordinator can then look at the notification messages to review the detailed list of errors, make changes, and resubmit if it is still within the timing requirements of the SP. The Scheduling Coordinator is also notified of successful validation via WEnet. The Scheduling Coordinators must comply with the ISO Data Templates and Validation Rules document, which contains the validation criteria for Adjustment Bids.

**30.4.3.2 Validation Checks.**

The ISO's stage one validation checks are performed automatically, whenever Schedules and Adjustment Bids are submitted. The ISO's stage two validation is performed automatically. A Scheduling Coordinator can also check whether its Adjustment Bids will pass the ISO's stage two validation by manually initiating validation of its Preferred Schedule or Revised Schedule, at any time prior to the deadline for submission of Preferred Schedules or Revised Schedules. It is a Scheduling Coordinator's responsibility to perform such checks.

**30.4.4 Validation of Ancillary Services Bids.**

The ISO will verify that each Ancillary Services Schedule or bid conforms to the format specified for the relevant service. If the Ancillary Services Schedule or bid does not so conform, the ISO will send a

notification to the Scheduling Coordinator notifying the Scheduling Coordinator of the errors in the Schedules and/or bids. Scheduling Coordinators will comply with the ISO Data Templates and Validation Rules document, which contains the validation criteria for Ancillary Services Schedules and bids. Shown below are the two stages of validation carried out by the ISO:

**30.4.4.1 Stage One Validation.**

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

**30.4.4.2 Stage Two Validation.**

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

**30.4.4.3 Validation Checks.**

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

**30.4.5 Validation of Energy Bids.**

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

**30.4.6 Format and Validation of Operational Ramp Rates.**

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

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

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

- If a Scheduling Coordinator does not submit an operational ramp rate for a generating unit for a day, the ISO shall use the maximum ramp rate for each operating range set forth in the Master File as the ramp rate for that unit for that same operating range for that day.

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

- The submitted operational ramp rate must be the same for each hour of the Trading Day, i.e., the

operational ramp rate submitted for a given hour must be the same with the one(s) submitted earlier for previous hours in the same Trading Day.

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

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

**30.4.7 Format and Validation of Startup and Shutdown Times.**

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

- The first down time must be 0 min.

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

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

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

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

**30.4.8 Format and Validation of Startup and Shutdown Costs.**

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

- The first down time must be 0 min.
- The down time entries must match exactly (in number, sequence, and value) the corresponding down time breakpoints of the cost-based startup cost function, as registered in the Master File for the relevant resource.
- The startup cost for each segment must not be negative and must not exceed the startup cost of the corresponding segment of the cost-based startup cost function, as registered in the Master File for the relevant resource. For gas-fired resources, the cost-based startup cost function shall be derived from the startup fuel function, as registered in the Master File for the relevant resource, and the applicable gas price index as approved by FERC.
- The startup cost function must be strictly monotonically increasing, i.e., the startup cost must increase as down time increases.

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

**30.4.9 Format and Validation of Minimum Load Costs.**

For a Generating Unit, the submitted Minimum Load Cost expressed in dollars per hour ($/hr) is the cost incurred for operating the unit at minimum load. The submitted Minimum Load Cost must not be negative and must not exceed the cost-based Minimum Load Cost, as registered in the

Master File for the relevant resource. For gas-fired resources, the cost-based Minimum Load Cost shall

be derived pursuant to Section 40.8.4.

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

**30.5 [NOT USED]**

**30.6 RMR.**

**30.6.1 Procurement of Reliability Must-Run Generation by the ISO.**

**30.6A.1** A Reliability Must-Run Contract is a contract entered into by the ISO with a Generator which operates a Generating Unit giving the ISO the right to call on the Generator to generate Energy and, only as provided in this Section 30.6.1, or as needed for Black Start or Voltage Support required to meet local reliability needs, or to procure Ancillary Services from Potrero or Hunter's Point power plants to meet operating criteria associated with the San Francisco local reliability area, to provide Ancillary Services from the Generating Units as and when this is required to ensure that the reliability of the ISO Controlled Grid is maintained.

**30.6A.1.1** If the ISO, pursuant to Section 8.5.4(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 8.2.3.6), except that the ISO shall not be required to accept bids that exceed price caps imposed by the ISO or the FERC.

**30.6A.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 8.2.3.6) have been selected pursuant to Section 8.7, 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 30.6A.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 30.6A.1.1. The ISO must provide the notice specified in paragraph (3) of this Section 30.6A.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 Reliability 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 8.2.3.6) 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 8.5.4 ("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.

**30.6A.2** The ISO will, subject to any existing power purchase contracts of a Generating Unit, have the right at any time based upon ISO Controlled Grid technical analyses and studies to designate a Generating Unit as a Reliability Must-Run Unit. A Generating Unit so designated shall then be obligated to provide the ISO with its proposed rates for Reliability Must-Run Generation for negotiation with the ISO. Such rates shall be authorized by FERC or the Local Regulatory Authority, whichever authority is applicable.

**30.6A.3** On a yearly basis, the ISO will carry out technical evaluations based upon historic patterns of the operation of the ISO Controlled Grid and the ISO's forecast requirements for maintaining the reliability of the ISO Controlled Grid in the next year. The ISO will then determine which Generating Units it requires to continue to be Reliability Must-Run Units, which Generating Units it no longer requires to be Reliability Must-Run Units and which Generating Units it requires to become the subject of a Reliability Must-Run Contract which had not previously been so contracted to the ISO. None of the Generating Units owned by Local Publicly Owned Electric Utilities are planned to be designated as Reliability Must-Run Units by the ISO as of the ISO Operations Date but are expected to be operated in such a way as to maintain the safe and reliable operation of the interconnected transmission system comprising the ISO Control Area. However, in the future, Local Publicly Owned Electric Utilities may contract with the ISO to provide Reliability Must-Run Generation.

**30.6A.4** A *pro forma* of the Reliability Must-Run Contract is attached as Appendix G. From the ISO Operations Date all Reliability Must-Run Units will be placed under the “As Called” conditions, but the parties may, pursuant only to the terms of the Reliability Must-Run Contract, Transfer any such unit to one of the alternative forms of conditions under specific circumstances. The ISO will review the terms of the applicable forms of agreement applying to each Reliability Must-Run Unit to ensure that the ISO will procure Reliability Must-Run Generation from the cheapest available sources and to maintain System Reliability. The ISO shall give notice to terminate Reliability Must-Run Contracts that are no longer necessary or can be replaced by less expensive and/or more competitive sources for maintaining the reliability of the ISO Controlled Grid.

**30.6.1.1 Reliability Must-Run Charge.**

The ISO shall prepare and send to each Responsible Utility in accordance with Appendix N, Part J an ISO Invoice in respect to those costs incurred under each Reliability Must-Run Contract that are payable to the ISO by such Responsible Utility or payable by the ISO to such Responsible Utility pursuant to Section 30.6.1.2. The ISO Invoices shall reflect all reductions or credits required or allowed under or arising from the Reliability Must-Run Contract or under this Section 30.6.1.1. The ISO Invoice shall separately show the amounts due for services from each RMR Owner. Each Responsible Utility shall pay the amount due under each ISO Invoice by the due date specified in the ISO Invoice, in default of which interest shall become payable at the interest rate provided in the Reliability Must-Run Contract from the due date until the date on which the amount is paid in full. For each Reliability Must-Run Contract, the ISO shall establish two, segregated commercial bank accounts under the "Facility Trust Account" referred to in Appendix N, Part J and Article 9 of the Reliability Must-Run Contract. One commercial bank account, the "RMR Owner Facility Trust Account," shall be held in trust by the ISO for the RMR Owner. The other commercial bank account, the "Responsible Utility Facility Trust Account," shall be held in trust by the ISO for the Responsible Utility. Payments received by the ISO from the Responsible Utility in connection with the Reliability Must-Run Contract, including payments following termination of the Reliability Must-Run Contract, will be deposited into the RMR Owner Facility Trust Account and payments from the ISO to the RMR Owner will be withdrawn from such account, in accordance with Section 30.6.1.1, Article 9 of the Reliability Must-Run Contract and Appendix N, Part J. Any payments received by the ISO from the RMR Owner in connection with the Reliability Must-Run Contract will be deposited into the Responsible Utility Facility Trust Account. Any payments due to the Responsible Utility of funds received from the RMR Owner in connection with the Reliability Must-Run Contract will be withdrawn from the Responsible Utility Facility Trust Account, in accordance with this Section 30.6.1.1, Appendix N, Part J and Article 9 of the Reliability Must-run Contract. Neither the RMR Owner Facility Trust Account nor the Responsible Utility Trust Account shall have other funds commingled in it at any time. The ISO shall not modify this Section 30.6.1.1 or Appendix N, Part J as it applies to procedures for the billing, invoicing and payment of charges under Reliability Must-Run Contracts without the Responsible Utility's consent, provided, however, that no such consent shall be required with respect to any change in the method by

which costs incurred by the ISO under RMR Contracts are allocated to or among Responsible Utilities.

**30.6.1.1.1** Except where the Responsible Utility is also the RMR Owner, the Responsible Utility's payment of the ISO Invoice shall be made without offset, recoupment or deduction of any kind whatsoever. Notwithstanding the foregoing, if the ISO fails to deduct an amount required to be deducted under Section 30.6.1.1.1.1, the Responsible Utility may deduct such amount from payment otherwise due under such ISO Invoice.

**30.6.1.1.1.1** If the Responsible Utility disputes an ISO Invoice, Revised Estimated RMR Invoice, or Revised Adjusted RMR Invoice, or Final Invoice, it shall pay the ISO Invoice but may pay under protest and reserve its right to seek a refund, with interest, from the ISO. If resolution of the dispute results in an amount paid by the Responsible Utility under protest being due from the ISO to the Responsible Utility and from the RMR Owner to the ISO, and such amount was paid to the RMR Owner by the ISO, then such amount, with interest at the interest rate specified in the applicable Reliability Must-Run Contract from the date of payment until the date on which the amount is repaid in full, shall be refunded by the RMR Owner to the ISO and from the ISO to the Responsible Utility, pursuant to Article 9 of the Reliability Must-Run Contract and Appendix N, Part J, by the RMR Owner's inclusion of such refund amount in the appropriate invoice. If the RMR Owner does not include such refund amount (including interest) in the appropriate invoice, then such refund amount shall be deducted by the ISO from the next succeeding amounts otherwise due from the Responsible Utility to the ISO and from the next succeeding amounts otherwise due from the ISO to the RMR Owner with respect to the applicable Reliability Must-Run Contract or, if such Contract has terminated, such amount shall be refunded by the ISO to the Responsible Utility; provided, however, that if and to the extent that such resolution is based on an error or breach or default of the RMR Owner's obligations to the ISO under the Reliability Must-Run Contract, then such refund obligation shall extend only to amounts actually collected by the ISO from the RMR Owner as a result of such resolution. If resolution of the dispute requires the ISO, but not the RMR Owner, to pay the Responsible Utility, then such award shall be recovered from any applicable insurance proceeds, provided that to the extent sufficient funds are not recoverable through insurance, the amount of the award (whether determined through settlement, or ADR or otherwise) shall be collected by the ISO pursuant to Section 13.5, and in any event, the award shall be paid by the ISO to the Responsible Utility

pursuant to Section 13.5.

**30.6.1.1.1.2** If the Responsible Utility disputes an ISO Invoice, a Revised Estimated Invoice, a Revised Adjusted RMR Invoice, or a Final Invoice, or part thereof, based in whole or in part on an alleged error by the RMR Owner or breach or default of the RMR Owner's obligations to the ISO under the Reliability Must-Run Contract, the Responsible Utility shall notify the ISO of such dispute within 12 months of its receipt of the applicable Revised Adjusted RMR Invoice or Final Invoice from the ISO, except that the Responsible Utility may also dispute a Revised Estimated RMR Invoice, Revised Adjusted RMR Invoice, or Final Invoice for the reasons set forth above in this Section 30.6.1.1.1.2, within 60 days from the issuance of a final report with respect to an audit of the RMR Owner's books and accounts allowed by a Reliability Must-Run Contract.

**30.6.1.1.1.3** If the Responsible Utility disputes an ISO Invoice, a Revised Estimated RMR Invoice, a Revised Adjusted RMR Invoice, or a Final Invoice, based in whole or in part on an alleged error by the ISO or breach or default of the ISO's obligations to the Responsible Utility, the Responsible Utility shall notify the ISO of such dispute prior to the later to occur of (i) the date 12 months following the date on which the ISO submitted such invoice to the Responsible Utility for payment or (ii) the date 60 days following the date on which a final report is issued in connection with an operational audit, pursuant to Section 22.1.2.2, of the ISO's performance of its obligations to Responsible Utilities under this Section 30.6.1.1 conducted by an independent third party selected by the ISO Governing Board and covering the period to which such alleged dispute relates. The ISO or any Responsible Utility shall have the right to request, but not to require, that the ISO Governing Board arrange for such an operational audit at any time.

**30.6.1.1.1.4** Notwithstanding Section 13 of this ISO Tariff, any Responsible Utility dispute relating to an ISO Invoice, a Revised Estimated Invoice, a Revised Adjusted Invoice, a Final Invoice, or a RMR Charge, RMR Payment or RMR Refund as defined in Appendix N, Part J, shall be resolved through the dispute resolution process specified in the relevant RMR Contract. If the Responsible Utility fails to notify the ISO of any dispute as provided above, it shall be deemed to have validated the invoice and waived its right to dispute such invoice.

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

**30.6.1.1.3** If a Responsible Utility first executed a TCA after April 1, 1998 (a "New Responsible Utility") and if:

(i) the senior unsecured debt of the New Responsible Utility is rated or becomes rated at less than A- from Standard & Poor's ("S&P") or A3 from Moody's Investment Services ("Moody's"), and

(ii) Such ratings do not improve to A- or better from S&P or A3 or better from Moody's within 60 days,

the New Responsible Utility shall issue and confirm to the ISO an irrevocable and unconditional letter of

credit in an amount equal to three times the highest monthly payment invoiced by the ISO to the New Responsible Utility (or the prior Responsible Utility) in connection with services under Reliability Must-Run Contracts in the last 3 months for which invoices have been issued. The letter of credit must be issued by a bank or other financial institution whose senior unsecured debt rating is not less than A from S&P and A2 from Moody's. The letter of credit shall be in such form as the ISO may reasonably require from time to time by notice to the New Responsible Utility and shall authorize the ISO or the Owner to draw on the letter of credit for deposit solely into the RMR Owner Facility Trust Account in an amount equal to any amount due and not paid by the Responsible Utility under the ISO Invoice. The security provided by the New Responsible Utility pursuant to this Section 30.6.1.1.3 is intended to cover the New Responsible Utility's outstanding liability for payments it is liable to make to the ISO under this Section 30.6.1.1, including monthly payments, any reimbursement for capital improvement, termination fees and any other payments to which the ISO is liable under Reliability Must-Run Contracts.

**30.6.1.2 Responsibility for Reliability Must-Run Charge.**

Except as otherwise provided in Section 30.6.1.2.1, the costs incurred by the ISO under each Reliability Must-Run Contract shall be payable to the ISO by the Responsible Utility in whose PTO Service Territory the Reliability Must-Run Generating Units covered by such Reliability Must-Run Contract are located or, where a Reliability Must-Run Generating Unit is located outside the PTO Service Territory of any Responsible Utility, by the Responsible Utility or Responsible Utilities whose PTO Service Territories are contiguous to the Service Area in which the Generating Unit is located, in proportion to the benefits that each such Responsible Utility receives, as determined by the ISO. Where costs incurred by the ISO under a Reliability Must-Run Contract are allocated among two or more Responsible Utilities pursuant to this section, the ISO will file the allocation under Section 205 of the Federal Power Act.

**30.6.1.2.1 Responsibility for Reliability Must-Run Charges Associated with SONGS.**

If the ISO procures Reliability Must-Run Generation from the San Onofre Nuclear Generation Station Units 2 or 3, it shall determine prior to the operation of such facilities as Reliability Must-Run Generation the appropriate allocation of associated charges, if any, among Responsible Utilities. The allocation of such charges shall be based on the reliability benefits that the ISO reasonably identifies through studies

and analysis as accruing to the respective Service Areas of the Responsible Utilities.

**30.6.1.2.2** The ISO may Dispatch an RMR Unit that has currently selected Condition 2 of its RMR Contract to provide Energy through an out-of-market transaction for reasons other than to manage Intra-Zonal Congestion or to address local reliability under the following conditions:

(1) The ISO projects that it will require Energy from the Condition 2 RMR Unit to (a) meet forecast Demand and operating reserve requirements or (b) manage Inter-Zonal Congestion;

(2) If ISO must Dispatch a Condition 2 RMR Unit to meet forecast Demand and operating reserve requirements, the ISO must first revoke or deny waivers of the must-offer obligation from all other Generating Units, including non-Condition 2 RMR Units and Generating Units not subject to an RMR Contract subject to the must-offer obligation and not on outage, except as set forth in item (5) below;

(3) If ISO must Dispatch a Condition 2 RMR Unit to manage projected Inter-Zonal Congestion, the ISO must first revoke or deny waivers of the must-offer obligation from all other Generating Units, including non-Condition 2 RMR Units and Generating Units not subject to an RMR Contract subject to the must-offer obligation, that are within the Congested Zone, except as set forth in item (5) below;

(4) Before Dispatching a Condition 2 RMR Unit in accordance with this Section 30.6.1.2.2, the ISO must notify Market Participants of (a) the situation for which the ISO is contemplating Dispatching a Condition 2 RMR Unit in accordance with this Section 30.6.1.2.2, and (b) the date and time the ISO requires the Condition 2 RMR Unit so Dispatched to be operating. The ISO shall provide such notice as far in advance as practical and prior to directing the Condition 2 Unit to start up;

(5) The ISO does not have to revoke or deny a waiver to a Generating Unit (a) subject to environmental limitations if doing so would violate such limitations, or cause the Generating Unit to be unavailable in the future, or if the environmental limitations currently restrict the

availability or use of the Generating Unit; or (b) if that Generating Unit would cause or exacerbate Congestion, Overgeneration or other operational problem; or (c) if that Generating Unit is incapable of being available for Dispatch in the required timeframe.

Notwithstanding anything to the contrary in the applicable RMR Contract, all MWh, start-ups and service hours provided by a Generating Unit that has currently selected Condition 2 of its RMR Contract pursuant to this Section 30.6.1.2.2 outside of the RMR Contract shall not be used to determine future RMR Contract Annual Service Limits. Payment for Dispatches pursuant to this Section 30.6.1.2.2 is governed by Section 11.2.4.2 of this Tariff.

**30.6.1.3 Identification of Generating Units.**

Each Generator shall provide data identifying each of its Generating Units and such information regarding the capacity and the operating characteristics of the Generating Unit as may be reasonably requested from time to time by the ISO.

**31 DAY-AHEAD MARKET.**

**31.1 Timing of Day-Ahead Scheduling.**

**31.1A** The ISO may in its sole discretion implement any temporary variation or waiver of the timing requirements of this Section 31.1 (including the omission of any step) if any of the following criteria are met:

(i) such waiver or variation of timing requirements is reasonably necessary to preserve System Reliability, prevent an imminent or threatened System Emergency or to retain Operational Control over the ISO Controlled Grid during an actual System Emergency.

(ii) the ISO receives Schedules that require delay in performing Day-Ahead Market or Hour-Ahead Market evaluations, such as in the case of the ISO receiving Inter-Scheduling Coordinator Energy Trades that do not balance;

(iii) because of error or delay, the ISO requires additional time to fulfill its responsibilities pursuant to Section 30.1.3 of the ISO Tariff;

(iv) problems with data or the processing of data cause a delay in receiving or issuing Schedules or publishing information on the WEnet;

(v) problems with telecommunications or computing infrastructure cause a delay in receiving or issuing Schedules or publishing information on the WEnet;

If the ISO temporarily implements a waiver or variation of such timing requirements, the ISO will publish the following information on WEnet as soon as practicable:

(i) the exact timing requirements affected;

(ii) details of any substituted timing requirements;

(iii) an estimate of the period for which this waiver or variation will apply;

(iv) reasons for the temporary waiver or variation.

**31.1A.1** If, despite the variation of any time requirement or the omission of any step, the ISO either fails to receive sufficient Schedules to operate the Day-Ahead Market or is unable to perform Congestion Management in the Day-Ahead Market, the ISO may abort the Day-Ahead Market and require all Schedules to be submitted, and Congestion Management to be performed, in the Hour-Ahead Market.

**31.1A.2** If, despite the variation of any time requirement or omission of any step, the ISO either fails to receive sufficient Schedules to operate the Hour-Ahead Market or is unable to perform Congestion Management in the Hour-Ahead Market, the ISO may abort the Hour-Ahead Market and function in real time.

**31.1.1 Reliability Must Run Information.**

By no later than 5:00 a.m. on the day before 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".

**31.1.1.1** No later than 6:00 a.m. on the day before the Trading Day, any RMR Owner receiving an RMR Dispatch Notice as indicated in this Section 31.1.1.1 (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 ("RMR Market Energy"), and receiving only market compensation therefore (the "RMR Market Option"), or (ii) by delivering RMR Energy as a contract transaction ("RMR Contract Energy"), and accepting payment under the relevant RMR Contract (the "RMR Contract Option"). 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.

**31.1.2 RMR Contract Option.**

For each hour for which the Applicable RMR Owner elects the RMR Contract Option, the Scheduling Coordinator shall submit a Day-Ahead Energy Schedule that includes all RMR Contract Energy. Any RMR Contract Energy not Scheduled to forecast Demand or through Inter-Scheduling Coordinator Energy Trades shall be balanced by also Scheduling an additional quantity of Demand equal to the remaining amount of RMR Contract Energy at a Load Point specified by the ISO for each RMR Unit (the "RMR Contract Energy Load Point"). The RMR Contract Energy Load Point shall be used solely for the purpose of balancing the RMR Contract Energy not otherwise Scheduled to forecast Demand or an Inter-Scheduling Coordinator Energy Trade. The price for the RMR Contract Energy Scheduled to the RMR

Contract Energy Load Point shall be the price paid to Demand deviations from Final Hour-Ahead Schedules. The ISO shall post the list of RMR Contract Energy Load Points on the ISO Home Page and shall make any modifications to that list effective only 1) after providing at least five (5) days notice and 2) on the first day of a month. Whether or not the RMR Contract Energy is in the Final Schedule, the Applicable RMR Owner must deliver the RMR Contract Energy pursuant to the RMR Dispatch Notice. Notwithstanding anything to the contrary in the RMR Contract, neither the Applicable RMR Owner nor the Applicable RMR Scheduling Coordinator shall be entitled to any payment from any source for RMR Energy that is not scheduled as required by this Section 31.1.2. All RMR Energy delivered under this option shall be deemed delivered under a Nonmarket Transaction for the purposes of the RMR Contract. In the event that the RMR Contract Energy is not delivered for any hour, (i) if the RMR Contract Energy had been scheduled, the Applicable RMR Owner shall not be entitled to an Availability Payment under the RMR Contract and the Applicable RMR Scheduling Coordinator shall pay for the Imbalance Energy necessary to replace that RMR Energy; and (ii) if the RMR Contract 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 Contract 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.

**31.1.2.1 [Not Used]**

**31.1.3 RMR Market Option.**

This Section 34.1.3 provides how an Applicable RMR Owner electing the RMR Market Option shall satisfy its obligation to deliver RMR Energy.

**31.1.3.1** For each hour for which an Applicable RMR Owner has selected the Market Option, the Applicable RMR Owner (i) may bid into a power exchange market any amount of the RMR Market Energy and (ii) may schedule as a bilateral Day-Ahead transaction any amount of RMR Market Energy.

The Preferred Day-Ahead Schedule of the Applicable RMR Scheduling Coordinator shall include as RMR Market Energy for each hour the sum of the amount awarded to the Applicable RMR Owner in any power

exchange market for that hour and the amount scheduled as a bilateral Day-Ahead transaction for that hour. If the Preferred Day-Ahead Schedule of the Applicable RMR Scheduling Coordinator for any hour includes Adjustment Bids for the RMR Unit, the Adjustment Bid shall specify the RMR Market Energy as the minimum MW output to which the Applicable RMR Scheduling Coordinator 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 Scheduling Coordinator shall be entitled to any payment from any source for RMR Market Energy that is not bid and scheduled as required by this Section 31. In the event that the RMR Market Energy is not delivered, (i) if the RMR Market Energy had been scheduled, the Applicable RMR Owner shall not be entitled to an Availability Payment under the RMR Contract and the Applicable RMR Scheduling Coordinator shall pay for the Imbalance Energy necessary to replace that RMR Market Energy, or (ii) if the RMR Market 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 Market 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.

**31.1.3.2** If the Applicable RMR Scheduling Coordinator's Preferred Day-Ahead Schedule does not include the entire amount of RMR Market Energy for any hour, the Applicable RMR Owner shall bid all remaining RMR Market Energy for that hour, net of any RMR Energy the Applicable RMR Owner elects to provide through an Hour-Ahead bilateral transaction for that hour, into the next available power exchange market for such hour at zero dollars per MWh.

**31.1.3.2.1** The Applicable RMR Scheduling Coordinator's Preferred Hour-Ahead Schedule for each hour shall include all RMR Market 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 power exchange markets under Section 31.1.3.2 but was not awarded in such power exchange markets for such hour. If the Preferred Hour-Ahead Schedule of the Applicable RMR Scheduling Coordinator for any hour includes

Adjustment Bids for the RMR Unit, the Adjustment Bid shall specify the RMR Market Energy as the minimum MW output to which the Applicable RMR Scheduling Coordinator will allow the RMR Unit to be redispatched for that hour.

**31.1.3.3** Whether or not the RMR Energy is in a Final 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, 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 Scheduling Coordinator shall be entitled to any payment from any source for RMR Market Energy that is not bid and scheduled as required by this Section 31.

**31.1.3.4** If, at any time after 5:00 a.m. on the day before 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"). If the owner of the RMR Unit or the Applicable RMR Scheduling Coordinator for 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 three hours before the hour specified in the Supplemental RMR Dispatch Notice for each such hour that is at least four hours after the issuance of the Supplemental Dispatch Notice. If the RMR Owner elects to provide the Energy requested in the Supplemental RMR Dispatch Notice as RMR Contract Energy, the Scheduling Coordinator shall 1) submit an Hour-Ahead Energy Schedule that includes all or part of the RMR Contract Energy requested in the Supplemental RMR Dispatch Notice in a bilateral transaction to Demand or in an Inter-Scheduling Coordinator Energy Trade and 2) submit an Hour-Ahead Energy Schedule for all RMR Contract Energy requested in the Supplemental RMR Dispatch Notice not Scheduled in a bilateral transaction as a Schedule to the RMR Contract Energy Load Point and balance that Schedule by also Scheduling an additional quantity of Demand equal to the remaining amount of RMR Contract Energy at the RMR Contract Energy Load Point. The RMR Contract Energy Load Point shall be used solely for the

purpose of balancing the RMR Contract Energy not otherwise Scheduled to forecast Demand or through an Inter-Scheduling Coordinator Energy Trade. The price for the RMR Contract Energy Scheduled to the RMR Contract Energy Load Point shall be the price paid to Demand deviations from Final Hour-Ahead Schedules.

**31.1.3.5 [Not Used]**

**31.1.4 Demand Information.**

**31.1.4.1 Daily Information.** By 10:00 a.m. on the day preceding the Trading Day, each Scheduling Coordinator shall provide to the ISO a Demand Forecast specified by UDC or MSS Service Area for which it will schedule deliveries for each of the Settlement Periods of the following Trading Day; however, the requirements of this Section shall not apply to (a) the portion of a Scheduling Coordinator's Demand associated with Station Power and (b) the Scheduling Coordinator's Demand within a UDC or MSS Service Area if the Scheduling Coordinator's maximum Demand within that UDC or MSS Service Area during the preceding twelve (12) months was less than one (1) megawatt, provided that this exemption shall not apply to any Scheduling Coordinator that did not submit Schedules for any metered Demand within a UDC or MSS Service Area over the preceding twelve (12) month period. The ISO shall aggregate the Demand information by UDC or MSS Service Area and transmit the aggregate Demand information to each UDC or MSS serving such aggregate Demand.

**31.1.4.2 Preliminary Weekly Information.** Each Scheduling Coordinator shall provide to the ISO, no later than seven (7) days after the end of each week, which shall end at Sunday HE 24, data for the previous week (Monday through Sunday), in electronic format, comparing, for each hour of that week: (1) the Scheduling Coordinator's total Day-Ahead scheduled Demand by UDC Service Area, as submitted pursuant to Section 4.5.4.2, (2) the Scheduling Coordinator's total Day-Ahead Demand Forecast by UDC Service Area, as submitted pursuant to Section 31.1.4.1, and (3) an estimate of the Scheduling Coordinator's actual Demand by UDC Service Area. The requirements of this section do not apply to (a) the portion of a Scheduling Coordinator's Demand associated with Station Power and (b) the Scheduling Coordinator's Demand within a UDC or MSS Service Area if the Scheduling Coordinator's Maximum

Demand within the UDC or MSS Service Area during the preceding twelve (12) months was less than one (1) megawatt, provided that this exemption shall not apply to any Scheduling Coordinator that did not submit Schedules for any metered Demand within a UDC or MSS Service Area over the preceding twelve (12) month period.

**31.1.5** 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 Adjustment Bids and Ancillary Services bids.

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

**31.1.7 ISO Analysis of Preferred Schedules.**

On receipt of the Preferred Schedules, the ISO will analyze the Preferred Schedules of Applicable RMR

Scheduling Coordinators to determine the compatibility of such Preferred Schedules with the RMR Dispatch Notices. 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 30.2.3.4. 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 30.2.3.4, the Preferred Schedules shall become the Final Schedules and the ISO shall notify Scheduling Coordinators accordingly.

**31.1.8 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.

**31.1.9 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 30.2.3.4.

**31.1.9.1 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 30.2.3.4, the Revised Schedules and any unamended Preferred Schedules shall become Final Day-Ahead Schedules and the ISO shall notify Scheduling Coordinators accordingly.

**31.1.9.2 Use of Congestion Management for Final Schedule.**

Subsequent to receiving Revised Schedules if the ISO identifies Congestion on the ISO Controlled Grid, it shall use the Congestion Management provisions of this ISO Tariff to develop the Final Day-Ahead Schedules.

**32 [Not Used]**

**33 HOUR AHEAD.**

**33.1 Timing of Hour-Ahead Scheduling.**

**33.1.1. 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 Bids or Ancillary Services bids shall be submitted at least two hours and fifteen minutes (i.e., 135 minutes) prior to the commencement of that Settlement Period.

**33.1.1.1 Statements in Preferred Schedule.**

In submitting its Preferred Schedule, each Scheduling Coordinator may submit Adjustment Bids for use in the Hour-Ahead Market to assist in relieving Congestion.

**33.1.1.2 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.

**33.1.2 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.

**33.1.2.1 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.

**33.1.2.2 Congestion Management Provisions for Final Hour-Ahead Schedules.**

If the ISO identifies Congestion, it shall use the Congestion Management provisions of Section 27.1.1 of this ISO Tariff to develop the Final Hour-Ahead Schedules.

**33.1.2.3 Final Hour-Ahead Schedules.**

The ISO shall inform each Scheduling Coordinator of its responsibilities to provide Ancillary Services in accordance with Section 8.7. 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 shall contain the following information:

**33.1.2.3.1 Generation.**

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

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

**33.1.2.3.1.3** The changes in the final scheduled quantity (in MWh) for each such Generating Unit, System Resource and scheduled voltage;

**33.1.2.3.1.4** Notification if the scheduled Generation was adjusted to resolve Congestion; and

**33.1.2.3.1.5 [Not Used]**

**33.1.2.3.2 Load.**

**33.1.2.3.2.1** For each Load where a Demand Bid has been submitted, the Location Code of the Take-Out Point;

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

**33.1.2.3.2.3 Notification of Adjustment.** Notification if the scheduled Demand was adjusted to resolve Congestion.

**33.1.2.4 Usage Charges.** The ISO shall notify each Scheduling Coordinator of the applicable Usage Charge calculated in accordance with Section 27.1.2.

## 34 REAL-TIME.

### 34.1 Energy Bids.

#### 34.1.1 Energy Bid Definition.

A single Energy Bid curve per resource per hour shall be used in: (a) the real-time Hourly Pre-Dispatch as set forth in Section 34.3.0.2, and (b) Dispatch in the Real Time Markets. A corresponding operational ramp rate as provided for in Section 30.4.6 shall be submitted along with the single Energy Bid curve and shall be used in determination of Dispatch Instructions pursuant to Section 34.3.1(c).

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

#### 34.1.2 Energy Bid Submission.

##### 34.1.2.1 Real Time Market.

Bids shall be submitted for use in the real-time Hourly Pre-Dispatch Section 34.3.0.2(i) and the Real-Time Economic Dispatch up to sixty-two (62) minutes prior to the Operating Hour. Resources required to offer their Available Generation in accordance with Section 40.7.4 shall be required to submit Energy Bids for

1) all of their Available Generation and 2) any Ancillary Services capacity awarded or self-provided in the Day-Ahead or Hour-Ahead Ancillary Services markets. In the absence of submitted bids, default bids will be used for resources required to offer their Available Generation in accordance with Section 40.7.4. Resources not required to offer their Available Generation in accordance with Section 40.7.4 that were awarded or self-provided Ancillary Services capacity must submit an Energy Bid for no less than the amount of awarded or self-provided Ancillary Services capacity. Resources not required to offer their Available Generation in accordance with Section 40.7.4 may voluntarily submit Energy Bids. Submitted Energy Bids shall be subject to the Damage Control Bid Cap as set forth in Section 39.1 and to the Mitigation Measures set forth in Attachment A to Appendix P.

**34.1.2.1.1 Frequently Mitigated Adders**

Generating Units of Participating Generators for which only a portion of their capacity is Eligible Capacity, as well as self-scheduled Generating Units of Participating Generators that have Eligible Capacity, that submit Supplemental Energy bids that are mitigated under Section 3.2.2.2 of Appendix P five times in a single Trading Day, based on five-minute dispatch periods, shall receive a supplemental payment adder ("Frequently Mitigated Adder") for the Dispatched Energy that is mitigated for each mitigated interval in that Trading Day beginning with the 10-minute Settlement Interval of the fifth mitigation and continuing for each following 10-minute Settlement Interval through the remainder of the Trading Day, provided that the Frequently Mitigated Adder plus the Mitigated Price does not exceed the resources' original Supplemental Energy bid. The Frequently Mitigated Adder shall be $40 per megawatt hour multiplied by the ratio of the Eligible Capacity (excluding any portion of minimum load capacity that is not also Resource Adequacy Capacity, RMR or designated under TCPM) to the total Qualifying Capacity (excluding minimum load level) of the Generating Unit. Generating Units shall not receive Frequently Mitigated Adders in connection with decremental dispatches.

The total amount of Frequently Mitigated Adders that any Generating Unit can receive in a Trading Day shall not exceed the TCPM Capacity Payment that the Generating Unit would have received pursuant to Section 43.7, pro-rated to a daily payment, if the ISO had denied a must-offer waiver request. Further, Frequently Mitigated

Adders will stop accruing in any calendar month once the combined value for that month of all Frequently Mitigated Adders payments reaches the level of the Monthly TCPM Charge (established in Schedule 6 of Appendix F) reduced by the Monthly PER (established in Schedule 6 of Appendix F) for that month multiplied by the megawatts of Eligible Capacity of that Generating Unit. This Section 34.1.2.1.1 shall expire at midnight on the day before the MRTU Tariff goes into effect.

**34.1.2.1.2 Allocation of Frequently Mitigated Adder Costs**

Costs incurred under Section 34.1.2.1.1 will be allocated in accordance with Section 27.1.3.

**34.1.2.2 Real-Time Energy Bid Partition.**

The portion of the single Energy Bid that corresponds to the high end of the resource's operating range, shall be allocated to any awarded or self-provided Ancillary Services in the following order from higher to lower capacity: (a) Regulation Up; (b) Spinning Reserve; (c) Non-Spinning Reserve; and (d) Replacement Reserve. For resources providing Regulation Up, the upper regulating limit shall be used if it is lower than the highest operating limit. The remaining portion of the Energy Bid (i.e. that portion not associated with capacity committed to provide Ancillary Services) shall constitute a Bid to provide Supplemental Energy.

**34.1.2.3 Creation of the Real-Time Merit Order Stack.**

**34.1.2.3.1 Sources of Imbalance Energy.**

The following Energy Bids will be considered in the creation of the real-time merit order stack for Imbalance Energy:

(a) Supplemental Energy Bids;

(b) Ancillary Services Energy Bids (except for Regulation) submitted for specific Ancillary Services for those resources which have been selected in the ISO's Ancillary Services auction to supply such specific Ancillary Services; and

(c) Ancillary Services Energy Bids (except for Regulation) submitted for specific Ancillary Services

for those resources which Scheduling Coordinators have elected to use to self-provide such specific Ancillary Services and for which the ISO has accepted such self-provision.

**34.1.2.3.2 Stacking of the Energy Bids.**

The sources of Imbalance Energy described in Section 34.1.2.3.1 will be arranged in order of increasing Energy Bid prices to create a merit order stack. This merit order stack will be arranged without regard to the source of the Energy Bid except that Energy Bids associated with Spinning and Non-Spinning Reserve shall not be included in the merit order stack during normal operating conditions if the capacity associated with such bids has been designated as available to supply Imbalance Energy only in the event of the occurrence of an unplanned Outage, a Contingency or an imminent or actual System Emergency. In the event of an unplanned Outage, a Contingency or threatened or actual System Emergency, all Energy Bids associated with Spinning and Non-Spinning Reserve may be included in the merit order stack. In the event of Inter-Zonal Congestion, separate merit order stacks will be created for each Zone. The information in the merit order stack shall be provided to the real-time dispatcher through the RTD Software. Where, in any Settlement Interval, the highest decremental Energy Bid in the merit order stack is higher than the lowest incremental Energy Bid, the RTD Software will eliminate the Price Overlap by actually dispatching for all those incremental and decremental bids which fall within the overlap.

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

**34.1.2.3.3 Use of the Merit Order Stack.**

The merit order stack, as described in Section 34.1.2.3.2, can be used to supply Energy for:

(a) satisfying needs for Imbalance Energy (differences between actual and scheduled Generation, Demand and external imports/exports) in real time;

(b) managing Inter-Zonal Congestion in real time;

(c) supplying Energy necessary to allow resources providing Regulation service to return to the base point of their regulating ranges in real time;

(d) recovering Operating Reserves utilized in real time;

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

(f) Dispatching System Resources and Dispatchable Loads and increasing Generating Units' output to manage Intra-Zonal Congestion in real time.

**34.1.3 Requirement to Submit Energy Bids For Awarded or Self-Provided Ancillary Services Capacity.**

Scheduling Coordinators for resources that have been awarded or self-provide Regulation Up, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity must submit a Supplemental Energy bid for at least all the awarded or self-provided Ancillary Services capacity. To the extent a Supplemental Energy bid is not so submitted for a gas-fired resource, the ISO shall calculate a Supplemental Energy bid in accordance with Section 40.10.1 and insert that bid into the real-time Imbalance Energy market. To the extent a Supplemental Energy bid is not so submitted for a non-gas-fired resource, the ISO shall insert a bid of $0/MWh into the real-time Imbalance Energy market.

**34.2 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. Supplemental Energy bids are available to the ISO for procurement and use for Imbalance Energy, additional Voltage Support and Congestion Management in the Real Time Market.

**34.2.1 Identification of Supplemental Energy Bids.**

The upper portion of a Scheduling Coordinator's Energy Bid for a resource providing Spinning, Non-Spinning, or Replacement Reserves that corresponds to the resource's available capacity up to the highest operating limit, shall be allocated to any awarded or self-provided Ancillary Services in the following order from higher to lower capacity: a) Regulation Up; b) Spinning Reserve; c) Non-Spinning Reserve; and d) Replacement Reserve. For resources providing Regulation Up, the upper regulating limit

shall be used if it is lower than the highest operating limit. The remaining portion of the Energy Bid, if there is any, shall constitute Supplemental Energy.

**34.2.1.1 Timing of Supplemental Energy Bids.**

Supplemental Energy bids must be submitted to the ISO no later than sixty-two (62) minutes prior to the operating hour. Bids may also be submitted at any time after the Day-Ahead Market closes. These Supplemental Energy bids cannot be withdrawn after sixty-two (62) minutes prior to the Settlement Period. A System Resource that identifies its bid as a Hourly Pre-Dispatch bid will only be pre-dispatched and will not be subject to any intra-hour Redispatch except as necessary to maintain inter-Control Area transmission reliability.

**34.2.1.1A Form of Supplemental Energy Bid Information.**

Supplemental Energy bids must include the following information:

**34.2.1.2 Generation Section of Energy Bid Data.**

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

(a) Scheduling Coordinator's ID code;

(b) name of Generating Unit;

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

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

(e) Generating Unit startup time function in minutes;

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

(g) Generating Unit Minimum Load Cost in $/hr; and

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

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

**34.2.1.3 Demand Section of Energy Bid Data.**

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

(a) Scheduling Coordinator's ID code;

(b) name of Demand;

(c) Demand shutdown time in minutes;

(d) Demand shutdown cost in $/start;

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

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

**34.2.1.4 External Import Section of Energy Bid Data.**

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

(a) Scheduling Coordinator's ID code;

(b) name of Scheduling Point;

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

(d) external Control Area ID;

(e) Schedule ID (NERC ID number);

(f) complete WECC tag;

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

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

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

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

(k) interchange ID code;

(l) external Control Area ID;

(m) Schedule ID (NERC ID number) and complete WECC tag;

(n) preferred bid flag, a “YES” indicates a bid and a “NO” indicates a self-provided schedule; and

(o) the contract reference number, if applicable.

**34.2.1.4A Format of Energy Bids.**

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

**34.2.1.4B Real Time Operational Activities in the Hour Prior to the Settlement Period.**

**34.2.1.5 Schedule Confirmation.**

In the hour prior to the beginning of the Settlement Period, the ISO will review and evaluate the current system operating conditions to ensure sufficient Energy and Ancillary Services resources are available for the next Settlement Period. The ISO will:

(a) verify that each Scheduling Coordinator's Ancillary Services obligations are scheduled as required. The ISO will procure additional Ancillary Services if insufficient resources are scheduled;

(b) verify any Supplemental Energy bids received up to thirty (30) minutes prior to the Settlement Period, for increases or decreases in Energy output which it may require for the Settlement Period; and

(c) verify that with currently anticipated operating conditions there is sufficient transfer capacity on the ISO Controlled Grid to implement all Final Schedules.

**34.2.1.6 Confirm Interchange Transaction Schedules (ITSs).**

Also in the hour prior to the beginning of the Settlement Period the ISO will:

(a) adjust interchange transaction schedules (ITSs) as required under Existing Contracts in accordance with the procedures in the ISO Tariff for the management of Existing Contracts;

(b) adjust ITSs as required by changes in transfer capability of transmission paths occurring after close of the Hour-Ahead Market; and

(c) agree on ITS changes with adjacent Control Area Operators.

**34.3 Real-Time Dispatch.**

The ISO, using RTD Software, shall economically Dispatch each Generating Unit, Curtailable Demand, System Unit, Interconnection schedule or System Resource that is effective to: (i) 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 34.3.0.3, and (ii) relieve Congestion, if

necessary, to ensure System Reliability and to maintain Reliability Criteria. The ISO shall determine that additional output is needed if the current output levels of the Regulation Generating Units, System Units, and System Resources deviate from their preferred operating points by more than a specified threshold (to be determined by the ISO), or to meet the projected Imbalance Energy requirements for the next Dispatch Interval. The ISO shall employ a multi-interval constrained optimization methodology (RTD Software) to calculate an optimal dispatch for each Dispatch Interval within a time horizon that shall extend to the end of the next hour. The ISO shall Dispatch resources that have submitted Energy bids over the time horizon to meet forecasted Imbalance Energy requirements minimizing the Imbalance Energy procurement cost over the entire time horizon, subject to resource and transmission system constraints. However, Dispatch Instructions shall be issued for the next Dispatch Interval only. The ISO also shall instruct resources to start up or shut down over the time horizon based on their submitted and validated Start-Up Costs, Minimum Load Costs and Energy bids and, in addition to these costs, the optimization shall also include for FERC Must-Offer Generators' Eligible Capacity, the applicable Monthly TCPM Charge. These resources shall receive binding start-up or shut-down pre-dispatch instructions as required by their startup time. The ISO shall only start resources that can start within the time horizon. The ISO may shut down resources that do not need to be on-line if constraints within the time horizon permit. However, resources providing Regulation or Spinning Reserve shall not be shut down. On-line resources providing Non-Spinning or Replacement Reserve shall also not be eligible for shut down, unless their minimum down time does not exceed ten (10) minutes.

**34.3.0 Rules For Real-Time Dispatch of Imbalance Energy Resources.**

**34.3.0.1.1 Overview.**

During real time, the ISO shall dispatch Generating Units, Loads and System Resources 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.

**34.3.0.1.2 Utilization of the Energy Bids.**

The ISO will use the Energy Bids to Dispatch Supplemental Energy and Ancillary Services to procure balancing Energy for:

(a) satisfying needs for Imbalance Energy;

(b) mitigating Inter-Zonal Congestion;

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

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

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

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

**34.3.0.2 General Principles.**

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

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

(b) in each Dispatch Interval, following the loss of a resource and once ACE has returned to zero, the ISO shall determine whether the Regulation Generating Units, System Units, Dispatchable Interconnection schedules, and System Resources are operating at a point away from their preferred operating point and project the Imbalance Energy requirements based on the forecasted Demand for the next Dispatch Interval. The ISO shall then Dispatch Generating Units, System Units, Curtailable Demands, Dispatchable Interconnection schedules, and System Resources available (either providing Spinning Reserve, Non-Spinning Reserve, Replacement Reserve or offering Supplemental Energy) to meet the projected Imbalance Energy requirements for the next Dispatch

Interval and return the Regulation Generating Units, System Units, Dispatchable Interconnection schedules, 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, Curtailable Demands, Dispatchable Interconnection schedules and System Resources only to meet its Imbalance Energy requirements and eliminate any Price Overlap between Energy Bids subject to resource and transmission system Constraints, thereby, Dispatching the relevant resources in real time for economic trades either between Scheduling Coordinators or within a Scheduling Coordinator's portfolio;

(d) subject to Section 34.3.0.3 and its subparts, the ISO shall select the Generating Units, System Units, Loads, Curtailable Demands, Dispatchable Interconnection schedules and System Resources to be dispatched in merit order according to their Energy Bids to meet its Imbalance Energy requirements and to eliminate any Price Overlap based on a constrained optimization method to minimize the overall cost of Imbalance Energy subject to resource and transmission system Constraints;

(e) subject to Section 34.3.0.3 and its subparts, the ISO shall not discriminate between Generating Units, System Units, Loads, Curtailable Demands, Dispatchable Interconnection schedules 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 or to resolve Inter-Zonal Congestion;

(f) Generating Units, System Units, Loads, Curtailable Demands, Dispatchable Interconnection schedules 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 Dispatch Interval. In Dispatching such resources, the ISO may make

commitments beyond the current Settlement Period;

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

(h) The operational ramp rate(s) of a resource will be considered by the RTD Software in determining the amount of Instructed Imbalance Energy by Dispatch Interval, and such consideration may result in Instructed Imbalance Energy in Dispatch Intervals prior to or subsequent to the Dispatch Interval to which the Dispatch Instruction applies;

(i) System Resources identified as Dispatchable within the operating hour pursuant to Section 34.2.1.1A shall be Dispatched optimally through the RTD Software. Such bids will be settled pursuant to Section 11.2.4.1.1.2;

(j) The ISO will pre-dispatch Energy Bids from System Resources, subject to Hourly Pre-Dispatch as indicated in Section 34.2.1.1A, prior to the beginning of each hour consistent with applicable WECC interchange scheduling practices, assuring that any Price Overlap between such decremental and incremental Energy Bids will be eliminated. Such bids will be settled pursuant to Section 11.2.4.1.1.2.

(k) In issuing the Dispatch Instructions, the ISO will not intentionally request UDCs, Participating Generators, Generating Unit operators, Participating Transmission Owners, Control Area Operators (to the extent the agreement between the Control Area Operator and the ISO so provides), Metered Subsystem Operators or Scheduling Coordinators to exceed any inherent plant rating or local restriction imposed by the plant or transmission owner in order to protect the design and/or operational integrity of its plant or equipment. In issuing Dispatch Instructions to PTOs, the ISO will comply with Section 5.1.7 of the TCA. Any conflict that may arise between an ISO issued Dispatch Instruction and a plant or transmission owner's restriction as mentioned above must be immediately brought to the ISO's attention by the person receiving such Dispatch Instruction prior to any attempt to implement that Dispatch Instruction.

**34.3.0.3 Ancillary Services Dispatch.**

The ISO will base its standards for the Dispatch of Ancillary Services upon NERC and WECC reliability standards, including any requirements of the NRC and ISO Controlled Grid reliability requirements. 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, (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 by NERC and WECC reliability standards, including any requirements of the NRC.

**34.3.0.3.1 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 Bids as described in Section 34.3.0.1.2, subject to the limitation on the Dispatch of Spinning Reserve and Non-Spinning Reserve set forth in Section 34.3.0.3.

**34.3.0.3.2 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 Dispatch, subject to the limitation on the Dispatch of Spinning Reserve and Non-Spinning Reserve set forth in Section 34.3.0.3.

**34.3.0.3.3 Ancillary Services Requirements for Real Time Dispatch.**

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

**34.3.0.3.3.1 Regulation.**

(a) Regulation provided from Generating Units or System Resources must meet the standards specified in this Tariff and the Part of A of Appendix K;

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

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

(d) when scheduled Operating Reserve is used for restoration of Regulation reserve, the ISO shall arrange for the replacement of that Operating Reserve (see Section 34.3.0.3.3.4 );

**34.3.0.3.3.2 Operating Reserve.**

(a) Spinning Reserve:

(i) Spinning Reserve provided from Generating Units and Interconnection schedules must meet the standards specified in Part B of Appendix K;

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

(iii) the ISO may Dispatch Spinning Reserve as balancing Energy to return Regulation

Generating Units to their Set Points and restore full Regulation margin; and

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

(b) Non-Spinning Reserve:

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

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

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

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

**34.3.0.3.3.3 Replacement Reserve.**

(a) Replacement Reserve provided from Generating Units, Curtailable Demands and Interconnection schedules must meet the standards specified in Part D of Appendix K

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

(c) the ISO may Dispatch Replacement Reserve to replace Operating Reserve that has been Dispatched for balancing Energy; and

(d) the ISO will Dispatch Replacement Reserve in merit order of Energy Bid prices as determined by RTD;

**34.3.0.3.3.4 Replacement of Operating Reserve.**

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

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

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

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

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

**34.3.0.3.3.5 Voltage Support.**

(a) Voltage Support provided from Generating Units shall meet the standards specified in this Tariff and the Part E of Appendix K;

(b) the ISO may Dispatch Generating Units to increase or decrease MVar output within the power factor limits of 0.9 lagging to 0.95 leading (or within other limits specified by the ISO in any exemption granted pursuant to Section 8.2.3.4 of the ISO Tariff) at no cost to the ISO when required for System Reliability;

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

(d) If Voltage Support is required in addition to that provided pursuant to 34.3.0.3.3.5 (b) and (c), the ISO will reduce output of Participating Generators certified in accordance with Appendix K . The ISO will select Participating Generators in the vicinity where such additional Voltage Support is required; and

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

**34.3.1 Resource Constraints.**

The RTD Software shall enforce the following resource physical constraints:

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

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

(c) Operational ramp rates and start-up times. The submitted operational ramp rate as provided for in Section 30.4.6 shall be used for all Dispatch Instructions. Each Energy Bid shall be Dispatched only up to the amount of Imbalance Energy that can be provided within the Dispatch Interval based on the applicable operational ramp rate. The Dispatch Instruction shall consider the relevant start-up time as provided for in Section 30.4.6, if the resource is off-line, the relevant ramp rate function, and any prior commitments such as schedule changes across hours and previous Dispatch Instructions. The start-up time shall be determined from the start-up time function and when the resource was last shut down. The start-up time shall not apply if the corresponding resource is on-line or expected to start.

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

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

their minimum up time expires.

(f) Operating (Spinning and Non-Spinning) Reserve. The RTD Software shall Dispatch Spinning and Non-Spinning Reserve subject to the limitations set forth in Section 34.3.0.3.

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

**34.3.2 Transmission System Constraints.**

RTD shall use a Zonal DC network model where all nodes within a Zone would be collapsed into a single equivalent “Zonal bus.” The constraints using the Zonal network model shall be the following:

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

(b) Inter-Zonal Interface constraints. These constraints shall limit the net active power flow on Inter-Zonal Interfaces at or below their transfer limits. For Inter-Zonal Interfaces between the ISO Control Area and another Control Area, inter-Zonal transfer capacity shall be reserved for awarded Ancillary Services from System Resources not already Dispatched.

**34.3.2.1 Inter-Zonal Congestion.**

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

**34.3.2.2 Selection of Generating Unit or Load to Increase Generation or Reduce Demand.**

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

**34.3.2.3 Selection of Generating Unit to Reduce Generation.**

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

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

Real-time Dispatch Instructions shall be issued for each Dispatch Interval as needed to prescribe the ramp between a resource's Final Hour-Ahead Schedule in one hour to its Final Hour-Ahead Schedule in the immediately succeeding operating hour. Such Dispatch Instructions shall be based on the lesser of: (1) the applicable operational ramp rate as provided for in Section 30.4.6 and (2) the ramp rate associated with the Standard Ramp. The Dispatch Instructions for ramping of Generating Units without real-time Energy Bids in both operating hours shall begin 10 minutes prior to the start of each operating hour and shall end no sooner than 10 minutes after and no later than 50 minutes after the start of each operating hour. Energy resulting from the Standard Ramp shall be deemed Standard Ramping Energy and will be settled in accordance with Appendix N, Part D-1, Section 2.1.2. Energy resulting from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be settled in accordance with Appendix N, Part D-1, Section 2.1.2.

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

Real-time Dispatch Instructions associated with the ramp between a resource's Final Hour-Ahead Schedule in one hour to its Final Hour-Ahead Schedule in the immediately succeeding operating hour

shall be determined optimally by the RTD Software if the ISO has bids for either or both relevant operating hours. For any operating hour(s) for which bids have been submitted Dispatch Instructions will be optimized such that the Dispatch Operating Point is within the bid range(s). For any operating hour without submitted bids Dispatch Instructions will be optimized such that the Dispatch Operating Point conforms to the schedule within the operating hour. Energy resulting from the Standard Ramp shall be deemed Standard Ramping Energy and will be settled in accordance with Appendix N, Part D-1, Section 2.1.2. Energy resulting from any ramp extending beyond the Standard Ramp will be deemed Ramping Energy Deviation and will be settled in accordance with Appendix N, Part D-1, Section 2.1.2. Energy delivered or consumed as a result of ISO Dispatch of a resource's Energy Bid in one operating hour to a Dispatch Operating Point such that the resource cannot return to its successive operating hour Final Hour-Ahead Schedule by the beginning of the next operating hour is Residual Energy and shall be settled as Instructed Imbalance Energy as provided for in Appendix N, Part D-1, Section 2.1.2 and also may be eligible for recovery of its applicable Energy Bid costs in accordance with Section 11.2.4.1.1.1. Similarly, Energy delivered or consumed as a result of ISO Dispatch of a resource's Energy Bid in a future operating hour to a Dispatch Operating Point different from its current operating hour Final Hour-Ahead Schedule prior to the end of the current operating hour is also considered Residual Energy and shall be settled as Instructed Imbalance Energy as provided for in Appendix N, Part D-1, Section 2.1.2 and also may be eligible for recovery of its applicable Energy Bid costs in accordance with Section 11.2.4.1.1.1. When Ramping Energy Deviation and Residual Energy coexist within a given Dispatch Interval, the Ramping Energy Deviation shall be the portion of Instructed Imbalance Energy that is produced or consumed within the schedule-change band defined by the Final Hour-Ahead Schedules of the two consecutive Settlement Periods; the Residual Energy shall be the portion of Instructed Imbalance Energy that is produced or consumed outside the schedule-change band.

**34.3.3 Inter-Zonal Congestion.**

In the event of Inter-Zonal Congestion in real time, the ISO shall procure Imbalance Energy as described in Section 34.3.

**34.3.4 Intra-Zonal Congestion.**

Except as provided in Section 30.6.1, in the event of Intra-Zonal Congestion in real time, the ISO shall adjust resources in accordance with Sections 27.1.1.6.1 and 27.1.1.6.2.

**34.3.5 Recovery of Operating Reserve.**

If procured Operating Reserve is used to meet Imbalance Energy requirements, such Operating Reserve may be recovered by the ISO's replacing the associated Imbalance Energy through the Dispatch of other Energy Bids in merit order to allow the resources that were providing Energy from the procured Operating Reserve to return to their operating point before the provided the Energy from the Operating Reserves.

Any additional real-time Operating Reserve needs may be met through unloaded capacity from RMR resources.

**34.3.6 Dispatch Information and Instructions.**

**34.3.6.1 Dispatch Information To Be Supplied to the ISO.**

**34.3.6.2 Dispatch Information To Be Supplied by Scheduling Coordinator**

Each Scheduling Coordinator shall be responsible for the scheduling and Dispatch of Generation and Demand in accordance with its Final Schedule. Each Scheduling Coordinator shall keep the ISO appraised of any change or potential change in the current status of all Generating Units, Interconnection schedules and Inter-Scheduling Coordinator Energy Trades. This will include any changes in Generating Unit capacity that could affect planned Dispatch and conditions that could affect the reliability of a Generating Unit. Each Scheduling Coordinator shall immediately pass to the ISO any information which it receives from a Generator which the Generator provides to the Scheduling Coordinator pursuant to Section 34.5. Each Scheduling Coordinator shall immediately pass to the ISO any information it receives from a MSS Operator which the MSS Operator provides to the Scheduling Coordinator regarding any change or potential change in the current status of all Generating Units, System Units, Interconnection schedules and Inter-Scheduling Coordinator Energy Trades. This information includes any changes in MSS System Units and MSS Generating Unit capacity that could affect planned Dispatch and conditions that could affect the reliability of the System Unit or Generating Unit.

**34.3.6.3 Dispatch Information To Be Supplied by UDCs.**

Each UDC shall keep the ISO informed of any change or potential change in the status of its transmission lines and station equipment at the point of interconnection with the ISO Controlled Grid. Each UDC shall keep the ISO informed as to any event or circumstance in the UDC's service territory that could affect the reliability of the ISO Controlled Grid. This would include adverse weather conditions, fires, bomb threats, etc.

**34.3.6.4 Dispatch Information To Be Supplied by PTOs.**

Each PTO shall report any change or potential change in equipment status of the PTO's transmission assets turned over to the control of the ISO or in equipment that affects transmission assets turned over to the control of the ISO immediately to the ISO (this will include line and station equipment, line protection, Remedial Action Schemes and communication problems, etc.). Each PTO shall also keep the ISO immediately informed as to any change or potential change in the PTO's transmission system that could affect the reliability of the ISO Controlled Grid. This would include adverse weather conditions, fires, bomb threats, etc.

Each PTO shall schedule all Outages of its lines and station equipment which are under the Operational Control of the ISO in accordance with the appropriate procedures in Section 9.3. Each PTO shall coordinate any requests for or responses to Forced Outages on its transmission lines or station equipment which are under the Operational Control of the ISO directly with the appropriate ISO Control Center as defined in Section 7.2.4.1.

**34.3.6.6 Dispatch Information To Be Supplied by Control Area Operators.**

The ISO and each adjacent Control Area Operator shall keep each other informed of any change or potential change in the status of the Interconnection and any changes in the Interconnection's TTC. The ISO and each adjacent Control Area Operator shall keep each other informed of situations such as adverse weather conditions, fires, etc., that could affect the reliability of any Interconnection.

The ISO and each adjacent Control Area Operator shall follow all applicable NERC and WECC scheduling procedures. This will include checking the Interconnection schedules for the next Settlement Period prior to the start of the Energy ramp going into that hour. The ISO and each adjacent Control Area Operator shall check and agree on actual MWh net interchange after the hour for the previous Settlement Period. One Control Area shall change its actual number to reflect that of the other Control Area in accordance with WECC standard procedures.

The ISO and each adjacent Control Area Operator shall exchange MW, MVar, terminal and bus voltage data with each other on a four second update basis. MWh data for the previous hour shall be exchanged once per hour. All MW and MWh data for both the ISO Control Area and the adjacent Control Areas must originate from the same metering equipment. All provisions in Sections 4.6.1.1(i) and 4.6.1.1 (ii) refer to information and data obtained from metering used for Control Area operations and not metering used for billing and settlement.

**34.3.7** 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. If the ISO considers that there has been a failure at a particular point in time or inadequate response over a particular period of time by the Generating Units to the Dispatch Instruction, the ISO will notify the relevant Scheduling Coordinator. 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 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. In situations of deteriorating system conditions or emergency, the ISO reserves the right to communicate directly with the Generator(s) as required to ensure System Reliability. The recipient of a Dispatch Instruction shall confirm the Dispatch Instruction. Dispatch Instructions communicated by the ISO either electronically or by fax shall be confirmed electronically in accordance with ISO procedures. Dispatch instructions communicated verbally shall be confirmed by repeating the Dispatch instructions to the ISO.

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

**34.4 Notification of Non-Compliance With A Dispatch Instruction.**

In the event that, in carrying out the Dispatch Instruction, an unforeseen problem arises (relating to plant operations or equipment, personnel or the public safety), the recipient of the Dispatch Instruction must notify the ISO or, in the case of a Generator, the relevant Scheduling Coordinator immediately. The relevant Scheduling Coordinator shall notify the ISO of the problem immediately.

**34.5 Dispatch Instructions for Generating Units and Curtailable Demand.**

The ISO may issue Dispatch Instructions covering:

(a) Ancillary Services;

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

(i) Congestion Management;

(ii) provision of Imbalance Energy; or

(iii) replacement of an Ancillary Service;

(c) agency operation of Generating Units, Curtailable Demands or Interconnection

schedules, for example:

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

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

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

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

**34.6 Response Required by Generators to ISO Dispatch Instructions.**

Generators must:

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

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

(c) meet the applicable operational ramp rates as provided for in Section 30.4.6 ;

(d) respond to Dispatch Instructions for Ancillary Services within the time periods required by this ISO Tariff except in a System Emergency, when Section 7.4 will apply; and (in the case of Generating Units providing Regulation) respond to electronic signals from the EMS; and

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

**34.7 Qualifying Facilities.**

Where a Qualifying Facility ("QF") has entered into an agreement with a PTO before March 31, 1997 for the supply of Energy to the PTO (an "Existing Agreement"), the ISO will follow the instructions provided by the parties to the Existing Agreement regarding the provisions of the Existing Agreement in the performance of its functions relating to Outage Coordination, and not require a QF to take any action that

would interfere with the QF's obligations under the Existing Agreement. Each QF will make reasonable efforts to comply with the ISO's instructions during a System Emergency without penalty for failure to do so.

**34.8 Failure to Conform to Dispatch Instructions.**

All Scheduling Coordinators, Participating Generators, owners or operators of Curtailable Demands and operators of System Resources providing Ancillary Services (whether self-provided or procured by the ISO) or whose Supplemental Energy bids have been accepted by the ISO shall be obligated to respond or to secure response to the ISO's Dispatch 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 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 or System Resource:

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

(b) cannot set the Dispatch Interval Ex Post Price pursuant to Section 34.9.2.3; and

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

The ISO will develop additional mechanisms to deter Generating Units, Loads, Curtailable Demand and System Resources in the ISO or other Control Areas from failing: (i) to respond at a particular time (or failing to adequately respond over a particular period of time) to a Dispatch Instruction, or (ii) to perform according to Dispatch instructions. The additional mechanisms, for example, can include reduction in payments to Scheduling Coordinators, or suspension of the Scheduling Coordinator's Ancillary Services certificate for the Generating Unit, Curtailable Demand or System Resource concerned. The ISO may apply penalties, fines, economic consequences or the sanctions referred to in the preceding two sentences for any failure or inadequate response under Section 34.3.7 to the Scheduling Coordinator representing the Generator responsible for such failure or inadequate response (which may be appropriately weighted to reflect its seriousness) subject to any necessary FERC approval.

**34.9 Pricing Imbalance Energy.**

**34.9.1 General Principles.**

Instructed and Uninstructed Imbalance Energy shall be paid or charged the applicable Resource-Specific Settlement Interval Ex Post Price or the Zonal Settlement Interval Ex Post Price except for hourly pre-dispatched Instructed Imbalance Energy, which shall be settled as set forth in Appendix N, Part D, Section 2.1.2. These prices are determined using the Dispatch Interval Ex Post Prices. The Dispatch Interval Ex Post Prices shall be based on the bid of the marginal Generating Units, System Units, and Curtailable Demand dispatched by the ISO to increase or reduce Demand or Energy output in each Dispatch Interval as provided in Section 34.9.2.1.

The marginal bid is the highest bid that is accepted by the ISO's RTD Software for increased energy Supply or the lowest bid that is accepted by the ISO's RTD Software for reduced energy Supply. In the event the lowest price decremental bid accepted by the ISO is greater and not equal to the highest priced incremental bid accepted, then the Dispatch Interval Ex-Post Price shall be equal to the highest incremental bid accepted when there is a non-negative Imbalance Energy system requirement and equal to the lowest accepted decremental bid when there is a negative Imbalance Energy requirement.

When an Inter-Zonal Interface is operated at the capacity of the interface (whether due to scheduled uses of the interface, or decreases in the capacity of the interface), the marginal incremental or decremental

bid prices in some Zones may differ from one another. In such cases, the ISO will determine separate Ex Post Prices for the Zones.

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

**34.9.2 Determining Ex Post Prices.**

**34.9.2.1 Dispatch Interval Ex Post Prices.**

**34.9.2.2 Computation.**

For each Dispatch Interval, the ISO will compute updated supply and demand curves, using the Generating Units, System Units, and Curtailable Demand Dispatched according to the ISO's RTD Software during that time period to meet Imbalance Energy requirements and to eliminate any Price Overlap. The Dispatch 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 34.9.2.1. In the event of Inter-Zonal Congestion, the ISO will determine separate Dispatch Interval Ex Post Prices for each Zone or groups of Zones on either side of the Congested interface.

**34.9.2.3 Eligibility.**

A resource constrained at an upper or lower operating limit, a boundary of a Forbidden Operating Region or dispatched for the maximum Energy deliverable based on its maximum applicable ramp rate cannot be marginal (i.e., it cannot move in a particular direction) and thus is not eligible to set the Dispatch Interval Ex Post Price. System Resources are not eligible to set the Dispatch Interval Ex Post Price. Constrained Output Generation that has the ability to be committed or shut off within the two-hour time horizon of the Real Time Market will be eligible to set the Dispatch Interval Ex Post Price if any portion of its Energy is necessary to serve Demand.

**34.9.2.4 Hourly Ex Post Price.**

The Hourly Ex Post Price in a Settlement Period in each Zone will equal the absolute-value Energy-

weighted average of the Dispatch Interval Ex Post Prices in each Zone, where the weights are the system total Instructed Imbalance Energy, except Regulation Energy, for the Dispatch Interval.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.

**34.9.2.5 Price for Uninstructed Deviations for Participating Intermittent Resources.**

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

**35 [Not Used]**

**36 FIRM TRANSMISSION RIGHTS.**

**36.1 General.**

**36.1.1** Commencing in 2000, on the effective date established by the ISO Governing Board, the ISO shall make FTRs available in the amounts determined in accordance with Section 36.3, with the rights and other characteristics described in Sections 36.2, 36.6, 36.7 and 36.8, and through the processes described in Section 36.4. Proceeds of the ISO's auction of FTRs shall be distributed as described in Section 36.5. The owners of FTRs shall be entitled to share in Usage Charge revenues associated with Inter-Zonal Congestion in accordance with Section 36.6, and to scheduling priority in the event of Congestion in the Day-Ahead Market, as described in Section 36.7. For the purpose of Section 36, the term "Zone" shall be construed to mean both "Zone" and "Scheduling Point."

**36.2 Characteristics of Firm Transmission Rights**.

**36.2.1** Each FTR shall be defined by a transmission path from an originating Zone to a contiguous receiving Zone. Each FTR shall entitle the FTR Holder to a share of Usage Charges attributable to Inter-Zonal Congestion for transfers on that path from the designated originating Zone to the designated receiving Zone in accordance with Section 36.6. An FTR is a right in one direction only. An FTR Holder shall not be entitled to share in (i) Usage Charges attributable to Inter-Zonal Congestion

from the designated receiving Zone to the designated originating Zone; or (ii) Usage Charges payable in accordance with Section 27.1.2.1.5.1 to a Scheduling Coordinator that counter-schedules from the designated originating Zone to the designated receiving Zone.

**36.2.2** The ISO Governing Board shall, from time to time, approve the amount of FTRs to be auctioned for each FTR Market and the ISO shall publish this information on the ISO Home Page at least thirty (30) days prior to the auction. The ISO may issue FTRs in one or more auctions in any year so long as the total FTRs for any interface do not exceed the maximum amount permitted in Section 36.3.

**36.2.2.1** Should the ISO create additional Zones or otherwise change the ISO's defined Inter-Zonal Interface, and if such changes would affect outstanding FTRs, such changes will not take effect prior to the expiration date of any such outstanding FTRs. The ISO shall also publish an announcement of any such pending changes on the ISO Home Page and WEnet at least thirty (30) days prior to the applicable FTR auction.

**36.2.2.2** Any additional FTRs auctioned as a result of changes in the ISO's defined Inter-Zonal Interfaces shall not affect the rights associated with existing FTRs.

**36.2.3** Each FTR shall be issued in the denomination of 1 MW. The annual release of FTRs shall start with the hour beginning at 12:00 a.m., on April 1 and end with the hour beginning at 11:00 p.m., on March 31 of the following year. An FTR shall not afford the FTR Holder any right to share in Usage Charges attributable to Inter-Zonal Congestion occurring in any hour before or after the term of the FTR.

**36.2.4** The portion of the Usage Charges to which the FTR Holder is entitled shall be determined in accordance with Section 36.6.

**36.2.5** FTR Holders shall be entitled to priority in the scheduling of Energy in the Day-Ahead Market as specified in Section 36.7.

**36.2.6** Any entity, with the exception of the ISO, shall be eligible to acquire FTRs by participating in the ISO's auction of FTRs, as described in Section 36.4, or by purchasing FTRs in secondary markets. To participate in the ISO's auction of FTRs, an entity must either be a certified Scheduling Coordinator or have met financial requirements equivalent to the financial certification criteria required of all Scheduling

Coordinators. An entity may not acquire FTRs with a total value that exceeds the financial security proved by that entity to the ISO. In addition, an FTR Bidder must have, or have access to, the necessary technical equipment to participate in the electronic auction.

**36.2.7** All entities which acquire FTRs by participating in the ISO's auction of FTRs, as described in Section 36.4, directly from the ISO pursuant to Section 36.4.3, or by purchasing FTRs in secondary markets, must register as an FTR Holder with the ISO. To complete this registration, the FTR Holder must notify the ISO, through the form specified for that purpose by the ISO, of all Affiliates of the FTR Holder that are themselves FTR Holders or Market Participants. The requirement that an FTR Holder notify the ISO of all Affiliates that are FTR Holders or Market Participants is continuing for as long as the FTR Holder owns FTRs, and FTR Holders must provide the ISO with supplemental notification concerning FTR Holders and/or Market Participants that become affiliated with the FTR Holder or Affiliates that subsequently become FTR Holders or Market Participants in order to satisfy this requirement.

**36.3 Maximum Number of Firm Transmission Rights.**

**36.3.1** On each Inter-Zonal Interface and direction combination for which FTRs are issued, the ISO shall issue a number of FTRs that is less than or equal to the difference between:

(i) The WECC approved path rating of the interface in the direction from the originating Zone to the receiving Zone or, if the interface has not received a WECC approved rating, a rating determined by a methodology that is consistent with the WECC's rating methodology; and

(ii) The portion of the transfer capability of the interface available for transmission scheduling under Existing Contracts as Existing Rights.

and ensures the ISO's ability to honor all of its FTRs simultaneously under normal operating conditions.

**36.4 Issuance of Firm Transmission Rights by the ISO.**

**36.4.1** The ISO shall make FTRs available by conducting an annual primary auction of FTRs, commencing approximately two months before the beginning of the term of the FTRs; provided; however

that for the initial FTR release, the primary auction shall be as determined by the ISO Governing Board. The auction of FTRs shall be a simultaneous multi-round, clearing price auction conducted separately and independently, as set forth in Section 36.4.2, for each FTR Market. In addition, if the ISO Governing Board decides to make available, between annual auctions, FTRs in addition to those that were purchased in the last annual auction, the ISO may conduct additional auctions of such FTRs in accordance with Section 36.4.2. The term of such FTRs shall only be for the remaining duration of the FTR term defined for the primary auction applicable to the year during which they were issued.

**36.4.2 The ISO shall conduct the auction of FTRs through the following procedures:**

**36.4.2.1** At least thirty (30) days prior to the scheduled start of the auction, the ISO shall post on the ISO Home Page the following information:

(i) the number of FTRs to be issued for each FTR Market;

(ii) the starting bid price at which FTRs will be made available in each FTR Market in the first round of the auction, which price will be set in each FTR Market at a level equal to the greater of (a) $100 per MW-year; (b) twenty (20) percent of the ratio of the net Usage Charges collected by the ISO with respect to that FTR Market in the most recent twelve-month period for which data are available to the total MW-years of Energy scheduled over the Inter-Zonal Interface in the relevant direction during that period; or (c) twenty (20) percent of the ration of the net Grid Operation Charges (for new Inter-Zonal Interfaces that previously were transmission paths within a Zone) collected by the ISO in the most recent twelve-month period for which data are available to the total MW-years of Energy scheduled over the transmission paths in the relevant direction during that period, provided that, if data are available for only a portion of the twelve-month period, such data shall be used on annualized basis;

(iii) the formula through which the ISO will determine how much to adjust the price of FTRs in each FTR Market for subsequent rounds of the auction, including the initial coefficients to be used in the formula and the range over which the

coefficients may be adjusted in accordance with Section 36.4.2.3;

(iv) the date and time prior to the commencement of the auction by which each entity desiring to bid on FTRs must have satisfied the necessary financial requirements as outlined in Section 36.2.6;

(v) the specifications for the technical equipment necessary to participate in the auction, which will be conducted electronically, the date and time by which bids must be submitted in the first round of the auction, which shall be the same for all FTR Markets, and the form and format in which bids must be submitted; and

(vi) a schedule for the conduct of subsequent rounds of the auction, including the interval between rounds of the auction and the anticipated duration of the auction.

**36.4.2.2** On or before the date specified in Section 36.4.2.1(v), any entity desiring to obtain FTRs in the ISO's auction must submit, via equipment satisfying the technical requirements specified in accordance with Section 36.4.2.1(v), a bid for each FTR Market in which the entity desires to participate, specifying the number of FTRs the entity is willing to purchase at the price specified in Section 36.4.2.1(ii). All individual bids will remain confidential throughout all rounds of the auction in each FTR Market. Once submitted to the ISO, a bid for FTRs in any round of an auction may not be cancelled or rescinded by the FTR Bidder. The ISO shall announce simultaneously to all FTR Bidders the total quantity of FTRs for which valid bids are submitted for each FTR Market.

**36.4.2.3** In each round of the auction following the first round, the ISO will increase the price at which FTRs are made available in each FTR Market in accordance with the formula posted in accordance with Section 36.4.2.1(iii), or in accordance with any adjustment to the coefficients in that formula that is announced by the ISO to the FTR Bidders at least one round in advance of the round for which the adjustment is made. Price increases need not be uniform for all FTR Markets. In the case of an FTR Market in which the demand for FTRs in the preceding round is less than or equal to the quantity of FTRs being made available, the price shall not increase and the auction for that FTR Market shall close. After each round of the auction, the ISO shall announce simultaneously to all FTR Bidders the total quantity of

FTRs for which valid bids were submitted in each FTR Market, whether the auction for each FTR Market is closed, and, the revised prices for the following round of the auctions that remain open. Within the timeframe set by the ISO in accordance with Section 36.4.2.1(vi), each FTR Bidder may submit bids for the quantity of FTRs it desires to purchase in each FTR Market at the revised price, provided that an FTR Bidder may not bid for a number of FTRs in an FTR Market that exceeds the total number of FTRs in that FTR Market for which that entity submitted bids in the preceding round of the auction. The ISO shall conduct subsequent rounds of the auction in each FTR Market until the demand for FTRs in the FTR Market is less than or equal to the quantity of FTRs being made available, at which point the auction shall be closed in that FTR Market.

**36.4.2.4** Subject to Section 36.4.2.5, each successful FTR Bidder shall receive a number of FTRs in each FTR Market equal to the number of FTRs for which it bid in the last round of the auction for that FTR Market.

**36.4.2.5** For any FTR Market in which, when the auction has closed, the number of FTRs being made available exceeds the demand for FTRs in that FTR Market in the last round of the auction, each FTR Bidder shall be awarded a number of FTRs determined in accordance with the following formula, provided that, if the number of FTRs that would be awarded under the formula to an FTR Bidder that did not submit a bid in the last round of the auction is less than five percent (5%) of the initial bid submitted by that FTR Bidder for the FTR Market, that FTR Bidder shall have the option of declining the award of FTRs resulting from the formula:

$$N = B + [(R / TR) * D]$$

where

N = The total number of FTRs awarded to an FTR Bidder for an FTR Market, which shall be in whole MWs and shall not exceed the number of FTRs for which that FTR Bidder bid in the round preceding the final round of the auction;

B = The number of FTRs for which an FTR Bidder bid in the final round of the auction for the FTR Market in accordance with Section 36.4.2.4 (or zero, if the FTR Bidder did not bid in

that round);

R = The difference between the number of FTRs for which the FTR Bidder bid in the round preceding the final round of the auction and B, but not less than zero;

TR = The total of the demand reductions (R) for all FTR Bidders that submitted bids in the last round of the auction (treating the failure by an FTR Bidder to submit a bid as a bid of zero); and

D = The difference between the total demand for FTRs in the final round of the auction and the quantity of FTRs being made available for the FTR Market.

**36.4.2.6** The price of FTRs in an FTR Market shall be the last price at which the demand for FTRs in the FTR Market exceeded or equaled the quantity of FTRs being made available pursuant to Section 36.4.2.1(i), except that, if the demand for FTRs in an FTR Market in the first round of the auction was less than the quantity of FTRs being made available for that FTR Market, the price of FTRs in that FTR Market shall be the first round price and each FTR Bidder in that FTR Market will receive a number of FTRs equal to the quantity of bids they submitted in the first round. Any remaining FTRs in that FTR Market will not be awarded in that auction.

**36.4.2.7** Each FTR Bidder shall pay the ISO an amount equal to the sum, for all FTR Markets, of the products of the FTR price in each FTR Market (determined in accordance with Section 36.4.2.6) and the total quantity of FTRs awarded to that FTR Bidder in that FTR Market (determined in accordance with Section 36.4.2.4 or Section 36.4.2.5, as applicable). FTR Bidders shall pay the amount determined in accordance with the foregoing sentence within ten (10) Business Days of receiving an invoice from the ISO by making payment to the ISO Clearing Account in accordance with Section 11.10. If the FTR Bidder fails to make timely payment of the full amount due, the ISO may enforce any guarantee, letter of credit or other credit support provided by the defaulting FTR Bidder in accordance with Section 36.2.6 and, if the ISO is required to institute proceedings to collect any unpaid amount, the defaulting FTR Bidder shall pay Interest on the unpaid amount for the period from the Payment Date until the date on which payment is remitted to the ISO Clearing Account.

**36.4.2.8** The ISO shall post on the ISO Home Page the prices at which FTRs are sold in each FTR Market through the primary auction.

**36.4.3** For the ten-year transition period described in Section 4 of Schedule 3 to Appendix F, a New Participating TO that has an obligation to serve Load shall receive FTRs for Inter-Zonal Interfaces to which the transmission facilities and Converted Rights for Inter-Zonal Interfaces that the New Participating TO turns over to the ISO's Operational Control give it transmission rights, provided such transmission facilities are Existing High Voltage Facilities. The amount of FTRs will be determined when the Transmission Control Agreement is executed and shall be commensurate with the transmission capacity the New Participating TO is turning over to ISO Operational Control. The ISO will submit to FERC in the transmittal letter for the amendment to the Transmission Control Agreement regarding each New Participating TO the amount of FTRs allocated to such New Participating TO. The amount of FTRs that has been determined will not be effective until after FERC issues an order concerning the amendment required by this section. No additional FTRs will be issued to New Participating TOs for building High Voltage Transmission Facilities after they become Participating TOs. FTRs issued in accordance with this section shall entitle the FTR Holder to receive Usage Charge revenues and to priority in the scheduling of Energy in the Day-Ahead Market in accordance with the provisions of the ISO Tariff. FTRs associated with Converted Rights shall terminate on the earlier of termination of the Existing Contract or the end of the ten-year transition period.

## 36.5 Distribution of Auction Revenues Received by the ISO for Firm Transmission ` Rights.

**36.5.1** For each Inter-Zonal Interface and direction for which an FTR is defined, the total proceeds received by the ISO through the auction described in Section 36.4 shall be allocated and paid by the ISO to the Participating TO that is entitled in accordance with Section 27.1.2.1.6 to receive Usage Charge revenues with respect to the corresponding Inter-Zonal Interface. Each Participating TO shall credit its FTR auction proceeds against its high voltage TRBA if the FTR is for a High Voltage Transmission Facility or against its low voltage TRBA if the FTR is a for a Low Voltage Transmission Facility.

**36.5.2** In the event the transmission facilities or rights making up an Inter-Zonal Interface with respect to which FTRs are defined are owned by more than one Participating TO, the proceeds of the auction of such FTRs shall be allocated to those Participating TOs who auction FTRs in proportion to the FTRs associated with their Inter-Zonal Interface as of the date of the FTR auction compared to all FTRs auctioned for such Inter-Zonal Interface.

**36.5.3** In the event the transmission facilities or rights making up an Inter-Zonal Interface with respect to which FTRs are defined have been upgraded resulting in increased transmission capacity on the Inter-Zonal Interface, and the costs of construction and operation were paid for by a Project Sponsor pursuant to Section 24.7.1 and were not included in the ISO's transmission Access Charge or a reimbursement or direct payment from a Participating TO, the proceeds of the auction of such FTRs shall be allocated to the Project Sponsors according to the allocated shares determined as set forth in Section 24.7.3(d).

**36.6 Distribution of Usage Charges to FTR Holders.**

**36.6.1** The FTR Holder shall be entitled to receive from the ISO a portion of the total Congestion revenues related to Inter-Zonal Congestion calculated by the ISO in the Day-Ahead Market and collected by the ISO with respect to the Inter-Zonal Interface and direction combination for which the FTR was defined. This portion equals the Usage Charge calculated by the ISO in the Day-Ahead Market for the transfer of 1 MW from the originating Zone to the receiving Zone during each hour in which Usage Charges apply, multiplied by the number of FTRs owned by that FTR Holder, subject to adjustment in accordance with Section 36.6.3.

**36.6.2** In addition, an FTR Holder shall be entitled to receive a portion of the additional net Usage Charges related to Inter-Zonal Congestion calculated by the ISO in the Hour-Ahead Market and collected by the ISO with respect to the Inter-Zonal Interface and direction combination for which the FTR was defined. The FTR Holder shall receive a portion of the net Usage Charges in the Hour-Ahead Market proportionate to the share of the Usage Charges it received in the Day-Ahead Market in accordance with Section 36.6.1.

**36.6.3** When the Day-Ahead scheduling capability of an Inter-Zonal Interface and direction is less than its scheduling capacity, determined in accordance with Section 36.3, prior to the Day-Ahead Market, the entitlements of FTR Holders associated with that FTR Market to Usage Charge revenues shall not be reduced until and unless the entitlements of Participating TOs associated with that FTR Market to Usage Charge revenues in accordance with Section 27.1.2.1.6 have been reduced to zero. In that event, the financial entitlements associated with the corresponding FTRs shall be multiplied by a factor equal to the amount of scheduling capability available to holders of the remaining FTRs divided by the number of such FTRs. When the Day-Ahead scheduling capability of an Inter-Zonal Interface and direction is greater than its scheduling capacity, determined in accordance with Section 36.3, prior to the Day-Ahead Market, the entitlements of FTR Holders associated with that FTR Market to Usage Charge revenues shall not be increased.

**36.6.4** When the Congestion Usage Charges calculated and collected by the ISO from the Hour-Ahead Market with respect to transfers across an Inter-Zonal Interface in a particular direction result in a net obligation to the ISO, in the circumstances described in Section 27.1.2.1.7, the provisions of this Section 9.6 shall continue to apply, and FTR Holders shall be required to pay the ISO these amounts.

**36.6.5** The ISO will calculate the Congestion Usage Charge revenues to be credited or debited to the account of each FTR Holder on an hourly basis. Such calculation will identify the Inter-Zonal Interface and direction to which each credit or debit applies.

**36.7 Scheduling Priority of FTR Holders.**

**36.7.1** FTRs will not affect the ISO's dispatch and operation of the ISO Controlled Grid except that each FTR Holder will have a priority, as described in this Section 36.7, for the scheduling of Energy in the Day-Ahead Market when an Inter-Zonal Interface experiences Inter-Zonal Congestion in the direction for which its FTR is defined. Any FTRs not used in Preferred Schedules in the Day-Ahead Market for any hour have no scheduling priority for that hour in the Trading Day. FTR Holders shall have no scheduling priority in the Hour-Ahead Market or in real-time operations.

**36.7.2** When Inter-Zonal Congestion is experienced or projected to be experienced in the Day-Ahead Market, the ISO shall first attempt to relieve the Inter-Zonal Congestion using Adjustment Bids

submitted by Scheduling Coordinators in accordance with Section 27.1.1.4.

**36.7.2.1** If the ISO is unable to relieve the Day-Ahead Inter-Zonal Congestion using Adjustment Bids, then the ISO will allocate Day-Ahead inter-zonal transmission capacity first to Schedules of Market Participants that are using Existing Contract rights that have higher scheduling priority than Converted Rights capacity and second to Market Participants who hold FTRs and have indicated to the ISO that they wish to exercise their scheduling priority option. The ISO will allocate any remaining transmission capacity to remaining Market Participants' Schedules pro rata.

**36.7.3** When the scheduling capability of an Inter-Zonal Interface is less than or greater than its normal scheduling capability prior to the Day-Ahead Market, as described in Section 36.6.3, the priority scheduling rights of FTR Holders, as described in Section 36.7.2, shall remain constant (in MWs) to the extent that the total scheduling rights of FTR Holders do not exceed the total Interface scheduling capability of the associated Inter-Zonal Interface after adjustments have been made for transmission capacity allocated to Existing Contract rights that have higher scheduling priority than Converted Rights. If the total Interface scheduling capability, adjusted for transmission capacity allocated to Existing Contract rights that have higher scheduling priority than Converted Rights, is less than the total of all scheduling capability represented by FTR Holders who have chosen to exercise the FTR scheduling priority option, scheduling capability shall be allocated to FTR Holders pro rata.

**36.7.4 The scheduling priority of FTR Holders:**

(i) Shall not apply in the Hour-Ahead Market or in real-time dispatch and operation of the ISO Controlled Grid;

(ii) Shall not apply to any transfer of Energy other than a transfer across the Inter-Zonal Interface in the direction for which the FTR was defined during the hour or hours during which the circumstances described in Section 36.7.2.1 apply; and

(iii) Shall not be transferable, except in connection with a transfer of the FTR that is registered with the ISO, as described in Section 36.8.