

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

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

2.5.3.3 Replacement Reserve. The ISO shall make its determination of the required quantity of Replacement Reserve based on:

- (a) historical analysis of the deviation between actual and Day-Ahead forecast Demand,
- (b) historical patterns of unplanned Generating Unit Outages,

- (c) historical patterns of shortfalls between Final Day-Ahead Schedules and actual Generation and Demand,
- (d) historical patterns of unexpected transmission Outages, and

Reserve contracts. The ISO shall contract for Voltage Support annually (or for such other period as the ISO may determine is economically advantageous) and on a daily or hourly basis as required to maintain system reliability. The ISO shall contract annually (or for such other period as the ISO may determine is economically advantageous) for Black Start Generation.

2.5.6 Technical Requirements for Providing Ancillary Services.

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

ISO shall correspondingly reduce the quantity of the Ancillary Services concerned, which it procures as described in Sections 2.5.14 to 2.5.17. Where a Scheduling Coordinator's non-self-provided obligation in the Hour-Ahead Market is less than its non-self-provided obligation in the Day-Ahead Market the Scheduling Coordinator will be deemed to sell back the excess to the ISO in the Hour-Ahead Market pursuant to Section 2.5.21.

2.5.20.3 Literal Self Provision by a Metered Subsystem. A MSS operator must be the Scheduling Coordinator or act through a Scheduling Coordinator and must submit the Energy, Ancillary Services, and Adjustment Bids for all End Users within the MSS who are not served by other Scheduling Coordinators.

The MSS operator may provide its Regulation, Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve requirements through any combination of Literal Self Provision, In-Kind Self Provision, or purchases from the ISO. A MSS may utilize a System Unit to participate in the procurement processes of the ISO for Regulation, Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve. A System Unit is defined as one or more resources within a MSS controlled by the MSS operator so as to simulate a single resource for Regulation, Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve with specified performance characteristics. A System Unit must consist of resources located within the MSS or resources dynamically scheduled into the MSS. For Regulation, Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve, bid evaluation and price determination,

2.5.20.5 Time Frame for Informing ISO of Self Provision.

2.5.20.5.1 Day-Ahead Schedule. At the Day-Ahead scheduling process, Scheduling Coordinators shall be required to submit information on self provided Ancillary Services within the time frame stated in Section 2.5.10.1. Failure to submit the required information within the stated time frame for any hour shall lead to the self provision for all Settlement Periods of the relevant Trading Day being declared invalid by the ISO, and under such circumstances the ISO shall purchase sufficient Ancillary Services to meet the Scheduling Coordinator's requirements to match its Day-Ahead Schedule.

2.5.20.5.2 Hour-Ahead Schedule. If a Scheduling Coordinator adjusts its Schedule during the Hour-Ahead the Scheduling Coordinator shall adjust its Ancillary Service requirements in a corresponding manner. In the Hour Ahead scheduling process, Scheduling Coordinators shall be required to submit information on self provided Ancillary Services within the time frame stated in Section 2.5.10.2. Failure to submit the required adjusted information within the stated time frame shall lead to the self provision being declared invalid by the ISO, and under such circumstances the ISO shall purchase the additional Ancillary Services necessary to meet the requirements for that Scheduling Coordinator.

2.5.20.6 Information To Be Submitted By Scheduling Coordinators For Each Service. Scheduling Coordinators electing to self-provide Ancillary Services shall submit the information for each self provided Ancillary Service as described in Sections 2.5.14 to 2.5.17, excluding the capacity price information.

The ISO will verify and respond to submitted schedules in accordance with Appendix E and the ISO Protocols.

2.5.20.7 Acceptance of Self Provided Ancillary Service Schedules. The ISO will refuse to accept self provided Ancillary Service schedules only to the extent that they fail to meet requirements contained in this ISO Tariff. In particular, self provided Ancillary Service schedules must satisfy the following conditions:

- (a) the Scheduling Coordinator has a current certificate of technical eligibility for the Generating Units, Loads or System Resources selected for the Ancillary Services in question;
- (b) to the extent not provided under (a), the Generating Units, Loads and System Resources have the instrumentation, communication and metering equipment necessary to permit the ISO to dispatch the offered Ancillary Services and verify that the services have been provided;
- (c) the scheduling information provided by the Scheduling Coordinator is deemed to be valid in accordance with Appendix E and the ISO Protocols;
- (d) the Generating Units, Loads or System Resources meet the ISO's locational requirements for the Ancillary Services; and
- (e) for self-provided Ancillary Services delivered from another control area, that, under Existing Contracts, the Scheduling Coordinator has arranged for the firm transmission of the Ancillary Services to the point of interconnection between the other control area and the ISO Controlled Grid.

operating hour, whichever is sooner. In dispatching such resources, the ISO is not making any long term commitment as to the duration of their operation, nor the level of their output or Demand.

2.5.22.3 Ancillary Services Dispatch. The ISO may dispatch Generating Units, Loads, System Units and System Resources contracted to provide Ancillary Services (either procured through the ISO's competitive market, or self provided by Scheduling Coordinators) to supply Imbalance Energy. If a Generating Unit, Load, System Unit or System Resource, which is supplying Operating Reserve, is dispatched to provide Imbalance Energy, the ISO shall replace the Operating Reserve from the same or another resource within the time frame specified in the WSCC guidelines.

2.5.22.3.1 Dispatch of Competitively Procured and Self-Provided Ancillary Services. Generating Units and Loads selected in the ISO competitive auction or self-provided shall be dispatched based on their Energy bid prices as described in their Ancillary Service schedule.

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

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

2.5.22.4.1 Timing of Supplemental Energy Bids.

Supplemental Energy bids must be submitted to the ISO no later than thirty (30) 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 thirty (30) minutes prior to the Settlement Period. The ISO may dispatch the associated resource at any time during the Settlement Period.

2.5.22.4.2 Form of Supplemental Energy Bid Information.

Supplemental Energy bids must include the following:

- (a) Bidder name and identification;
- (b) Resource name, identification, and location;

- (c) the positive or negative bid price of incremental and decremental changes in Energy (up to eleven ordered pairs of quantity/price representing up to ten steps);
- (d) Generating Unit operating limits (high and low MW);
- (e) Generating Unit ramp rate (MW/Min); and
- (f) Such other information as the ISO may determine it requires to evaluate bids, as published from time to time in ISO Protocols.

2.5.22.5 Information used in the Real Time Dispatch. The ISO shall place all the bid price information (except for Regulation bid prices and Adjustment Bids carried forward from the Day-Ahead and Hour-Ahead Markets) received from available Generating Units, Loads, System Units and System Resources in a database for use in real time Dispatch of Balancing Energy. The database shall indicate:

- (a) Generating Unit/Load/ System Unit/ System Resource name;
- (b) congestion zone;
- (c) quantity bid;
- (d) normal ramp rate;
- (e) price;
- (f) whether the Generating Unit/ Load/ System Unit/ System Resource has been contracted to provide any Ancillary Services and/or Supplemental Energy, and, if so, which ones.

The quantity blocks shall be ordered in a merit order stack of ascending incremental and descending decremental price bids.

2.5.22.6 Real Time Dispatch. The ISO shall select the least-cost Generating Unit, Load, System Unit or System Resource to meet Imbalance Energy requirements in real time. The ISO shall determine that additional output is needed if the current output levels of the Regulation Generating Units and System Units exceed their scheduled Set

Points by more than a specified threshold (to be determined by the ISO). The ISO shall determine that less output is needed if the output levels of the Regulation Generating Units and System Units fall below their scheduled Set Points by more than a specified threshold (to be determined by the ISO). To minimize the cost of providing Imbalance Energy:

- (a) if additional Energy output, or Demand reduction, is needed, the ISO shall Dispatch additional output or reduce Demand from Generating Units, Loads, System Units or System Resources in ascending order of their incremental Supplemental Energy bid prices (or, for Generating Units, Loads, System Units and System Resources providing Ancillary Services, their Energy Bid prices).
- (b) if the ISO is required to reduce Energy output from Generating Units, Loads, System Units or System Resources, the ISO shall dispatch down Generating Units, Loads, System Units and System Resources in descending order of their decremental Supplemental Energy bid prices (or, for Generating Units, Load, System Units and System Resources providing Ancillary Services their Energy Bid prices).

Once a bid has been accepted by the ISO, the database shall be adjusted to reflect the change in status of the bid.

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

it will then be included in the decremental part of the database with a decremental bid equal to its incremental price bid. In the event that the ISO subsequently needs to decrement output, it will initially decrement the Generating Units, Loads, System Units or System Resources incremented previously, and then continue down the merit order of the decremental bids.

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

2.5.22.8 Intra-Zonal Congestion. In the event of Intra-Zonal Congestion in real time, the ISO shall adjust Generating Units and Loads within the Zone to alleviate the constraint, based on the Adjustment Bids available within the Zone; if there are insufficient Adjustment Bids to relieve Intra-Zonal Congestion, the ISO will use incremental and decremental bids from other resources available in the Zone. In the event no incremental or decremental bids are available, the ISO will exercise its authority to direct the redispatch of resources within the Zone.

2.5.22.9 Replacement of Operating Reserve. If pre-arranged Operating Reserve is used to meet Imbalance Energy requirements, such Operating Reserve may be replaced by the ISO's dispatch of additional Imbalance Energy through available Supplemental Energy Bids.

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

example reduction in payments to Scheduling Coordinators, or suspension of the Scheduling Coordinator's Ancillary Services certificate for the Generating Unit, Load or System Resource concerned.

2.5.23 Pricing Imbalance Energy.

2.5.23.1 General Principles. Imbalance Energy shall be priced in two (2) time intervals using the Five Minute Ex Post Price and the Hourly Ex Post Price. The Five Minute Ex Post Price shall be based on the bid of the marginal Generating Units, Loads and System Resources dispatched by the ISO to reduce Demand or to increase or decrease Energy output in each five minute period (including resources that provide Imbalance Energy and Ancillary Services resources that increase or decrease Energy output or reduce Demand).

The marginal Generating Unit, Load or System Resource dispatched in the five (5) minute period is

- (a) if generation output is increased, or Demand reduced, the Generating Unit, Load or System Resource with the highest bid that is accepted by the ISO for incremental Generation, or Demand reduction; or
- (b) if generation output is decreased, the Generating Unit or System Resource with the lowest bid that is accepted by the ISO for decremental Generation.

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 Hourly Ex Post Prices for the Zones.

2.5.23.2 Determining Five Minute Ex Post Price and Hourly Ex Post Price. For each five minute period, the ISO will compute an updated dispatch price curve, using the Generating Units, Loads and System Resources dispatched during that time period to meet Imbalance Energy requirements. The Five Minute Ex Post Price for each five (5) minute period will equal the marginal bid of the marginal Generating Unit, Load, or System Resource as described in Section 2.5.23.1.

If the net quantity of Imbalance Energy in the five (5) minute period t is positive then

$$P5Min_t = Max(EnBid_i)_t$$

Where

$EnBid_i$ = Energy bid prices of the Generating Units, Loads and System Resources providing Ancillary Services, and the Supplemental Energy bids of other Generating Units, Loads and System Resources dispatched by the ISO during the five minute period.

The ISO has authority to suspend MSS control and direct, via communications with the MSS operator, the operation of units within the MSS if such control is necessary to maintain ISO Controlled Grid reliability.

If the MSS operator does not conform with Good Utility Practice, the ISO may suspend MSS control until the MSS operator demonstrates the ability and willingness to conform with Good Utility Practice.

2.5.25 Periodic Testing of Units.

The ISO may test Generating Units, Loads and System Resources in the manner described herein. The frequency of testing shall be within such timeframes as are reasonable under all the circumstances. Scheduling Coordinators shall manage the resulting Energy output if notification of testing permits the Energy to be scheduled. If a Generating Unit, Load, or System Resource fails to meet requirements in a test under this section, the ISO shall notify the relevant Participating Generator, owner or operator of Loads or System Resources, or Scheduling Coordinator of such failure as soon as reasonably practicable after the completion of the test. Failure to meet requirements shall lead to the penalties described in Section 2.5.26.

2.5.25.1 Regulation. The ISO shall continuously monitor the response of a Generating Unit or a System Unit to the ISO's Regulation instructions in order to determine compliance with Dispatch instructions.

2.5.25.2 Spinning Reserve. The ISO shall test the Spinning Reserve capability of a Generating Unit, System Unit or System Resource by issuing unannounced Dispatch instructions requiring the Generating Unit, System Unit or System Resource to ramp up to its ten minute capability. The ISO shall measure the response of the Generating Unit,

System Unit or System Resource to determine compliance with requirements. The Scheduling Coordinator for the
Generating Unit, System Unit or System Resource shall be paid the Energy Bid price of the Generating Unit or
System Unit for the output under the Spinning Reserve test.

2.5.25.3 Non-Spinning Reserve. The ISO may test the Non-Spinning Reserve capability of a Generating Unit, Load, System Unit or System Resource by issuing unannounced Dispatch instructions requiring the Generating Unit, Load, System Unit or System Resource to come on line and ramp up or to reduce Demand to its ten minute capability. The ISO shall measure the response of the Generating Unit, System Unit, System Resource or Load to determine compliance with requirements. The Scheduling Coordinator for the Generating Unit, System Unit, Load or System Resource shall be paid the Energy (or Demand reduction) Bid price of the Generating Unit, System Unit, Load or System Resource for its output or reduction, under the Non-Spinning Reserve test.

2.5.25.4 Replacement Reserve. The ISO may test the Replacement Reserve capability of a Generating Unit, Load, System Unit or System Resource by issuing unannounced Dispatch instructions requiring the Generating Unit, Load, System Unit or System Resource to come on line and ramp up or reduce Demand to its sixty minute capability. The ISO shall measure the response of the Generating Unit, Load, System Unit or System Resource to determine compliance with requirements. The Scheduling Coordinator for the Generating Unit, Load, System Unit or System Resource shall be paid the Energy or Demand reduction Bid price of the Generating Unit, Load, System Unit or System Resource for the output, or reduction, of the Generating Unit, Load, System Unit or System Resource under the Replacement Reserve test.

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

Scheduling Coordinator for all the Generating Units and Loads and Load that it represents for each Settlement Period t.

The settlements for the Hour-Ahead markets shall be calculated by substituting Hour-Ahead prices in the relevant formulae and deducting any amounts due to the ISO from Scheduling Coordinators who buy back in the Hour-Ahead Market Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity they sold to the ISO in the Day-Ahead Market.

2.5.27.1 Regulation.

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

$AGCQDA_{xt}$ = the Scheduling Coordinator's total quantity of Regulation capacity in Zone X sold through the ISO auction, and scheduled Day-Ahead j for Settlement Period t.

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

Prices. The prices in the Settlement process for Regulation shall be those determined in Section 2.5.14.

Penalty: penalty described in Section 2.5.26.

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

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

$AGCPay_{xt} = AGCQDA_{xt} * PAGCDA_{xt} - Penalty$

Scheduling Coordinators for Generating Units shall receive the following payment for Energy output from

Regulation:

$EnQUnst_{xt} * Hourly Ex Post Price in Zone X$

2.5.27.2 Spinning Reserve.

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

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

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

Prices. The prices in the Settlement process for Spinning Reserve shall be those determined in Section 2.5.15.

$Penalty$ = penalty described in Section 2.5.26.

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

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

$SpinPay_{xt} = SpinQDA_{xt} * PspDA_{xt}$

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

$EnQInst_{xt} * BEEP Interval Ex Post Price_{xt}$

2.5.27.3 Non-Spinning Reserve.

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

$NonSpinQDA_{xt}$ = the Scheduling Coordinator's total Quantity of Non-Spinning Reserve capacity in Zone X sold through the ISO's auction and scheduled Day-Ahead for Settlement Period t.

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

Prices. The prices in the Settlement process for Non-Spinning Reserve shall be those determined in Section 2.5.16.

$Penalty$ = penalty described in section 2.5.26.

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

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

$$NonspPay_{xt} = NonSpinQDA_{xt} * PnonspDA_{xt} - penalty$$

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

$$EnQInst_{xt} * BEEP Interval Ex Post Price_{xt}$$

2.5.27.4 Replacement Reserve.

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

$RepResQDA_{xt}$ = the Scheduling Coordinator's total quantity of Replacement Reserve capacity in Zone X sold through the ISO auction, and scheduled Day-Ahead for Settlement Period t.

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

Prices. The prices in the settlement process for Replacement Reserve shall be those determined in section 2.5.17.

Penalty = penalty described in section 2.5.26.

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

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

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

The payments for Energy output from Replacement Reserve capacity are calculated as follows:

$$EnQInst_{ijt} * BEEP Interval Ex Post Price_{xt}$$

2.5.27.5 Voltage Support. The total payments for each Scheduling Coordinator shall be the sum of the short-term procurement payments, based on opportunity cost, as described in Section 2.5.18, and the payments under long term contracts.

2.5.27.6 Black Start.

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

Coordinators. The ISO will calculate the user rate for Non-Spinning Reserve in each Zone for each Settlement Period as:

$$NonSpRateDA (\$/Mwh) = \frac{NonSpinPayDa}{NonSpinObligTotalDA}$$

where:

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

NonSpinObligTotalDA = the total ISO Non-Spinning Reserve requirement for the Settlement Period in the Day-Ahead for the Zone less that which has been self provided by Scheduling Coordinators.

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

$$NonSpRateDA * NonSpinObligDA$$

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

2.5.28.4 Replacement Reserve. The user rate per unit of purchased Replacement Reserve for each Settlement Period in the Day-Ahead Market and Hour-Ahead Markets for each Zone shall be calculated as shown below. If the ISO procures Replacement Reserves on a Zonal basis in the Day-Ahead Market the ISO will allocate the Replacement Reserve capacity Charges (both Dispatched and Un-Dispatched) on a Zonal basis. If the ISO procures Replacement Reserves on a ISO Control Area-wide basis in the Day-Ahead

Market the ISO will allocate the Replacement Reserve capacity Charges (both Dispatched and Un-Dispatched) on a
ISO Control Area-wide basis (irrespective of whether any additional Replacement Reserves are procured on a
Zonal basis

in the Hour Ahead Markets or not) and references in Section 2.5.28.4 of the ISO Tariff to "Zone(s)", "Zonal" and the use of subscript "x" shall be read as referring to "ISO Control Area". Dispatched Replacement Reserve capacity charges are recovered by an augmentation to the Imbalance Energy Charge to allocate costs associated with the dispatch of Replacement Reserve to those Scheduling Coordinators who contributed to the Imbalance Energy requiring such dispatch. The calculation of this augmentation is set forth in Section 11.2.4.1 of this ISO Tariff. For undispached Replacement Reserve the user rate shall be calculated by dividing the total cost to ISO of purchasing undispached Replacement Reserve capacity within the Zone, for the Settlement Period by the ISO's total Replacement Reserve requirement for the Settlement Period in the Day-Ahead and Hour-Ahead Markets less that which has been self provided by Scheduling Coordinators within the Zone. The net cost to the ISO to purchase undispached Replacement Reserve capacity is equal to the total cost to the ISO to purchase Replacement Reserve less any amounts payable to the ISO by Scheduling Coordinators for Replacement Reserve bought back from the ISO in the Hour-Ahead Market, less the cost for the Replacement Reserve which was Dispatched. The undispached Replacement Reserve user rate for each Settlement Period shall be calculated as follows for each Zone:

$$UnDispReplRate = \frac{(ReplPayTotal - ReplReceiveTotal) - RRC}{ReplObligTotal}$$

where

UnDispReplRate = the undispached Replacement Reserve user rate

