(i) Black Start unit startup and connection times;

(ii) ISO Controlled Grid restoration times; and

(iii) load restoration times.

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

2.5.3.6 The ISO, whenever possible, will increase its purchases of an Ancillary Service that can substitute for another Ancillary Service, when doing so is expected to reduce its total cost of procuring Ancillary Services while meeting reliability requirements. The ISO will make such adjustments in accordance with the following principles:

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

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

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

(d) Additional Regulation and Spinning Reserve capacity can be used to satisfy requirements for Non-Spinning and Replacement Reserve;

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

(f) Additional Regulation, Spinning Reserve, and Non-Spinning Reserve capacity can be used to satisfy requirements for Replacement Reserve;

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

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

2.5.4 Locational Quantities of Ancillary Services.

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

2.5.4.1 Black Start Units.

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

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

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

2.5.5 Time-frame For Contracting for Ancillary Services.

The ISO shall procure on a daily and hourly basis, each day, Regulation, Spinning, Non-Spinning and Replacement Reserves. The ISO shall procure Replacement Reserve on a longer term basis pursuant to Section 2.3.5.1.3 if necessary to meet reliability criteria. The ISO Governing Board must approve all long term Replacement

market-based rates, will not be paid above their cost-based bid for the Ancillary Service concerned even if the relevant market clearing price is higher.

2.5.7.4 Bidding and Self-Provision of Ancillary Services

The ISO will procure Ancillary Services in accordance with this ISO Tariff, and the applicable ISO Protocols.

2.5.7.4.1 Scheduling Coordinators may bid or self-provide Ancillary Services or specify Inter-Scheduling Coordinator Ancillary Service Trades from resources located within the ISO Control Area.

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

2.5.7.4.3 Except as provided in section 2.5.7.4.4, Scheduling Coordinators cannot bid or self-provide external imports of Regulation Reserve from resources located outside the ISO Control Area.

2.5.7.4.4 Scheduling Coordinators may utilize transmission service under Existing Contracts to self-provide Regulation (consistent with the applicable ISO Protocols), Spinning Reserve, Non-Spinning Reserve or Replacement Reserve from resources located outside the ISO Control Area, where technically feasible, consistent with WSCC standards.

(c) the date for which the bid applies;

(d) maximum operating level (MW);

(e) minimum operating level (MW);

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

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

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

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

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

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

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

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

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

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

2.5.19 Black Start Capability and Energy Output.

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

2.5.20 Obligations for and Self Provision of Ancillary Services.

2.5.20.1 Ancillary Service Obligations. Each Scheduling Coordinator shall be assigned a share of the total Regulation, Spinning Reserve, Non-Spinning and Replacement Reserve requirements by the ISO. Any references in this Tariff to the Ancillary Service "Regulation" shall be read as referring to "Regulation Up" or "Regulation Down". The share assigned to each Scheduling Coordinator is described in Section 2.5.20 and in Section 2.5.28 as that Scheduling Coordinator's obligation. Each Scheduling Coordinator's Regulation obligation in each Zone shall be pro rata based upon the same

proportion as the Scheduling Coordinator's metered hourly Demand (excluding exports) bears to the total

metered Demand (excluding exports) served in each hour in that Zone. Each Scheduling Coordinator's Operating Reserve obligation in each Zone shall be pro rata based upon the same proportion as the ratio of the product of its percentage obligation based on metered output and the sum of its metered Demand and firm exports bears to the total of such products for all Scheduling Coordinators in the Zone. The Scheduling Coordinator's percentage obligation based on metered output shall be calculated as the sum of 5% of its scheduled Demand (except the Demand covered by firm purchases from outside the ISO Control Area) met by Generation from hydroelectric resources plus 7% of its Demand (except the Demand covered by firm purchases from outside the ISO Control Area) met by Generation from non-hydroelectric resources in that Zone, plus 100% of any Interruptible Imports and on-demand obligations which it schedules. Each Scheduling Coordinator's Replacement Reserve obligation in each Zone is calculated as described in Section 2.5.28.4. Scheduling Coordinator obligations for each Ancillary Service will be calculated based on the requirement for each Ancillary Service as the ISO determines prior to the adjustment set forth in Section 2.5.3.6.

2.5.20.2 Right to Self Provide.

Each Scheduling Coordinator may choose to self provide all, or a portion, of its Regulation and Reserve obligation in each Zone. The ISO shall schedule self provided Ancillary Services, Day-Ahead and Hour-Ahead, and Dispatch self provided Ancillary Services in real time. To the extent that a Scheduling Coordinator self provides, the

ISO shall correspondingly reduce the quantity of the Ancillary Services concerned, which it procures as described in Sections 2.5.14 to 2.5.17. In accordance with Section 2.5.22.11 and Section 2.5.26.2, if a Scheduling Coordinator uses capacity scheduled to self-provide Spinning Reserve, Non-Spinning Reserve, or Replacement Reserve to supply Uninstructed Imbalance Energy to the ISO from a Generating Unit, Curtailable Demand, or System Resource under circumstances that would cause the elimination of payments to the Scheduling Coordinator under Section 2.5.26.2 if the capacity had been bid and was selected by the ISO to supply the Ancillary Service, the Scheduling Coordinator shall pay to the ISO the amount of the payment that would be eliminated under that section. Scheduling Coordinators may trade Ancillary Services obligations so that any Scheduling Coordinator may reduce its Ancillary Services obligation through purchase of Ancillary Services capacity from another Scheduling Coordinator, or self-provide in excess of its obligation to sell Ancillary Services to another Scheduling Coordinator, subject to the limits specified under Section 2.5.20.5.2. If a Scheduling Coordinator's Day-Ahead self-provided Ancillary Service schedule is decreased in the Hour-Ahead Market, such decrease shall be deemed to be replaced at the Market Clearing Price in the Hour-Ahead Market, pursuant to Section 2.5.21.

2.5.20.2 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. Increases in each Scheduling Coordinator's self-provided Ancillary Service between the Day-Ahead and Hour-Ahead Markets shall be limited to the estimated incremental Ancillary Service requirement associated with the increase between the Day-Ahead and Hour-Ahead Markets in that Scheduling Coordinator's scheduled Zonal Demand. Notwithstanding this limit on increases in Hour-Ahead self-provision, a Scheduling Coordinator may buy or sell Ancillary Services through Inter-Scheduling Coordinator Ancillary Service Trades in the Hour-Ahead Market. 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, but including the name of the trading Scheduling Coordinator in the case of Inter-Scheduling Coordinator Ancillary Service Trades.

2.5.21 Scheduling of Units to Provide Ancillary Services.

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

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

Notwithstanding the foregoing, a Scheduling Coordinator who has sold or self-provided Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity to the ISO in the Day-Ahead Market shall be required to replace that capacity in whole or in part from the ISO if the scheduled self-provision is decreased between the Day-Ahead and Hour-Ahead Markets, or if the Ancillary Service associated with a

Generating Unit, Curtailable Demand, or System Resource successfully bid in a Day-Ahead Ancillary Service Market is reduced in the Hour-Ahead Market, for any reason (other than the negligence or willful misconduct of the ISO). The price for such replaced Ancillary Service shall be the Market Clearing Price in the Hour-Ahead Market for the Ancillary Service for the Settlement Period concerned for the Zone in which the Generating Units or other resources are located. The ISO will purchase the Ancillary Service concerned from another Scheduling Coordinator in the Hour-Ahead Market in accordance with the provisions of the ISO Tariff.

2.5.22 Rules For Real Time Dispatch of Ancillary Service Resources.

2.5.22.1 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.

Market operations or to prevent a System Emergency; or (ii) a penalty is imposed under Section 2.5.26.1 with respect to the deficiency.

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

2.5.26.2.3 The payment for Energy to be eliminated shall be determined in accordance with Section 11.2.4.1.

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

UnavailDispLoadMW$_{ixt}$, as also defined in Section 11.2.4.1, applied to the Curtailable Demand supplying the Ancillary Service.

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

2.5.26.3 Rescission of Payments When Dispatch Instruction is Not Followed

If the metered output of a Generating Unit, Curtailable Demand or System Resource is less than the amount of a dispatch instruction issued in accordance with a bid on Spinning Reserve, Non-Spinning Reserve, or Replacement Reserve in any Settlement Period, then the Ancillary Services capacity payments associated with the difference between the sum of the total scheduled Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve, and the actual output shall be rescinded. If the metered Demand of a Curtailable Demand in any Settlement Period is greater than its scheduled Demand net of dispatch instructions, then the capacity payments associated with the difference between its total scheduled Non-Spinning and Replacement Reserve, and actual load reduction as represented by the difference between its metered Demand and scheduled Demand, shall be rescinded. If the Generating Unit, Curtailable Demand or System Resource is scheduled to provide more than one Ancillary Service in the Settlement Period, then the actual output will be attributed to each in proportion to the dispatch instructions issued by the ISO, and the capacity payments associated with the balance of each Ancillary Service shall be

rescinded. If the same Ancillary Service is scheduled in both the Day Ahead and Hour Ahead Markets, than payments shall be rescinded in proportion to the amount of each Ancillary Service scheduled in each market.

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

2.5.27 Settlements For Contracted Ancillary Services.

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

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

Separate payments shall be calculated for each Settlement Period t for each Generating Unit, System Unit, System Resource and Curtailable Demand. The ISO shall

then calculate a total daily payment for each Scheduling Coordinator for all the Generating Units, System Units, System Resources and Curtailable Demands 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.

Regulation Up and Regulation Down payments shall be calculated separately. Quantities and prices for Regulation Down shall be calculated by substituting the Regulation Up quantities and prices in the relevant formulae.

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

$AGCUpQDA_{xt}$ = the Scheduling Coordinator's total quantity of Regulation Up capacity in Zone X sold through the ISO auction, 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 Up shall be those determined in Section 2.5.14.

Adjustment: penalty described in Section 2.5.26.1.

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

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

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

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

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

Adjustment = penalty described in section 2.5.26.1.

Payments.

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

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

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

2.5.27.7 Payments Regarding Certain Reliability Must-Run Units. If:

(a) the Ancillary Services capacity for which payment is to be made under this Section 2.5.27 is provided by a Reliability Must-Run Unit as the result of a Dispatch notice issued by the ISO under the Reliability Must-Run Contract between the owner of that Reliability Must-Run Unit and the ISO; and

(b) such Reliabilty Must-Run Contract does not require the owner to credit to the ISO the payments made for such Ancillary Services capacity that the owner receives through its Scheduling Coordinator;

then the ISO may, in lieu of making such capacity payments to such Scheduling Coordinator, make those payments to the Settlement Account of the relevant Participating TO. For the purposes of this Section, the relevant Participating TO shall be the Participating TO in whose Service Area such Reliabilitiy Must-Run Unit is located.

2.5.28 Settlement for User Charges for Ancillary Services.

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

Each Scheduling Coordinator's obligation for Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve for each Zone shall be calculated in accordance with Section 2.5.20.1.

The cost of Voltage Support and Black Start shall be allocated to Scheduling Coordinators as described in Sections 2.5.28.

Quantities and rates for the Hour-Ahead markets shall be calculated by substituting the Hour-Ahead quantities and prices in the relevant formulae (including self provided quantities of the Ancillary Service) except that the user rates for Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve capacity shall be calculated by dividing the net payments made by the ISO for each service by the obligation for each service which has not been self-provided. The net payments are the total payments for each service net of sums payable by Scheduling Coordinators who have bought back in the Hour-Ahead Regulation, Spinning Reserve, Non-Spinning Reserve or Replacement Reserve capacity, as the case may be, which they had sold to the ISO in the Day-Ahead Market.

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

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

When Market Clearing Prices for Ancillary Services differ, substituting Demand for one Ancillary Service with Demand for another pursuant to Section 2.5.3.6 may cause an imbalance to arise between the total payments to suppliers and the total payments to users. For each Settlement Period, this imbalance is equal to the sum of payments for Regulation, Spinning Reserve, Non-Spinning Reserve, and Replacement Reserve pursuant to Section 2.5.27 for the Day-Ahead and Hour-Ahead Markets summed across all Zones in each Settlement Period, less the sum of corresponding charges for such Ancillary Services pursuant to this Section. Charges or credits associated with such imbalance shall be assigned to each Scheduling Coordinator in proportion to its share of such corresponding charges.

2.5.28.1 Regulation. Regulation Up and Regulation Down charges shall be calculated separately. Quantities and rates for Regulation Down shall be calculated by substituting the Regulation Up quantities and rates in the relevant formulae. The user rate per unit of purchased Regulation service for each Settlement Period in the Day-Ahead Market for each Zone shall be calculated by dividing the total Regulation capacity payments by the ISO's total requirement for Regulation for that Settlement Period for that Zone which has not been self provided by Scheduling Coordinators. The ISO will calculate the user rate for Regulation Up in each Zone for each Settlement Period as:

RegRateUpDA ($/MWh) = AGCUpPayDA /AGCUpObligTotal

where:

AGCUpPayDA = Total Regulation Up payments for the Settlement Period in the Day-Ahead Market for the Zone. If the ISO procures Ancillary Services in accordance with Section 2.5.3.6, then this payment will be calculated by multiplying the total non-self-provided Regulation Up requirement by the price as it would have been, had the ISO purchased Ancillary Services without any substitution of one Ancillary Service for another.

AGCUpObligTotal = the total ISO Regulation Up requirement for the Settlement Period 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:

*RegUpRateDA * AGCUpOblig*

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

2.5.28.2 Spinning Reserve. The user rate per unit of purchased Spinning Reserve for each Settlement Period in the Day-Ahead Market for each Zone shall be calculated by dividing the total capacity payments for Spinning Reserve by the ISO's total

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

$$NonSpRateDA(\$/MWh) = \frac{NonSpinPayDA}{NonSpinObligTotal}$$

where:

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

NonSpinObligTotal = the total ISO Non-Spinning Reserve requirement for the Settlement Period 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 * NonSpinOblig*

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

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

$$ReplRate_{xt} = \frac{ReplPayTotalDA_{xt} + ReplPayTotalHA_{xt} - ReplBuyBackTotal_{xt}}{ReplObligTotal_{xt}}$$

where

$ReplPayTotalDA_{xt}$ = Total Replacement Reserve payments for the Settlement Period t in the Day-Ahead Market for the Zone x.

$ReplPayTotalHA_{xt}$ = Total Replacement Reserve payments for the Settlement Period t in the Hour-Ahead Market for the Zone x.

ReplBuyBackTotal = payments from Scheduling Coordinators buying back Ancillary Service capacity sold in the Day-Ahead Market or replacing capacity that was self-provided in the Day-Ahead Market.

$ReplObligTotal_{xt}$ = the total ISO Replacement Reserve requirement procured in the Day-Ahead Market and Hour-Ahead Market for the Settlement Period t for the Zone x 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:

*ReplRateDA*ReplOblig*

where

ReplOblig = DevReplOblig + RemRepl – SelfProv

DevReplOblig is the Scheduling Coordinator's obligation for deviation Replacement Reserve in the Zone in the Settlement Period and *RemRepl* is the Scheduling Coordinator's obligation for remaining Replacement Reserve.

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

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

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

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

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

where,

$GenDev_i$ = The deviation between scheduled and actual Energy Generation for Generator i represented by Scheduling Coordinator j in Zone x during Settlement Period t as referenced in Section 11.2.4.1.

$LoadDev_i$ =The deviation between scheduled and actual Load consumption for resource i represented by Scheduling Coordinator j in Zone x during Settlement Period t as referenced in Section 11.2.4.1.

DevReplOblig is total deviation Replacement Reserve in Zone x for Settlement Period t.

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

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

where:

MeteredDemand is the Scheduling Coordinator's total metered Demand excluding exports in Zone x for Settlement Period t.

TotalMeteredDemand is total metered Demand excluding exports in Zone x for Settlement Period t.

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