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 or specify

Inter-Scheduling Coordinator Ancillary Service Trades 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.

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 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.

2.5.20.3 **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

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. 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.

$AGCDownQDA_{xt}$ = the Scheduling Coordinator's total quantity of Regulation Down

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 and Regulation Down

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.

$PAGCDownDA_{xt}$ = the market clearing price, PAGC, in Zone X for Regulation Down

capacity in the Day-Ahead market for Settlement Period t.

Payments. Scheduling Coordinators for Generating Units providing Regulation Up

capacity through the ISO auction shall receive the following payments for Regulation

Up:

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

Scheduling Coordinators for Generating Units providing Regulation Down capacity

through the ISO auction shall receive the following payments for Regulation Down:

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

2.5.28 Settlement for User Charges for Ancillary Services.

(a)   The ISO shall determine a separate hourly user rate for Regulation,

Spinning Reserve, Non-Spinning Reserve and Replacement Reserve for each

Settlement Period purchased in the Day-Ahead market, and in the Hour-Ahead

Market. Each rate will be charged to Scheduling Coordinators on a volumetric basis

applied to each Scheduling Coordinator's obligation for the Ancillary Service

concerned which it has not self provided, as adjusted by any Inter-Scheduling

Coordinator Ancillary Service Trades.

Each Scheduling Coordinator's obligation for Regulation, Spinning Reserve, Non-Spinning Reserve and Replacement Reserve for each Zone shall be calculated in accordance with Section 2.5.20.1, notwithstanding any adjustment to the quantities of each Ancillary Service purchased by the ISO in accordance with Section 2.5.3.6.

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

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

Ancillary Services obligations may be negative, and credits for such negative obligations will be in accordance with the rates calculated in Sections 2.5.28.1, 2.5.28.2, 2.5.28.3 and 2.5.28.4, except that a Scheduling Coordinator's credit shall be reduced by the greater of: a) the amount of any self-provision scheduled from resources which are deemed to meet the ISO's Ancillary Services standards, and which are not subject to the certification and testing requirements of the ISO Tariff; or

b) if the ISO has no incremental requirement to be met in the Hour-Ahead Market for

an Ancillary Service, the incremental

amount of such service scheduled by that Scheduling Coordinator in the Hour-Ahead Market.

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

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

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

(ii) If the affected market is an Hour-Ahead Market, the user rate

for the affected Ancillary Service shall be set at the lowest capacity reservation

price for an unaccepted qualified capacity bid in the Hour-Ahead Market for the

same Settlement Period for that Ancillary Service or for another Ancillary Service

that meets the requirements for the affected Ancillary Service. If there are no

such unaccepted bids, the user rate for the affected Ancillary Service shall be

the user rate for the same Ancillary Service in the Day-Ahead Market in the same

Settlement Period.

(c) With respect to each Settlement Period, in addition to the user rates

determined in accordance with Sections 2.5.28.1 through 2.5.28.4 or Section

2.5.28(b), as applicable, each Scheduling Coordinator shall be charged an

additional amount equal to its proportionate share, based on total purchases by

Scheduling Coordinators of Regulation, Spinning Reserve, Non-Spinning Reserve

and Replacement Reserve of the amount, if any, by which (i) the total payments

to Scheduling Coordinators pursuant to Section 2.5.27.1 through 2.5.27.4, for the

Day-Ahead Market and Hour-Ahead Market and all Zones, exceed (ii) the total

amounts charged to Scheduling Coordinators pursuant to Section 2.5.28.1

through 2.5.28.4, for the Day-Ahead Market and Hour-Ahead Market and all

Zones. If total amounts charged to Scheduling Coordinators exceed the total

payments to Scheduling Coordinators, each Scheduling Coordinator will be

refunded its proportionate share, based on total purchases by Scheduling

Coordinators of Regulation, Spinning Reserve, Non-Spinning Reserve and

Replacement Reserve.

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

RegRateUpDA ($/MW) = AGCUpPayDA /AGCUpPurchDA

where:

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

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

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

RegRateDownDA ($/MW) = AGCDownPayDA /AGCDownPurchDA

where:

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

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

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

*RegRateUpDA * AGCUpOblig*

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

*RegRateDownDA * AGCDownOblig*

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

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

purchases of Spinning Reserve for that Settlement Period for that Zone which has not

been self-provided by Scheduling Coordinators. The ISO will calculate the user rate

for Spinning Reserve in each Zone for each Settlement Period as:

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

where:

SpinPayDA = Total Spinning Reserve payments for the Settlement Period in the Market

for the Zone Day-Ahead.

SpinPurchDA = the total ISO Spinning Reserve MW purchases in the Day-Ahead Market

for the Settlement Period for the Zone, excluding that which has been self provided by

Scheduling Coordinators.

For each Settlement Period, each Scheduling Coordinator shall pay to the ISO

a sum calculated as follows for each Zone:

*SPRateDA * SpinOblig*

where *SpinOblig* is the Scheduling Coordinator's obligation for Spinning Reserve in the

Zone in the Settlement Period for which it has not self-provided.

2.5.28.3   **Non-Spinning Reserve.** The user rate per unit of purchased Non-

Spinning Reserve for each Settlement Period in the Day-Ahead Market for each Zone

shall be calculated by dividing the total capacity payments for Non-Spinning Reserve

by the ISO's total MW purchases of Non-Spinning Reserve for that Settlement Period

for that Zone which has not been self provided by Scheduling

Coordinators. The ISO will calculate the user rate for Non-Spinning Reserve in each

Zone for each Settlement Period as:

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

where:

NonSpinPayDA = Total Non-Spinning Reserve payments for the Settlement Period in the

Day-Ahead Market for the Zone.

NonSpinPurchDA = the total ISO Non-Spinning Reserve MW purchases for the Settlement

Period for the Zone, excluding that which has been self-provided by Scheduling

Coordinators.

For each Settlement Period, each Scheduling Coordinator shall pay to the ISO

a sum calculated as follows for each Zone:

*NonSpRateDA * NonSpinOblig*

where *NonSpinOblig* is the Scheduling Coordinator's obligation for Non-Spinning

Reserve in the Zone in the Settlement Period for which it has not self provided.

2.5.28.4   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:

ReplRate$_{xt}$*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: