ATTACHMENT B

INTRA-ZONAL CONGESTION MANAGEMENT BLACKLINE

2.5.22.8 Intra-Zonal Congestion.

Except as provided in Section 5.2, in the event of Intra-Zonal Congestion in real time, the ISO shall adjust resources in accordance with Section 7.2.6.2.~~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.~~

7.2.6.2 Intra-Zonal Congestion During Initial Period.

Except as provided in Section 5.2, during the initial period of operation, the ISO will perform Intra-Zonal Congestion Management in real time using available Adjustment Bids and Imbalance Energy bids, based on their effectiveness and in merit order, to minimize the cost of alleviating Congestion. ~~The ISO will also use Adjustment Bids to decrement Generation in order to accommodate Reliability Must-Run Generation which the ISO requests under Reliability Must-Run Contracts~~. ~~To the extent that insufficient Adjustment Bids are available, the ISO will use incremental and decremental bids from available sources of Imbalance Energy in the Zone.~~ In the event ~~of~~ no ~~incremental or decremental~~ Adjustment Bids or Imbalance Energy bids are~~being~~ available, the ISO will exercise its authority to direct the redispatch of resources ~~within the Zone~~.

7.2.6.3 Cost of Intra-Zonal Congestion Management.

~~The ISO will pay Scheduling Coordinators for Reliability Must-Run Generation which the ISO requests under Reliability Must-Run Contracts at the Energy weighted average of the decremental Adjustment Bids which the ISO accepts to accommodate the Reliability Must-Run Generation and to carry out Intra-Zonal Congestion Management. After deduction of the amount paid for Reliability Must-Run Generation under Section 7.2.6.2,~~ tThe net of the amounts paid by the ISO to the Scheduling Coordinators and the amounts charged to the Scheduling Coordinators will be calculated ~~on a Zone-by-Zone basis~~ and charged to all Scheduling Coordinators through a Grid Operations Charge, as described in Section 7.3.2.

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7.3.2 Grid Operations Charge for Intra-Zonal Congestion.

Scheduling Coordinators whose resources are redispatched by the ISO, in accordance with Intra-Zonal Congestion Management, ~~and in order to accommodate Reliability Must-Run Generation which the ISO requests under Reliability Must-Run Contracts~~ will be paid or charged based on the Adjustment Bids or Supplemental Energy bids that they have provided to the ISO.

~~After deduction of the amounts paid for Reliability Must-Run Generation under Section 7.2.6.2,~~ ~~t~~The net redispatch cost ~~in each Zone~~ will be recovered for each Settlement Period through the Grid Operations Charge, which ~~shall be calculated by the ISO for each Settlement Period and~~ 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~~metered~~ exports from~~,~~ the Zone with Intra-Zonal Congestion to a neighboring Control Area.

DP 7.4 Intra-Zonal Congestion Management

In the hour prior to the beginning of the Settlement Period the ISO may adjust SCs' Final Schedules to alleviate Intra-Zonal Congestion. Except in those instances where the ISO calls Reliability Must-Run Units as provided in Section 5.2 of the ISO Tariff, the ISO will adjust resources in accordance with DP 8.4 and DP 8.5.~~increment those Generating Units which have the lowest incremental Adjustment Bids decrement the Curtailable Demand which has the lowest decremental Adjustment Bids, and decrement those Generating Units which have the highest decremental Adjustment BidsTo the extent that insufficient Adjustment Bids are available, the ISO will use incremental and decremental bids from available sources of Imbalance Energy in the Zone. In the event of no incremental or decremental bids being available, the ISO will exercise its authority to direct the redispatch of resources within the Zone.~~

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DP 8.4 Intra-Zonal Congestion

Except as provided in Section 5.2 of the ISO Tariff, in the event of Intra-Zonal Congestion in real time, the ISO shall adjust Generating Units and Curtailable Demands ~~within the Zone~~ (or Interconnection schedules of System Resources in the Control Areas ~~adjacent to the Zone~~) to alleviate the constraints, ~~based on any~~ using available Adjustment Bids ~~which have been carried forward from the Day-Ahead and Hour-Ahead Markets as described in SBP 4~~ and ~~on the incremental and decremental~~ Imbalance Energy bids based on their effectiveness and in merit order ~~prices of resources within the Zone (or in the Control Areas adjacent to the Zone) taken from the merit order stack~~.

SETTLEMENT AND BILLING PROTOCOL

APPENDIX B

GRID OPERATIONS CHARGE COMPUTATION

B 1 Purpose of charge

The Grid Operations Charge is a charge which recovers redispatch costs incurred due to ~~the dispatch of Reliability Must-Run Generation pursuant to Section 2.2.8.1 of the ISO Tariff, the decrementing of Generation to accommodate the dispatch of such Reliability Must-Run Generation pursuant to Section 7.2.6.1 of the ISO Tariff and~~ Intra-Zonal Congestion pursuant to Section 7.3.2 of the ISO Tariff. The Grid Operations Charge is paid by or charged to Scheduling Coordinators in order for the ISO to recover and properly redistribute the costs of adjusting the Balanced Schedules submitted by Scheduling Coordinators.

B 2 Fundamental formulae

B 2.1 Payments to SCs with incremented schedules

When it becomes necessary for the ISO to increase the output of a Scheduling Coordinator's Generating Unit$_i$ or System Resource$_i$ or reduce a Curtailable Demand$_i$ in order to relieve Congestion within a Zone, the ISO will pay the Scheduling Coordinator. The amount that ISO pays the Scheduling Coordinator$_j$ is the price specified in the Scheduling Coordinator's Day-Ahead or Hour-Ahead Adjustment Bid (or Imbalance Energy bid as appropriate) for the Generating Unit$_i$ or System Resource$_i$ or Curtailable Demand$_i$ multiplied by the quantity of Energy rescheduled. The formula for calculating the payment to Scheduling Coordinator$_j$ for each block$_b$ of Energy of its Adjustment Bid curve in Trading Interval$_t$ is:

$$INC_{bijt} = adjinc_{bijt} * \Delta inc_{bijt}$$

B 2.1.1 Total Payment for Trading Interval

The formula for calculating payment to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ has been increased or Curtailable Demand$_i$ reduced for all the relevant blocks$_b$ of Energy in the Adjustment Bid curve (or Imbalance Energy bid) of that Generating Unit or System Resource or Curtailable Demand in the same Trading Interval$_t$ is:

$$PayTI_{ijt} = \sum_{b} INC_{bijt}$$

B 2.2 Charges to Scheduling Coordinators with decremented schedules

When it becomes necessary for the ISO to decrease the output of a Scheduling Coordinator's Generating Unit$_i$ or System Resource$_i$ in order to relieve Congestion within a Zone, ~~or to accommodate Generation which the ISO requires under Reliability Must-Run Contract from Reliability Must-Run~~

~~Units within the Zone,~~ the ISO will make a charge to the Scheduling Coordinator. The amount that the ISO will charge Scheduling Coordinator$_j$ is the price specified in the Scheduling Coordinator's Day-Ahead or Hour-Ahead Adjustment Bid (or Imbalance Energy bid) for the Generating Unit$_i$ or System Resource$_i$ multiplied by the quantity of Energy rescheduled. The formula for calculating the charge to Scheduling Coordinator$_j$ for each block$_b$ of Energy in its Adjustment Bid curve (or Imbalance Energy bid) in Trading Interval$_t$ is:

$$DEC_{bijt} = adjdec_{bijt} * \Delta dec_{bijt}$$

B 2.2.1 Total Charge for Trading Interval

The formula for calculating the charge to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ has been decreased for all the relevant blocks$_b$ of Energy in the Adjustment Bid curve (or Imbalance Energy bid) of that Generating Unit or System Resource in the same Trading Interval$_t$ is:

$$ChargeTI_{ijt} = \sum_{b} DEC_{bijt}$$

B 2.3 Not Used~~Reliability Must-Run Generation~~

~~When it becomes necessary for the ISO to request an increase in the output of a Scheduling Coordinator's Reliability Must-Run Generating Unit$_i$ in a Zone under a Reliability Must-Run Contract, the ISO will pay the Scheduling Coordinator. The amount that the ISO pays the Scheduling Coordinator$_j$ is the Energy weighted average price derived from the Day-Ahead and/or Hour-Ahead Adjustment Bids for all Generating Units whose Scheduled output is decreased under B 2.2 multiplied by the quantity of Energy requested under the Reliability Must-Run Contract and adjusted for any amounts not delivered. The formula for calculating the payment to Scheduling Coordinator$_j$ for each Trading Interval$_t$ during which the Reliability Must-Run Unit$_i$ is requested to increase its output is:~~

$$PayRMR_{ijt} = \left(\frac{\sum_{ij} ChargeTI_{ijt}}{\sum_{bij} \Delta dec_{bij}} \right) * RMR\Delta inc_{ijt} - \left[\left(RMR\Delta inc_{ijt} - RMRact_{ijt} \right) * P_{xt} \right]$$

~~In this formula, the value of $RMRact_{ijt}$ shall not be greater than the value of $RMR\Delta inc_{ijt}$.~~

B 2.4 Net ISO redispatch costs

~~Within a Zone,~~ Tthe Trading Interval net redispatch cost encountered by ISO to ~~accommodate Reliability Must-Run Generating Unit and/or~~ relieve Intra-Zonal Congestion is the sum of the amounts paid by the ISO to those Scheduling Coordinators whose Generation or System Resource was increased or Curtailable Demand was decreased during the Trading Interval less the sum of the amounts received by the ISO from those Scheduling Coordinators whose Generating Units or System Resource were decreased during the Trading Interval. The fundamental formula for calculating the net redispatch cost is:

$$REDISP_{CONGt} = \sum_j PayTI_{ijt} + \sum_j PayRMR_{ijt} - \sum_j ChargeTI_{ijt}$$

Note that $REDISP_{CONGt}$ can be either positive or negative. This means that it is possible for the ISO to generate either a net cost or a net income, for any given Trading Interval. Owners of Reliability Must-Run Units will give credit to the ISO for sums received from their Scheduling Coordinators in the amounts which they charge the ISO under their Reliability Must-Run Contracts. In the event the ISO does not make use of equal amounts of incremental and decremental dispatched MWHs, then the net redispatch cost becomes the sum of the amounts paid (or charged) by the ISO to those Scheduling Coordinators whose Generation or System Resource was increased (or decreased) or Curtailable Demand was decreased (or increased) during the Trading Interval less the sum of the amounts received by the ISO from Scheduling Coordinators through the Imbalance Energy Market.

B 2.5 Grid Operations Price

The grid operations price is the Trading Interval rate used by the ISO to apportion net Trading Interval redispatch costs within a Zone to Scheduling Coordinators within that the Zone with Intra-Zonal Congestion. The grid operations price is calculated using the following formula:

$$GOP_t = \frac{REDISP_{CONGt}}{\sum_j QCharge_{jt} + \sum_j Export_{jt}}$$

B 2.6 Grid Operations Charge

The Grid Operations Charge is the vehicle by which the ISO recovers the net redispatch costs within each Zone. It is allocated to each Scheduling Coordinator in a Zone in proportion to the Scheduling Coordinator's consumption in the Zone with Intra-Zonal Congestion and Exports from the Zone with Intra-Zonal Congestion. The formula for calculating the Grid Operations Charge for Scheduling Coordinator$_j$ in Trading Interval$_t$ is:

$$GOC_{jt} = GOP_t * \left(QCharge_{jt} + EXPORT_{jt}\right)$$

B 3 Meaning of terms of formulae

B 3.1 INC_{bijt} - $

The payment from the ISO due to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ is increased or Curtailable Load$_i$ is reduced within a block$_b$ of Energy in its Adjustment Bid curve (or Imbalance Energy bid) in Trading Interval$_t$ in order to relieve Intra-Zonal Congestion.

B 3.2 $adjinc_{bijt}$ - $/MWh

The incremental cost for the rescheduled Generating Unit$_i$ or System Resource$_i$ or Curtailable Load$_i$ taken from the relevant block$_b$ of Energy in the

Day-Ahead or Hour-Ahead Adjustment Bid curve (or Imbalance Energy bid) submitted by the Scheduling Coordinator$_j$ for the Trading Interval$_t$.

B 3.3 **∆incbijt - MW**

The amount by which the Generating Unit$_i$ or System Resource$_i$ or Curtailable Load$_i$ of Scheduling Coordinator$_j$ for Trading Interval$_t$ is increased by the ISO within the relevant block$_b$ of Energy in its Adjustment Bid curve (or Imbalance Energy bid).

B 3.4 **PayTI$_{jit}$ - $**

The Trading Interval payment to Scheduling Coordinator$_j$ whose Generating Unit$_i$ has been increased or System Resource$_i$ or Curtailable Load$_i$ reduced in Trading Interval$_t$ of the Trading Day.

B 3.5 **DEC$_{bijt}$ - $**

The charge to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ is decreased for Trading Interval$_t$ within a block$_b$ of Energy in its Adjustment Bid curve (or Imbalance Energy resource).

B 3.6 **adjdec$_{bijt}$ - $/MWh**

The decremental cost for the rescheduled Generating Unit$_i$ or System Resource$_i$ taken from the relevant block$_b$ of Energy of the Day-Ahead or Hour-Ahead Adjustment Bid curve (or Imbalance Energy resource) submitted by Scheduling Coordinator$_j$ for the Trading Interval$_t$.

B 3.7 **∆dec$_{bijt}$ - MW**

The amount by which the Generating Unit$_i$ or System Resource$_i$ of Scheduling Coordinator$_j$ for Trading Interval$_t$ is decreased by ISO within the relevant block$_b$ of Energy of its Adjustment Bid curve (or Imbalance Energy resource).

B 3.8 **ChargeTI$_{ijt}$ - $**

The Trading Interval charge to Scheduling Coordinator$_j$ whose Generating Unit$_i$ or System Resource$_i$ has been decreased in Trading Interval$_t$ of the Trading Day.

B 3.9 **Not Used~~RMR∆inc$_{ijt}$ – MW~~**

~~The amount by which the output of Reliability Must-Run Unit i of Scheduling Coordinator j is requested by the ISO to increase for Trading Interval t under its Reliability Must-Run Contract.~~

B 3.10 **Not Used~~PayRMR$_{ijt}$ - $~~**

~~The payment for Scheduling Coordinator j whose Reliability Must-Run Unit i has been increased in Trading Interval t of the Trading Day.~~

B 3.10.1 **Not Used~~RMRact$_{ijt}$ – MW~~**

~~The actual Energy Delivered by Reliability Must-Run Unit i of Scheduling Coordinator j in Trading Interval t pursuant to the ISO's request.~~

B 3.10.2 **P_{xt} - $/MWh**

The zonal Hourly Ex Post Price, for Uninstructed Imbalance Energy, for Trading Interval t in Zone x.

B 3.11 **$REDISP_{CONGt}$ - $**

The Trading Interval net cost to ISO to redispatch ~~within a Zone~~ in order to relieve Intra-Zonal Congestion ~~or accommodate Reliability Must-Run Generation~~ during Trading Interval$_t$.

B 3.12 **GOP_t - $/MWh**

The Trading Interval grid operations price ~~within a Zone~~ for Trading Interval$_t$ used by the ISO to recover the costs of redispatch for Intra-Zonal Congestion Management ~~or for Reliability Must-Run Generation.~~

B 3.13 **GOC_{jt} - $**

The Trading Interval Grid Operations Charge by the ISO for Trading Interval$_t$ for Scheduling Coordinator$_j$ in the relevant Zone with Intra-Zonal Congestion.

B 3.14 **$QCHARGE_{jt}$ – MWh**

The Trading Interval metered consumption within a Zone for Trading Interval$_t$ for Scheduling Coordinator$_j$ whose Grid Operations Charge is being calculated.

B 3.15 **$EXPORT_{jt}$ – MWh**

The total Energy for Trading Interval$_t$ exported from the Zone to a neighboring Control Area by Scheduling Coordinator$_j$.