

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 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, 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

B 2.4 Net ISO redispatch costs

The Trading Interval net redispatch cost encountered by ISO to 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:

$$REDISPCONG_t = \sum_j PayTI_{ijt} - \sum_j ChargeTI_{ijt}$$

Note that $REDISPCONG_t$ 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. 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 to Scheduling Coordinators within the Zone with Intra-Zonal Congestion. The grid operations price is calculated using the following formula:

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

B 2.6 Grid Operations Charge

The Grid Operations Charge is the vehicle by which the ISO recovers the net redispatch costs. It is allocated to each Scheduling Coordinator 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:

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

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 Δinc_{bijt} - 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 Pay_{TIjt} - \$

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** **Δdec_{bij_t} - 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** **Charge TI_{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**
- B 3.10** **Not Used**
- B 3.10.1** **Not Used**
- 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 in order to relieve Intra-Zonal Congestion during Trading Interval_t.
- B 3.12** **GOP_t - \$/MWh**
The Trading Interval grid operations price for Trading Interval_t used by the ISO to recover the costs of redispatch for Intra-Zonal Congestion Management.

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.

