

**ATTACHMENT C**

**FORMULAS FOR DETERMINING MINIMUM GENERATION AND START-UP  
 AND CURTAILMENT INITIATION COST PAYMENTS**

**I. Supplemental Payments to Generators**

Minimum Generation and Start Up Payment = Day-Ahead Minimum Generation and Start-Up Payment + Real-Time Market Minimum Generation and Start-Up Payment;

Day-Ahead Minimum Generation and Start-Up Payment =

$$\sum_{g \in G} \max \left[ \sum_{i=1}^{24} \left( \int_{MGH_{gi}^{DA}}^{EH_{gi}^{DA}} C_{gi}^{DA} + MGC_{gi}^{DA} MGH_{gi}^{DA} + SUC_{gi}^{DA} NSUH_{gi}^{DA} - LBMP_{gi}^{DA} EH_{gi}^{DA} - NASR_{gi}^{DA} \right), 0 \right]$$

Real-Time Market Minimum Generation and Start-Up Payment =

$$\sum_{g \in G} \max \left[ \sum_{i=1}^N \left( \int_{EI_{gi}^{RT}}^{EI_{gi}^{RT}} C_{gi}^{RT} + MGC_{gi}^{RT} (MGI_{gi}^{RT} - MGI_{gi}^{DA}) + SUC_{gi}^{RT} (NSUI_{gi}^{RT} - NSUI_{gi}^{DA}) - LBMP_{gi}^{RT} (EI_{gi}^{RT} - EI_{gi}^{DA}) - (NASR_{gi}^{TOT} - NASR_{gi}^{DA}) - RRAP_{gi} + RRAC_{gi} \right), 0 \right]$$

Where:

- G = set of Generators;
- $EH_{gi}^{DA}$  = Energy scheduled Day-Ahead to be produced by Generator g in hour i;
- $MGH_{gi}^{DA}$  = Energy scheduled Day-Ahead to be produced by minimum generation segment of Generator g in hour i;
- $C_{gi}^{DA}$  = Bid cost curve made by Generator g in the Day-Ahead Market for hour i;
- $MGC_{gi}^{DA}$  = Minimum Generation Bid by Generator g for hour i in the Day-Ahead Market, expressed in terms of \$/MW;
- $SUC_{gi}^{DA}$  = Start-Up Bid by Generator g in hour i into Day-Ahead Market;
- $NSUH_{gi}^{DA}$  = number of times Generator g is scheduled Day-Ahead to start up in hour i;
- $LBMP_{gi}^{DA}$  = Day-Ahead LBMP at Generator g's bus in hour i;
- N = number of RTD intervals in 24-hour day;
- $EI_{gi}^{RT}$  = metered Energy produced by Generator g in RTD interval i, up to a maximum of the arithmetic average of the 6-second AGC Basepoint Signals sent to the Generator over the RTD interval;
- $EI_{gi}^{DA}$  = Energy scheduled in the Day-Ahead Market to be produced by Generator g in RTD interval i;

Issued by: William J. Museler, President  
Issued on: April 4, 2001

Effective: May 1, 2001

$NASR_{gi}^{DA}$  = Net Ancillary Services revenue paid to Generator  $g$  as a result of having been committed to produce Energy for the LBMP Market and/or Ancillary Services Day- Ahead to operate in hour  $i$  is computed by summing the following: (1) Voltage Support payments received by that Generator for that hour, if it is not a Supplier of Installed Capacity and has been scheduled to operate in that hour; (2) Regulation Service payments made to that Generator for all Regulation Service it is scheduled Day-Ahead to provide in that hour, less that Generator's Day-Ahead Bid to provide that amount of Regulation Service in that hour (unless the Bid exceeds the payments that Generator receives for providing Regulation Service that was committed to produce Energy for the LBMP Market and/or Ancillary Services Day- Ahead, in which case this component shall be zero); and (3) payments made to that Generator for providing synchronized Operating Reserves in that hour if it is committed Day- Ahead to provide synchronized Operating Reserve in that hour, less that Generator's Day-Ahead Bid to provide synchronized Operating Reserve in that hour. **(Note to MSWG Members: The NYISO is open to suggestions that this variable should encompass all Operating Reserves instead of all synchronized Operating Reserves.)**

$C_{gi}^{RT}$  = Bid cost curve made by Generator  $g$  in the Real-Time dispatch for the hour that includes RTD interval  $i$ ;

$MGI_{gi}^{RT}$  = metered Energy produced by minimum generation segment of Generator  $g$  in RTD interval  $i$ ;

$MGI_{gi}^{DA}$  = Energy scheduled Day-Ahead to be produced by minimum generation segment of Generator  $g$  in RTD interval  $i$ ;

$MGC_{gi}^{RT}$  = Minimum Generation Bid by Generator  $g$  in the Real-Time Market for the hour that includes RTD interval , expressed in terms of \$/MW;

$SUC_{gi}^{RT}$  = Start-Up Bid by Generator  $g$  in hour  $i$  into Real-Time dispatch;

$NSUI_{gi}^{RT}$  = number of times Generator  $g$  started up in RTD interval  $i$ ;

$NSUI_{gi}^{DA}$  = number of times Generator  $g$  is scheduled Day-Ahead to start up in RTD interval  $i$ ;

$LBMP_{gi}^{RT}$  = Real-Time LBMP at Generator  $g$ 's bus in RTD interval  $i$ ;

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. ER99-4235-000, issued December 18, 2000.

$NASR_{gi}^{TOT}$  = Net Ancillary Services scheduled revenue paid to Generator  $g$  as a result of either having been committed Day-Ahead to operate in hour  $i$  or having operated in hour  $i$  is computed by summing the following: (1) Voltage Support payments received by that Generator for that hour, if it is not a Supplier of Installed Capacity; (2) Regulation Service payments that would be made to that Generator for that hour based on a Performance Index of 1, less the Bid(s) placed by that Generator to provide Regulation Service in that hour at the time it was committed to produce Energy for the LBMP Market and/or Ancillary Services to do so (unless the Bid(s) exceeds the payments that Generator receives for providing Regulation Service, in which case this component shall be zero); (3) payments made to that Generator for providing synchronized Operating Reserve in that hour, less the Bid placed by that Generator to provide synchronized Operating Reserve in that hour at the time it was scheduled to do so; and (4) Lost Opportunity Cost payments made to that Generator in that hour as a result of reducing that Generator's output in order for it to provide Voltage Support Service. **(Note: Same Comment as for DA Net Ancillary Services.)**

$RRAP_{gi}$  = Regulation Revenue Adjustment Payment for Generator  $g$  in RTD interval  $i$ .

$RRAC_{gi}$  = Regulation Revenue Adjustment Charge for Generator  $g$  in RTD interval  $i$ .

Time periods including reserve pickups, and time periods following a reserve pickup in which the dispatch of a given Generator is constrained by its downward ramp rate, will not be included in the above calculation of supplemental payments for that Generator.

Supplemental payments to Generators that trip before completing their minimum run-time (for Generators that were not scheduled to run Day-Ahead) or before running for the number of hours they were scheduled to operate (for Generators scheduled to run Day-Ahead) may be reduced by the ISO, per ISO Procedures.

Penalty charges resulting from failure to provide an Ancillary Service will not be taken into account when calculating supplemental payments for that Supplier.

Issued by: William J. Museler, President

Effective: January 2, 2001

Issued on: January 16, 2001

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. ER99-4235-000, issued December 18, 2000.

## **II. Supplemental Payments for Curtailment Initiation Costs**

A Supplemental payment for Curtailment Initiation Costs shall be made when the Curtailment Initiation Cost Bid and the Demand Reduction Bid price for any Demand Reduction committed by the ISO in the Day-Ahead market over the twenty-four (24) hour day exceeds Day-Ahead LBMP revenue, provided however that Supplemental payments made to Demand Reduction Providers that fail to complete their scheduled reductions may be reduced by the ISO, pursuant to ISO Procedures.

## **III. Supplemental Payments for Special Case Resources**

A Supplemental payment for Minimum Payment Nominations shall be made when the Minimum Payment Nomination for any Special Case Resource committed by the ISO during a Forecast Operating Reserve shortage exceeds the LBMP revenue received for performance by that Special Case Resource.

Generators with start-up times of greater than twenty-four (24) hours will have their Start-Up Bids equally prorated over the course of each day included in their start-up period. Consequently, units whose start-ups are aborted will receive a prorated portion of those payments, based on the portion of the start-up sequence they have completed (e.g., if a unit with a seventy-two (72) hour start-up time has its start-up sequence aborted after forty-eight (48) hours, it would receive two-thirds (2/3) of its start-up cost Bid).

Issued by: William J. Museler, President  
Issued on: January 16, 2001

Effective: January 2, 2001

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. ER99-4235-000, issued December 18, 2000.

New York Independent System Operator, Inc.  
FERC Electric Tariff  
Original Volume No. 2

Original Sheet Nos. 425 through 426

Sheet Nos. 425 through 426 are reserved for future use.

Issued by: William J. Museler, President  
Issued on: January 16, 2001

Effective: January 2, 2001

Filed to comply with order of the Federal Energy Regulatory Commission, Docket No. ER99-4235-000, issued December 18, 2000.