

## **25 Attachment J - Determination of Day-Ahead Margin Assurance Payments**

### **25.1 General Rule**

If an eligible Supplier buys out of a Day-Ahead Energy, Regulation Service or Operating Reserve schedule in a manner that reduces its Day-Ahead Margin it shall receive a Day-Ahead Margin Assurance Payment, except as noted in Sections 25.4, and 25.5 of this Attachment J. The purpose of such payments is to protect Suppliers' Day-Ahead Margins associated with real-time reductions after accounting for: (i) any real-time profits associated with offsetting increases in real-time Energy, Regulation Service, or Operating Reserve Schedules; and (ii) any Supplier-requested real-time de-rate granted by the ISO. Day-Ahead Margin Assurance Payments payable to Limited Energy Storage Resources shall be determined pursuant to Section 25.6 of this Attachment J.

### **25.2 Eligibility for Receiving Day-Ahead Margin Assurance Payments**

The following categories of Suppliers shall be eligible to receive Day-Ahead Margin Assurance Payments provided however, that intermittent Power Resources depending on wind as their fuel shall not be eligible for Day-Ahead Margin Assurance Payments: (i) all Self-Committed Flexible and ISO-Committed Flexible Generators that are online and dispatched by RTD; (ii) Demand Side Resources committed to provide Operating Reserves or Regulation Service; (iii) any Supplier that is scheduled out of economic merit order by the ISO in response to an ISO or Transmission Owner system security need or to permit the ISO to procure additional Operating Reserves; (iv) any Supplier that is derated or decommitted by the ISO in response to an ISO or Transmission Owner system security need or to permit the ISO to procure additional Operating Reserves; and (v) Energy Limited Resources with a total margin for the dispatch day that is less than its Day-Ahead margin as a result of an ISO-approved real-time reduction in scheduled output from its Day-Ahead schedule for Energy limited reasons.

No Day-Ahead Margin Assurance Payment shall be paid a Generator, otherwise eligible for a Day-Ahead Margin Assurance Payment, in hours in which the NYISO has increased the Generator's minimum operating level, either: (i) at the Generator's request; or (ii) in order to reconcile the ISO's dispatch with the Generator's actual output or to address reliability concerns that arise because the Generator is not following Base Point Signals.

## 25.3 Calculation of Day-Ahead Margin Assurance Payments

### 25.3.1

Day-Ahead Margin Assurance Payments for Generators shall be determined by applying the following equations to each individual Generator using the terms as defined in subsection 25.3.3:

$$DMAP_{hu} = \max\left(0, \sum_{i \in h} CDMAP_{iu}\right) \text{ where:}$$

$$CDMAP_{iu} = CDMAPen_{iu} + \sum_p CDMAPres_{iup} + CDMAPreg_{iu},$$

If the Supplier's real-time Energy schedule is lower than its Day-Ahead Energy schedule then:

$$CDMAPen_{iu} = \left\{ \begin{aligned} & [DASen_{hu} - LL_{iu}] \times RTPen_{iu} \\ & - \int_{LL_{iu}}^{DASen_{hu}} DABen_{hu} \end{aligned} \right\} * \frac{Seconds_i}{3600},$$

If the Supplier's real-time Energy schedule is greater than or equal to its Day-Ahead Energy schedule then:

$$CDMAPen_{iu} = \min \left\{ \begin{aligned} & [DASen_{hu} - UL_{iu}] \times RTPen_{iu} \\ & + \int_{DASen_{hu}}^{UL_{iu}} RTBen_{iu} \end{aligned} \right\} * \frac{Seconds_i}{3600}, 0$$

If the Supplier's real-time schedule for a given Operating Reserve product, p, is lower than its Day-Ahead Operating Reserve schedule for that product then:

$$CDMAPres_{iup} = \left[ (DASres_{hup} - RTSres_{iup}) \times (RTPres_{iup} - DABres_{hup}) \right] * \frac{Seconds_i}{3600}$$

If the Supplier's real-time schedule for a given Operating Reserve product, p, is greater than or equal to its Day-Ahead Operating Reserve schedule for that product then:

$$CDMAPres_{iup} = \left[ (DASres_{hup} - RTSres_{iup}) \times (RTPres_{iup}) \right] * \frac{Seconds_i}{3600}$$

If the Supplier's real-time Regulation Service schedule is less than its Day-Ahead Regulation Service schedule then:

$$CDMAPreg_{iu} = \left[ (DASreg_{hu} - RTSreg_{iu}) \times (RTPreg_{iu} - DABreg_{hu}) \right] * \frac{Seconds_i}{3600}$$

If the Supplier's real-time Regulation Schedule is greater than or equal to the Day-Ahead Regulation Service schedule then:

$$CDMAPreg_{iu} = \left[ (DASreg_{hu} - RTSreg_{iu}) \times \text{MAX}((RTPreg_{iu} - RTBreg_{iu}), 0) \right] * \frac{Seconds_i}{3600} .$$

### 25.3.2

Day-Ahead Margin Assurance Payments for Demand Side resources scheduled to provide Operating Reserves or Regulation Service shall be determined by applying the following equations to each individual Demand Side Resource using the terms as defined in subsection 25.3.3:

$$DMAP_{hu} = \max \left( 0, \sum_{i \in h} CDMAP_{iu} \right) \text{ where:}$$

$$CDMAP_{iu} = \sum_p CDMAPres_{iup} + CDMAPreg_{iu} ,$$

If the Demand Side Resource's real-time schedule for a given Operating Reserve product,  $p$ , is lower than its Day-Ahead Operating Reserve schedule for that product then:

$$CDMAPres_{iup} = \left[ (DASres_{hup} - RTSres_{iup}) \times (RTPres_{iup} - DABres_{hup}) \right] * RPI_{iu} * \frac{Seconds_i}{3600}$$

If the Demand Side Resource's real-time schedule for a given Operating Reserve product,  $p$ , is greater than or equal to its Day-Ahead Operating Reserve schedule for that product then:

$$CDMAPres_{iup} = \left[ (DASres_{hup} - RTSres_{iup}) \times (RTPres_{iup}) \right] * RPI_{iu} * \frac{Seconds_i}{3600}$$

If the Demand Side Resource's real-time Regulation Service schedule is less than its Day-Ahead Regulation Service schedule then:

$$CDMAPreg_{iu} = \left[ (DASreg_{hu} - RTSreg_{iu}) \times (RTPreg_{iu} - DABreg_{hu}) \right] * \frac{Seconds_i}{3600}$$

If the Demand Side Resource's real-time Regulation Schedule is greater than or equal to the Day-Ahead Regulation Service schedule then:

$$CDMAPreg_{iu} = \left[ (DASreg_{hu} - RTSreg_{iu}) \times \text{MAX}((RTPreg_{iu} - RTBreg_{iu}), 0) \right] * \frac{Seconds_i}{3600}.$$

### 25.3.3 Terms used in this Attachment J:

$h$  is the hour that includes interval  $i$ ;

$DMAP_h$  = the Day-Ahead Margin Assurance Payment attributable in any hour  $h$  to any Supplier  $u$ ;

$CDMAP_{iu}$  = the contribution of RTD interval  $i$  to the Day-Ahead Margin Assurance Payment for Supplier  $u$ ;

$CDMAPen_{iu}$  = the Energy contribution of RTD interval  $i$  to the Day-Ahead Margin Assurance Payment for Supplier  $u$ ;

$CDMAPreg_{iu}$	=	the Regulation Service contribution of RTD interval $i$ to the Day-Ahead Margin Assurance Payment for Supplier $u$ ;
$CDMAPres_{iup}$	=	the Operating Reserve contribution of RTD interval $i$ to the Day-Ahead Margin Assurance Payment for Supplier $u$ determined separately for each Operating Reserve product $p$ ;
$DASen_{hu}$	=	Day-Ahead Energy schedule for Supplier $u$ in hour $h$ ;
$DASreg_{hu}$	=	Day-Ahead schedule for Regulation Service for Supplier $u$ in hour $h$ ;
$DASres_{hup}$	=	Day-Ahead schedule for Operating Reserve product $p$ , for Supplier $u$ in hour $h$ ;
$DABen_{hu}$	=	Day-Ahead Energy bid curve for Supplier $u$ in hour $h$ ;
$DABreg_{hu}$	=	Day-Ahead Availability Bid for Regulation Service for Supplier $u$ in hour $h$ ;
$DABres_{hup}$	=	Day-Ahead Availability Bid for Operating Reserve product $p$ for Supplier $u$ in hour $h$ ;
$RTSen_{iu}$	=	Real-time Energy scheduled for Supplier $u$ in interval $i$ , and calculated as the arithmetic average of the 6-second AGC Base Point Signals sent to Supplier $u$ during the course of interval $i$ ;
$RTSreg_{iu}$	=	Real-time schedule for Regulation Service for Supplier $u$ in interval $i$ .
$RTSres_{iup}$	=	Real-time schedule for Operating Reserve product $p$ for Supplier $u$ in interval $i$ .
$RTBreg_{iu}$	=	Real-time Availability Bid for Regulation Service for Supplier $u$ in interval $i$ .
$RTBen_{iu}$	=	Real-time Energy bid curve for Supplier $u$ in interval $i$ .
$AEI_{iu}$	=	average Actual Energy Injection by Supplier $u$ in interval $i$ but not more than $RTSen_{iu}$ plus Compensable Overgeneration;
$RTPen_{iu}$	=	real-time price of Energy at the location of Supplier $u$ in interval $i$ ;
$RTPreg_{iu}$	=	real-time price of Regulation Service at the location of Supplier $u$ in interval $i$ ;
$RTPres_{iup}$	=	real-time price of Operating Reserve product $p$ at the location of Supplier $u$ in interval $i$ ;
$LL_{iu}$	=	$\max(RTSen_{iu}, \min(AEI_{iu}, EOP_{iu}))$ , but not more than $DASen_{hu}$ if $RTSen_{iu} < EOP_{iu}$ and $\min(RTSen_{iu}, \max(AEI_{iu}, EOP_{iu}))$ , but not more than $DASen_{hu}$ otherwise;

- $UL_{iu}$  =  $\min(RTSen_{iu}, \max(AEI_{iu}, EOP_{iu}))$  but not less than  $DASen_{hu}$  if  $RTSen_{iu} \geq EOP_{iu} \geq DASen_{hu}$  and  $\max(RTSen_{iu}, \min(AEI_{iu}, EOP_{iu}))$  but not less than  $DASen_{hu}$  otherwise;
- $EOP_{iu}$  = the Economic Operating Point of Supplier  $u$  in interval  $i$  calculated without regard to ramp rates;
- $Seconds_i$  = number of seconds in interval  $i$
- $RPI_{iu}$  = the Reserves Performance Index in interval  $i$  for Demand Side Resource  $u$ . The Reserves Performance Index is calculated pursuant to Section 15.4.3.6 of Rate Schedule 4 of this Services Tariff.
- $K_{PI}$  = the factor derived from the Regulation Service Performance index for Resource  $u$  for interval  $i$  as defined in Rate Schedule 3 of this Services Tariff which shall initially be set at 1.0 for LESRs.

#### 25.3.4 Other Provisions

The AGC Base Point Signal for a Supplier that is not providing Regulation Service during a given RTD interval shall be initialized by either: (i) the Supplier's last AGC Base Point Signal from the prior RTD interval; or (ii) the Supplier's actual metered generation or calculated Demand Reduction at the time new RTD Base Point Signals are received by the ISO's AGC software, whichever is closer to the Supplier's new RTD Base Point Signal. AGC Base Point Signals for a Supplier that is not providing Regulation Service will ramp evenly over the course of the RTD interval starting at the initialized AGC Base Point Signal and ending at the level of its new RTD Base Point Signal. AGC Base Point Signals for Suppliers providing Regulation Service during a given RTD interval are determined based on the ISO's need to minimize the NYCA area control error.

#### 25.4 Exception for Generators Lagging Behind RTD Base Point Signals

An otherwise eligible Generator that does not respond to, or that lags behind, the ISO's RTD Base Point Signals in a given interval, as determined below, shall not be eligible for Day-Ahead Margin Assurance Payments for that interval. If such a Generator's average Actual Energy Injection in an RTD

interval (*i.e.*, its Actual Energy Injections averaged over the RTD interval) is less than or equal to its penalty limit for under-generation value for that interval, as computed below, it shall not be eligible for Day-Ahead Margin Assurance Payments for that interval.

The penalty limit for under-generation value is the tolerance described in Section 15.3A.1 of Rate Schedule 3-A of this ISO Services Tariff, which is used in the calculation of the persistent under-generation charge applicable to Generators that are not providing Regulation Service.

## 25.5 Rules Applicable to Supplier Derates

Suppliers that request and are granted a derate of their real-time Operating Capacity, but that are otherwise eligible to receive Day-Ahead Margin Assurance Payments may receive a payment up to a Capacity level consistent with their revised Emergency Upper Operating Limit or Normal Upper Operating Limit, whichever is applicable. The foregoing rule shall also apply to a Generator, otherwise eligible for a Day-Ahead Margin Assurance Payment, in hours in which the ISO has derated the Generator's Operating Capacity in order to reconcile the ISO's dispatch with the Generator's actual output, or to address reliability concerns that arise because the Generator is not following Base Point Signals. If a Supplier's derated real-time Operating Capacity is lower than the sum of its Day-Ahead Energy Regulation Services and Operating Reserve schedules then when the ISO conducts the calculations described in Section 25.3 above, the DASen, DASeg and DASres<sub>p</sub> variables will be reduced by REDen, REDreg and REDres<sub>p</sub> respectively. REDen, REDreg and REDres<sub>p</sub> shall be calculated using the formulas below:

$$RED_{tot_{iu}} = \max(DASen_{hu} + DASreg_{hu} + \sum_p DASres_{hup} - RTUOL_{iu}, 0)$$

$$POTREDen_{iu} = \max(DASen_{hu} - RTSen_{iu}, 0)$$

$$POTREDreg_{iu} = \max(DASreg_{hu} - RTSreg_{iu}, 0)$$

$$POTREDres_{iup} = \max(DASres_{hup} - RTSres_{iup}, 0)$$

$$REDen_{iu} = ((POTREDen_{iu} / (POTREDen_{iu} + POTREDreg_{iu} + \sum_p POTREDres_{iup})) * REDtot_{iu})$$

$$REDreg_{iu} = ((POTREDreg_{iu} / (POTREDen_{iu} + POTREDreg_{iu} + \sum_p POTREDres_{iup})) * REDtot_{iu})$$

$$REDres_{iup} = ((POTREDres_{iup} / (POTREDen_{iu} + POTREDreg_{iu} + \sum_p POTREDres_{iup})) * REDtot_{iu})$$

where:

$RTUOL_{iu}$  = The real-time Emergency Upper Operating Limit or Normal Upper Operating Limit whichever is applicable of Supplier u in interval i

$REDtot_{iu}$  = The total amount in MW that Day-Ahead schedules need to be reduced to account for the derate of Supplier u in interval i;

$REDen_{iu}$  = The amount in MW that the Day-Ahead Energy schedule is reduced for the purposes of calculating the Day-Ahead Margin Assurance Payment for Supplier u in interval i;

$REDreg_{iu}$  = The amount in MW that Supplier u's Day-Ahead Regulation Service schedule is reduced for the purposes of calculating the Day-Ahead Margin Assurance Payment in interval i;

$REDres_{iup}$  = The amount in MW that Supplier u's Day-Ahead Operating Reserve schedule for Operating Reserves product p is reduced for the purposes of calculating the Day-Ahead Margin Assurance Payment in interval i;

$POTREDen_{iu}$  = The potential amount in MW that Supplier u's Day-Ahead Energy schedule could be reduced for the purposes of calculating the Day-Ahead Margin Assurance Payment for Supplier u in interval i;

$POTREDreg_{iu}$  = The potential amount in MW that Supplier u's Day-Ahead Regulation Service Schedule could be reduced for the purposes of calculating the Day-Ahead Margin Assurance Payment for Supplier u in interval i;

$POTREDres_{iup}$  = The potential amount in MW that Supplier u's Day-Ahead Operating Reserve Schedule for Operating Reserve product p could be reduced for the purposes of calculating the Day-Ahead Margin Assurance Payment for Supplier in interval;

All other variables are as defined above.



## 25.6 Day-Ahead Margin Assurance Payments for Limited Energy Storage Resources

A. Day-Ahead Margin Assurance Payments for Limited Energy Storage Resources scheduled to provide Regulation Service shall be determined by applying the following equations to each Resource using the terms as defined in subsection 25.3.3, provided however, DAMAP is payable only for intervals in which the NYISO has reduced the real-time Regulation Service offer (in MWs) of a Limited Energy Storage Resource to account for the Energy storage capacity of such Resource and the NYISO is not pursuing LESR Energy Management for such Resource for such interval, pursuant to ISO Procedures:

If the Supplier's real-time Regulation Service schedule is less than its Day-Ahead Regulation Service schedule then:

$$CDMAPreg_{iu} = \left[ \left( DASreg_{hu} - RTSreg_{iu} \right) * \left( RTPreg_{iu} - DABreg_{hu} \right) \right] * K_{reg} * \frac{Seconds_i}{3600}$$

If the Supplier's real-time Regulation Service schedule is greater than or equal to the Day-Ahead Regulation Service schedule then:

$$CDMAPreg_{iu} = \left[ \left( DASreg_{hu} - RTSreg_{iu} \right) * \max \left( \left( RTPreg_{iu} - DABreg_{hu} \right), 0 \right) \right] * \frac{Seconds_i}{3600}$$