Real-Time Offer Revenue Sufficiency Guarantee Payment (RTORSGP) and Day-Ahead Margin Assurance Payment (DAMAP)

The RTORSGP under Section 40.3.5 and the DAMAP under Section 40.3.6 of this Tariff shall be calculated as set forth below.

A. Calculation of RTORSGP for Day-Ahead Committed and Real-Time Must-Run Committed Resources

The RTORSGP for Day-Ahead committed and Real-Time Must-Run committed Generation Resources, Demand-Response Resources–Type II, Electric Storage Resources, and Distributed Energy Aggregated Resources with Non-Excessive Energy levels greater than their Day-Ahead Schedules for Energy and the RTORSGP for External Asynchronous Resources for Import Schedules with Non-Excessive Energy levels greater than their Day-Ahead Schedules for Energy shall be calculated in three steps. The first step shall determine the cost of following dispatch, *i.e.*, the cost to the Generation Resource, Demand Response Resource–Type II, Electric Storage Resource, Distributed Energy Aggregated Resources or External Asynchronous Resource for Import Schedules of following the Transmission Provider's Setpoint Instructions. The second step shall determine the payment for following dispatch, *i.e.*, the value of the payment to the Generation Resources, Demand Response Resources–Type II, Electric Storage Resources, Distributed Energy Aggregated Resources or External Asynchronous Resources for Import Schedules for following the Transmission Provider Setpoint Instructions and determine any Short-Term Reserve Revenue, Up Ramp Capability Revenue and/or Down Ramp Capability Revenue as described below. The third step shall determine the RTORSGP.

1. Step One: Cost of Following Dispatch

a. Two intermediate quantities must be derived to properly calculate Incremental Energy Costs associated with following the Transmission Provider Setpoint Instructions for both Day-Ahead committed and Real-Time Must-Run committed Generation Resources, Demand Response Resources–Type II, Electric Storage Resources, Distributed Energy Aggregated Resources and for External Asynchronous Resources.

i. Determination of base output:

1. For Real-Time Must-Run committed Generation Resource, Demand Response Resource–Type II, Electric Storage Resource, and Distributed Energy Aggregated Resource, the base output is equal to the Economic Minimum Dispatch for a given Dispatch Interval ("i"). For External Asynchronous Resource's with Day-Ahead Schedules for Energy that are equal to zero, the base output is equal to zero.

2. For Day-Ahead committed Generation Resources, Demand Response Resources–Type II, Electric Storage Resources, and Distributed Energy Aggregated Resources, or External Asynchronous Resources with Day-Ahead Schedules for Energy, the base output MW is equal to the Day-Ahead cleared MW, and will be the same for all intervals in an Hour. Day-Ahead committed Generation Resources,

Demand Response Resources – Type II, and Electric Storage Resources, or External Asynchronous Resources where the Energy Dispatch Status is Self Schedule, the base output MW is equal to the greater of the Day-Ahead cleared MW or the Economic Minimum Dispatch for a given Dispatch Interval ("i").

3. The base output shall be calculated for every Dispatch Interval ("i") in each eligible Hour as provided for in Section 40.3.5 of this Tariff.

ii. Determination of pay output:

1. The pay output shall be derived in the same way for Generation Resources, Demand Response Resources–Type II and External Asynchronous Resources for each Hour in the Commitment Period.

2. The pay output shall be calculated for every Dispatch Interval ("i") in each eligible Hour and shall be equal to the minimum of the Generation Resource's, Demand Response Resource's–Type II or External Asynchronous Resource's Non-Excessive Energy or Setpoint Instruction less any Contingency Reserve Deployment Instruction for Spinning Reserves. During Manual Redispatch, the pay output shall be calculated for every Dispatch Interval ("i") in each

eligible Hour and shall be equal to the minimum of the Generation Resource's, Demand Response Resource's– Type II or External Asynchronous Resource's Non-Excessive Energy or Manual Redispatch Dispatch Target ("$MRDSen_i$") for Energy plus any Regulation Reserve Deployment. The Manual Redispatch Dispatch Target for Energy will be used in the following cases:

(a) When the Dispatch Target for Energy for a Dispatch Interval is greater than the sum of i) the Real-Time Ramp Rate for the Dispatch Interval multiplied by five and ii) the Manual Redispatch Dispatch Target for Energy for the prior Dispatch Interval. In this case, the Manual Redispatch Dispatch Target for Energy is the sum of (1) the Manual Redispatch Dispatch Target for Energy for the prior Dispatch Interval and (2) the Real-Time Ramp Rate for the Dispatch Interval multiplied by five.

(b) When the Dispatch Target for Energy is less than the difference of i) the Manual Redispatch Dispatch Target for Energy for the prior Dispatch Interval and ii) the Real-Time Ramp Rate for the Dispatch Interval multiplied by five. In this case, the Manual

Redispatch Dispatch Target for Energy is the difference of (1) the Manual Redispatch Dispatch Target for Energy for the prior Dispatch Interval and (2) the Real-Time Ramp Rate for the Dispatch Interval multiplied by five.

In all other cases of Manual Redispatch, the Dispatch Target for Energy ($RTSen_i$) for the Dispatch Interval will be used as the value of the Manual Redispatch Dispatch Target for Energy ($MRDSen_i$).

3. For an Electric Storage Resource or Distributed Energy Aggregated Resource, the pay output for every Dispatch Interval ("i") in each eligible Hour shall be equal to: the minimum of the Electric Storage Resource's or Distributed Energy Aggregated Resource's Non-Excessive Energy or Setpoint Instruction when the Setpoint Instruction is greater than or equal to zero (0); or the maximum of the Electric Storage Resource's or Distributed Energy Aggregated Resource's Non-Excessive Energy or Setpoint Instruction when the Setpoint Instruction is less than zero (0).

b. The base output and pay output are inputs into the calculation of the cost of following dispatch.

i. The cost of following dispatch for each eligible Hour is equal to

the sum of the hourly integration of incremental Energy costs from base output up to Pay Output (as defined below) in each interval ("i").

1. Cost of following dispatch is performed for every interval ("i") within each eligible Hour, and integrated to an hourly value, as specified below.

$$EnergyCost_h^{RT} = \sum_{Hour} \int^{POi} RTOen_i - \int^{BOi} RTOen_i \times S_i / 3600$$

Where:

$EnergyCost_h^{RT}$ = Additional cost for Non-Excessive Energy produced in real-time above the Base Output within Hour *h*.

n = Number of intervals in the Hour *h* in the commitment period.

BO_i = Base Output for Dispatch Interval *i* in Hour *h* as defined above.

PO_i = Pay Output for Dispatch Interval *i* in Hour *h* as defined above.

$RTOen_i$ = RT Offer for Energy for Dispatch Interval *i*.

S_i = Number of seconds in Dispatch Interval *i*.

2. Step Two: Payment for Following Dispatch:

a. The Energy related payment (Energy revenues) for following dispatch shall be calculated as follows:

$$LMPRev_h^{RT} = \sum_{Hour} LMP_i^{RT} \times (PO_i - BO_i)$$

Where:

$LMPRev_h^{RT}$ = The Energy revenue in an Hour *h*.

LMP_i^{RT} = Real-Time Ex Post LMP at the Resource Commercial Pricing

Node for Dispatch Interval *i*.

BOi = Base Output for Dispatch Interval *i* in Hour *h* as defined above.

POi = Pay Output for interval *i* in Hour *h* as defined above.

S_i = Number of seconds in Dispatch Interval *i*.

b. The Spinning Reserve related payment (Spinning Reserve net revenues) for following dispatch shall be calculated as:

$$NetSpinRev_h^{RT} = \sum_{\text{Hour}} MAX \{ [(ClrSpin_i^{RT} - ClrSpin_h^{DA}) \times SpinMCP_i^{RT}] - [\int^{ClrSpiniRT} SpinOffer_h^{RT} - \int^{ClrSpinhDA} SpinOffer_h^{RT}], 0 \}$$

Where:

$NetSpinRev_h^{RT}$ = Real-Time Spinning Reserve revenue credit for Hour *h*.

$ClrSpin_i^{RT}$ = Cleared Real-Time Spinning Reserve for Dispatch Interval *i*.

$ClrSpin_h^{DA}$ = Cleared Day-Ahead Spinning Reserve for Hour *h*.

$SpinMCP_i^{RT}$ = Real-Time Ex Post MCP for Spinning Reserve for Dispatch Interval *i*.

$SpinOffer_h^{RT}$ = Real-Time Offer for Spinning Reserve for Hour *h*.

c. The Supplemental Reserve related payment (Supplemental Reserve net revenues) supplied from synchronized Resources for following dispatch shall be calculated as follows:

$$NetSynSuRev_h^{RT} = \sum_{\text{Hour}} MAX \{ [(ClrSynSu_i^{RT} - ClrSynSu_h^{DA}) \times SynSuMCP_i^{RT}] - [\int^{ClrSynSuiRT} SynSuOffer_h^{RT} - \int^{ClrSynSuhRDA} SynSuOffer_h^{RT}], 0 \}$$

Where:

$NetSynSuRev_h^{RT}$ = Real-Time synchronized Supplemental Reserve revenue credit for Hour *h*.

$ClrSynSu_i^{RT}$ = Cleared Real-Time synchronized Supplemental Reserve for Dispatch Interval *i*.

$ClrSynSu_h^{DA}$ = Cleared Day-Ahead synchronized Supplemental Reserve for Hour *h*.

$SynSuMCP_i^{RT}$ = Real-Time Ex Post MCP for synchronized Supplemental Reserve for Dispatch Interval *i.*

$SynSuOffer_h^{RT}$ = Real-Time Offer for synchronized Supplemental Reserve for hour *h*.

d. The Regulating Reserve related payment (Regulating Reserve net revenues) for following dispatch shall be calculated as follows:

$$NetRegRev_h^{RT} = \sum_{\text{Hour}} \text{MAX} \{ [(ClrReg_i^{RT} - ClrReg_h^{DA}) \times SpinMCP_i^{RT}] - [\int^{ClrRegiRT} RegOffer_h^{RT} - \int^{ClrReghDA} RegOffer_h^{RT}], 0 \}$$

Where:

$NetRegRev_h^{RT}$ = Real-Time Regulating Reserve revenue credit for Hour *h*.

$ClrReg_i^{RT}$ = Cleared Real-Time Regulating Reserve for Dispatch Interval *i*.

$ClrReg_h^{DA}$ = Cleared Day-Ahead Regulating Reserve for hour *h*.

$RegMCP_i^{RT}$ = Real-Time Ex Post MCP for Regulating for Dispatch Interval *i*.

$RegOffer_h^{RT}$ = Real-Time Regulating Total Cost for Hour *h*.

e. The net Operating Reserve related payment (Operating Reserve net revenues) shall be calculated as follows:

$$NetORRev_h^{RT} = NetSpinRev_h^{RT} + NetSynSuRev_h^{RT} + NetRegRev_h^{RT}$$

Where:

$NetORRev_h^{RT}$ = Net Operating Reserve revenue for Hour *h*.

f. The Up Ramp Capability Revenue shall be calculated as follows:

$$UpCapRevh = \sum_{\text{Hour}} MAX(RT\_URC\_MW_i - DA\_URC\_MW_h, 0) \times RT\_URC\_MCP_i$$

Where:

$UpCapRev_h$ = The Real-Time Up Ramp Capability Revenue for Hour *h*.

$RT\_URC\_MW_i$ = The Real-Time Up Ramp Capability cleared schedule for Dispatch Interval *i*.

$DA\_URC\_MW_h$ = The Day-Ahead Up Ramp Capability cleared schedule for Hour *h*.

$RT\_URC\_MCP_i$ = Real-Time Marginal Clearing Price for Up Ramp Capability for Dispatch Interval *i*.

g. The Down Ramp Capability Revenue shall be calculated as follows:

$$DnCapRev_h = \sum_{\text{Hour}} MAX(RT\_DRC\_MW_i - DA\_DRC\_MW_h, 0) \times RT\_DRC\_MCP_i$$

Where:

$DnCapRev_h$ = The Real-Time Down Ramp Capability Revenue for Hour *h*.

$RT\_DRC\_MW_i$ = The Real-Time Down Ramp Capability cleared schedule for Dispatch Interval *i*.

$DA\_DRC\_MW_h$ = The Day-Ahead Down Ramp Capability cleared schedule for Hour *h*.

$RT\_DRC\_MCP_i$ = Real-Time Marginal Clearing Price for Down Ramp Capability for Dispatch Interval *i*.

h. The Short-Term Reserve Revenue shall be calculated as follows:

$$STRRev_h = \sum_{\text{Hour}} MAX(RT\_STR\_MW_i - DA\_STR\_MW_h, 0) \times RT\_STR\_MCP_i$$

Where:

$STRRev_h$ = The Real-Time Short-Term Reserve Revenue for Hour *h*.

$RT\_STR\_MW_i$ = The Real-Time Short-Term Reserve cleared schedule for Dispatch Interval *i*.

$DA\_STR\_MW_h$ = The Day-Ahead Short-Term Reserve cleared schedule for Hour *h*.

$RT\_STR\_MCP_i$ = Real-Time Marginal Clearing Price for Short-Term Reserve for Dispatch Interval *i*.

i. The total Energy, Operating Reserve, Short-Term Reserve Revenue, Up Ramp Capability Revenue and Down Ramp Capability Revenue related payment (total net revenue) in Hour *h* for following dispatch shall be

calculated as follows:

$$Rev_h^{RT} = LMPRev_h^{RT} + NetORRev_h^{RT} + RDA_h +$$

$$NetRegMileageRev_h^{RT} + UpCapRev_h + DnCapRev_h + STRRev_h$$

Where:

Rev_h^{RT} = Total Real-Time net revenue in Hour *h*.

RDA_h = The sum of the Regulation Deployment Adjustment in Hour *h* as calculated pursuant to Section 40.3.3.1.a.v of this Tariff.

$NetRegMileageRev_h^{RT}$ = Real-Time Regulating Mileage revenue credit for Hour *h*. It is calculated as:

$$NetRegMileageRev_h^{RT} = AdditionalRegMileage_h^{RT} * MAX(RegMileageMCP_h^{RT} - RegMileageOffer_h^{RT}, 0)$$

Where:

$AdditionalRegMileage_h^{RT}$ = Real-Time total Additional Regulating Mileage for Hour h

$RegMileageMCP_h^{RT}$ = Ex-Post Regulating Mileage MCP for Hour h

$RegMileageOffer_h^{RT}$ = Real-Time Regulating Mileage Offer for Hour h

3. Step Three: Real-Time Offer Revenue Sufficiency Guarantee Payment:

a. If the eligible Generation Resource's, Demand Response Resource's Type II, Electric Storage Resource's, Distributed Energy Aggregated Resource's or External Asynchronous Resource's cost of following dispatch exceeds the value of its payment for following dispatch in an

eligible Hour, then the Resource will receive a RTORSGP in that Hour. The RTORSGP shall be calculated at an hourly level as a credit as specified below.

$RTORSGP_h^{RT} = MAX (EnergyCost_h^{RT} - Rev_h^{RT}, 0) * Performance Factor_h * Ramp Rate Factor_h$

Where:

$RTORSGP_h^{RT}$ = RTORSGP for Hour *h*.

$EnergyCost_h^{RT}$ = Additional cost for Non-Excessive Energy produced above the Base Output for Hour *h*.

Rev_h^{RT} = Total Real-Time net revenue in Hour *h*.

$Performance Factor_h$ = Performance Factor in Hour *h* calculated as:

If $MrdFl_h = 1$, then *1,* else

$= MAX (0, MIN (1, (Performance Ratio_h – 0.2) / (0.8 – 0.2)))$

Where:

$Performance Ratio_h = (RR_h – AvgDev_h) / RR_h$

Where:

$RR_h = \sum_{Hour} (RTRR_i * 10) / 12$

$AvgDev_h = \sum_{Hour} ABS(AvgRTSP_i – Act_i) / 12$

Where:

$RTRR_i$ = Real-Time Ramp Rate for Dispatch Interval *i*.

$AvgRTSP_i$ = average setpoint for a given Dispatch Interval *i*. This value represents the average of the Dispatch Target for Energy of

the current Dispatch Interval and previous Dispatch Interval, plus any Regulation Deployment in the current Dispatch Interval.

Act_i = Dispatch Interval Actual Energy Injections for Dispatch Interval *i*.

$Ramp\ Rate\ Factor_h$ = The ratio of the time-weighted Real-Time Ramp Rate to Day-Ahead Ramp Rate in Hour *h* calculated as:

If $MrdFl_h = 1$, then 1, else

$= MIN (MAX (RTRR\_tw_h / DARR_h, 0), 1)$

Where:

$RTRR\_tw_h$ = time-weighted Real-Time Ramp Rate for Hour *h*.

$DARR_h$ = Day-Ahead Ramp Rate for Hour *h*.

B. Calculation of DAMAP for Day-Ahead Committed Resources and External Asynchronous Resources for Import Schedules

The DAMAP for Generation Resources, Demand Response Resources–Type II, Electric Storage Resources, Distributed Energy Aggregated Resources External Asynchronous Resources with Day-Ahead Schedules for Energy for Import Schedules, and Demand Response Resources-Type I with Day-Ahead Schedules for Contingency Reserve shall be calculated for each Hour in three steps. The first step shall determine adjustments to Day-Ahead Schedules to account for real-time de-rates for Generation Resources, Demand Response Resources–Type II, Electric Storage Resources, and Distributed Energy Aggregated Resources. The second step shall determine the Day-Ahead Margin reduction associated with the adjusted Day-Ahead Schedules for Energy, Regulating Reserve, Spinning Reserve, Supplemental Reserve, Short-Term Reserve,

Up Ramp Capability and/or Down Ramp Capability associated with following dispatch, *i.e.*, the reduction in Day-Ahead Margin to the Generation Resource, Demand Response Resource–Type II, Electric Storage Resource, Distributed Energy Aggregated Resource or External Asynchronous Resource for following the Transmission Provider instructions for Dispatch Interval *i,* including any offsetting real-time margins associated with real-time cleared Energy, Operating Reserve, Short-Term Reserve, Up Ramp Capability and/or Down Ramp Capability in excess of Day-Ahead Schedules for Operating Reserve. The third step shall determine the DAMAP for an Hour.

1. Step One: Calculate Day-Ahead Schedule Adjustments

   Prior to the determination of eligible amounts of Energy, Regulating Reserve, Spinning Reserve, Supplemental Reserve, Short-Term Reserve and/or Up Ramp Capability for use in DAMAP calculations, the Day-Ahead Schedules for Energy, Regulating Reserve, Spinning Reserve, Supplemental Reserve, Short-Term Reserve and/or Up Ramp Capability associated with Resources, are adjusted to account for MISO approved real-time reductions in Resource capability caused by physical operating restrictions. For Electric Storage Resources and Distributed Energy Aggregated Resources, if the real-time reduction is the result of dispatch limitations due to reduced Energy storage capability, the Adjusted Day-Ahead Schedule for Regulating Reserve for the given Dispatch Interval will be set equal to the Real-Time cleared Regulating Reserve. These Day-Ahead Schedule adjustments are calculated as follows for Dispatch Interval *i*.

   $AdjDASen_i = DASen_h - REDen_i$

   $AdjDASreg_i = DASreg_h - REDreg_i$

$AdjDAScr_{ip} = DAScr_{hp} - REDcr_{ip}$

$AdjDASstr_i = DASstr_h - REDstr_i$

$\text{AdjDASurc}_{ip} = \text{DASurc}_{hp} - \text{REDurc}_{ip}$

Where:

$REDen_i = (POTREDen_i / (POTREDen_i + POTREDreg_i + \sum_p POTREDcr_{ip} + POTREDstr_i + POTREDurc_i)) \times REDtot_i$

$REDreg_i = (POTREDreg_i / (POTREDen_i + POTREDreg_i + \sum_p POTREDcr_{ip} + POTREDstr_i + POTREDurc_i)) \times REDtot_i$

$REDcr_{ip} = (POTREDcr_{ip} / (POTREDen_i + POTREDreg_i + \sum_p POTREDcr_{ip} + POTREDstr_i + POTREDurc_i)) \times REDtot_i$

$REDstr_i = (POTREDstr_i / (POTREDen_i + POTREDreg_i + \sum_p POTREDcr_{ip} + POTREDstr_i + POTREDurc_i)) \times REDtot_i$

$REDurc_{ip} = (POTREDurc_{ip} / (POTREDen_i + POTREDreg_i + \sum p\ POTREDcr_{ip} + POTREDstr_i + POTREDurc_i)) \times REDtot_i$

and where:

$POTREDen_i = MAX (DASen_h - RTSen_i , 0)$

$POTREDreg_i = MAX (DASreg_h - RTSreg_i , 0)$

$POTREDcr_{ip} = MAX (DAScr_{hp} - RTScr_{ip} , 0)$

$POTREDstr_i = MAX (DASstr_h - RTSstr_i , 0)$

$POTREDurc_{ip} = MAX (DASurc_h - RTSurc_{ip} , 0)$

and where:

If $MrdFl_h = 1$ then

$REDtot_i = MAX(DASen_h + DASreg_h + \sum_p DAScr_{hp} + DASstr_h + DASurc_h - MIN(DASen_h + DASreg_h + \sum_p DAScr_{hp} + DASstr_h + DASurc_h , RTEcoMax)_i , 0)$

Else

$REDtot_i = MAX(DASen_h + DASreg_h + \sum_p DAScr_{hp} + DASstr_h + DASurc_h - RTMaxDisp_i , 0)$

Where:

$REDtot_i$ = Total MW reduction of Day-Ahead Schedules for Dispatch Interval *i*.

$DASen_h$ = Day-Ahead Schedule for Energy for hour *h* containing Dispatch Interval *i*.

$DASreg_h$ = Day-Ahead Schedule for Regulating Reserve for hour *h* containing Dispatch Interval *i*.

$DAScr_{hp}$ = Day-Ahead Schedule for Contingency Reserve product *p* for hour *h* containing Dispatch Interval *i*.

$DASstr_h$ = Day-Ahead Schedule for Short-Term Reserve for hour *h* containing Dispatch Interval *i*.

$DASurc_h$ = Day-Ahead Schedule for Up Ramp Capability for hour *h* containing Dispatch Interval *i*.

$RTEcoMax_i$ = Real-Time offered Economic Maximum Limit for Dispatch Interval *i.*

$RTMaxDisp_i$ = Real-Time Maximum Dispatch for Dispatch Interval *i.*

$MrdFl_h$ = Manual Redispatch Flag for hour *h*.

$POTREDen_i$ = Potential reduction in the Day-Ahead Schedule for Energy schedule for Dispatch Interval *i*.

$RTSen_i$ = Dispatch Target for Energy for Dispatch Interval *i*.

$POTREDreg_i$ = Potential reduction in the Day-Ahead Schedule for Regulating Reserve or Dispatch Interval *i*.

$RTSreg_i$ = Real-Time cleared Regulating Reserve for Dispatch Interval *i*.

$POTREDcr_{ip}$ = Potential reduction in the Day-Ahead Schedule for Contingency Reserve, product *p*, for Dispatch Interval *i*.

$RTScr_{ip}$ = Real-Time cleared Contingency Reserve, product p, for Dispatch Interval *i*.

$POTREDurc_i$ = Potential reduction in the Day-Ahead Schedule for Up Ramp Capability or Dispatch Interval *i*.

$RTSurc_i$ = Real-Time cleared Up Ramp Capability for Dispatch Interval *i*.

$REDen_i$ = Actual reduction in the Day-Ahead Schedule for Energy for Dispatch Interval *i*.

$REDreg_i$= Actual reduction in Day-Ahead Schedule for Regulating Reserve for Dispatch Interval *i*.

$REDcr_{ip}$ = Actual reduction in the Day-Ahead Schedule for Contingency Reserve, product *p*, for Dispatch Interval *i*.

$POTREDstr_i$ = Potential reduction in the Day-Ahead Schedule for Short-Term Reserve for Dispatch Interval *i*.

$RTSstr_i$ = Real-Time cleared Short-Term Reserve for Dispatch Interval *i*.

$REDstr_i$ = Actual reduction in the Day-Ahead Schedule for Short-Term Reserve for Dispatch Interval *i*.

$REDurc_i$ = Actual reduction in Day-Ahead Schedule for Up Ramp Capability for Dispatch Interval *i*.

$AdjDASen_i$ = Adjusted Day-Ahead Schedule for Energy for Dispatch Interval *i*.

$AdjDASreg_i$ = Adjusted Day-Ahead Schedule for Regulating Reserve for Dispatch Interval *i*.

$AdjDAScr_{ip}$ = Adjusted Day-Ahead Schedule for Contingency Reserve, product *p*, for Dispatch Interval *i*.

$AdjDASstr_i$ = Adjusted Day-Ahead Schedule for Short-Term Reserve for Dispatch Interval *i*.

$AdjDASurc_i$ = Adjusted Day-Ahead Schedule for Up Ramp Capability for Dispatch Interval *i*.

2. Step Two: Calculate Energy, Operating Reserve and Up Ramp Capability Contributions to DAMAP.

a. The Energy contribution to the DAMAP for a Generation Resource, Demand Response Resource–Type II, Electric Storage Resource, Distributed Energy Aggregated Resource or External Asynchronous Resource for Dispatch Interval *i* is then calculated as follows.

i. If $MrdFl_h = 1$ and

$MrdSen_i < AdjDASen_h$ and $NXE_i < AdjDASen_h$

Then:

$CDAMAPen_i = (AdjDASen_h – MAX(NXE_i, MrdSen_i)) \times LMP_i^{RT} –$

$MAX (\int^{AdjDASen} DAOen_h - \int^{MAX (NXE, MrdSeni)} DAOen_h ,$

$(\int^{AdjDASen} RTOen_h - \int^{MAX(NXE, MrdSeni)} RTOen_h)$

Else If

$RTSen_i < AdjDASen_h$ and $NXE_i < AdjDASen_h$

Then:

$CDAMAPen_i = (AdjDASen_h – MAX(NXE_i, RTSen_i)) \times LMP_i^{RT} –$

$MAX (\int^{AdjDASen} DAOen_h - \int^{MAX (NXE, RTSeni)} DAOen_h ,$

$(\int^{AdjDASen} RTOen_h - \int^{MAX(NXE, RTSeni)} RTOen_h)$

ii. If $RTSen_i >= AdjDASen_h$ and $NXE_i >= AdjDASen_h$

Then:

$CDAMAPen_i = MIN((AdjDASen_h – NXE_i) \times LMP_i^{RT} +$

$(\int^{NXE} RTOen_h – \int^{AdjDASen} RTOen_h), 0)$

Where:

$RTSen_i =$ Dispatch Target for Energy for Dispatch Interval *i*.

$AdjDASen_i =$ Adjusted Day-Ahead Schedule for Energy for Dispatch Interval *i*.

$MrdFl_h =$ Manual Redispatch Flag for hour *h*.

$MrdSen_i =$ Dispatch Target for Energy for Dispatch Interval *i* during Manual Redispatch as determined in section A.1.ii.2 above.

$CDAMAPen_i =$ Energy contribution to DAMAP for Dispatch Interval *i*.

NXE_i = Non-Excessive Energy for Dispatch Interval *i.*

DET_i = Resource Deficient Energy Threshold for Dispatch Interval *i*.

LMP_i^{RT} = Real-Time Ex Post LMP at the Resource Commercial Pricing Node for hour *h* containing Dispatch Interval *i*.

$RTOen_h$ = Real-Time Offer for Energy for hour *h* containing Dispatch Interval *i*.

$DAOen_h$ = Day-Ahead Offer for Energy for hour *h* containing Dispatch Interval *i*.

b. The Contingency Reserve contribution to the DAMAP for a Generation Resource, Demand Response Resource–Type II, Electric Storage Resource, Distributed Energy Aggregated Resource or External Asynchronous Resource for Dispatch Interval *i* is calculated as follows.

i. If

$RTScr_{ip} < AdjDAScr_{hp}$

Then:

$$CDAMAPcr_{ip} = (AdjDAScr_{hp} - RTScr_{ip}) \times RTMCPcr_{ip} - MAX((\int^{AdjDAScr_{hp}} DAOcr_{hp} - \int^{RTScr_{ip}} DAOcr_{hp}), (\int^{AdjDAScr_{hp}} RTOcr_{hp} - \int^{RTScr_{ip}} RTOcr_{hp}))$$

ii. If $RTScr_{ip} >= AdjDAScr_{hp}$

Then:

$$CDAMAPcr_{ip} = MIN \{ [(AdjDAScr_{hp} - RTScr_{ip}) \times RTMCPcr_{ip}] - [\int^{AdjDAScrhp} RTOcr_h - \int^{RTScrip} RTOcr_h] , 0 \}$$

Where:

$RTScr_{ip}$ = Real-Time cleared Contingency Reserve, product p, for Dispatch Interval *i*.

$AdjDAScr_{hp}$ = Adjusted Day-Ahead Schedule for Contingency Reserve, product *p*, for Dispatch Interval *i*.

$CDAMAPcr_{ip}$ = Contingency Reserve, product *p*, contribution to DAMAP for Dispatch Interval *i*.

$RTMCPcr_{ip}$ = Real-Time Ex Post MCP for Contingency Reserve, product *p*, for Dispatch Interval *i*.

$DAOcr_{hp}$ = Day-Ahead Offer for Contingency Reserve, product *p*, for Hour *h* containing Dispatch Interval *i*.

$RTOcr_{hp}$ = Real-Time Offer for Contingency Reserve, product *p*, for Hour *h* containing Dispatch Interval *i*.

c. The Regulating Reserve contribution to the DAMAP for a Generation Resource, Demand Response Resource–Type II, Electric Storage Resource, Distributed Energy Aggregated Resource, or External Asynchronous Resource for Dispatch Interval *i* is calculated as follows.

i. If $RTSreg_i < AdjDASreg_h$

Then:

$$CDAMAPreg_i = (AdjDASreg_h - RTSreg_i) \times RTMCPreg_i - MAX((\int^{AdjDASreg_h} DAOreg_h - \int^{RTSreg_i} DAOreg_h), (\int^{AdjDASreg_h} RTOreg_h - \int^{RTSreg_i} RTOreg_h)) - NetRegMileageRev_i^{RT}$$

ii. If $RTSreg_i >= AdjDASreg_h$

Then:

$$CDAMAPreg_i = MIN\{ [(AdjDASreg_h - RTSreg_i) \times RTMCPreg_i] - [\int^{AdjDASregh} RTOreg_h - \int^{RTSregi} RTOreg_h], 0 \} - NetRegMileageRev_i^{RT}$$

Where:

$RTSreg_i$ = Real-Time cleared Regulating Reserve for Dispatch Interval *i*.

$AdjDASreg_h$ = Adjusted Day-Ahead Schedule for Regulating Reserve for Dispatch Interval *i*.

$CDAMAPreg_i$ = Regulating Reserve contribution to DAMAP for Dispatch Interval *i*.

$RTMCPreg_i$ = Real-Time Ex Post MCP for Regulating Reserve for Dispatch Interval *i*.

$DAOreg_h$ = Day-Ahead Regulating Total Cost for hour *h* containing Dispatch Interval *i*.

$RTOreg_h$ = Real-Time Regulating Total Cost for hour *h*

containing Dispatch Interval *i.*

$NetRegMileageRev_i^{RT}$ = Real-Time Regulating Mileage revenue credit for Dispatch Interval *i*. It is calculated as:

$NetRegMileageRev_i^{RT} =$

$AdditionalRegMileage_i^{RT} * MAX(RegMileageMCP_i^{RT} - RegMileageOffer_h^{RT}, 0)$

Where:

$AdditionalRegMileage_i^{RT}$ = Real-Time total Additional Regulating Mileage for Dispatch Interval *i.*

$RegMileageMCP_i^{RT}$ = Ex-Post Regulating Mileage MCP for Dispatch Interval *i*

$RegMileageOffer_h^{RT}$ = Real-Time Regulating Mileage Offer for Hour *h* containing Dispatch Interval *i*

d. The Up Ramp Capability contribution to DAMAP for a Generation Resource, Demand Response-Type II, Electric Storage Resource, Distributed Energy Aggregated Resource or External Asynchronous Resource for Dispatch Interval i is calculated as follows.

i. If

$RTSurc_i < AdjDASurc_h$

Then:

$CDAMAPurc_i = (AdjDASurc_h - RTSurc_i) \times RTMCPurc_i$

ii. If $RTSurc_i >= AdjDASurc_h$

Then:

$CDAMAPurc_i = MIN\{(AdjDASurc_h - RTSurc_i) \times RTMCPurc_i, 0\}$

Where:

$RTSurc_i$ = Real-Time cleared Up Ramp Capability for Dispatch Interval *i.*

$AdjDASurc_h$ = Adjusted Day-Ahead Schedule for Up Ramp Capability for Dispatch Interval *i*.

$CDAMAPurc_i$ = Up Ramp Capability contribution to DAMAP for Dispatch Interval *i.*

$RTMCPurc_i$ = Real-Time Market Clearing Price for Up Ramp Capability for Dispatch Interval *i*.

e. The Down Ramp Capability contribution to DAMAP for a Generation Resource, Demand Response-Type II, Electric Storage Resource, Distributed Energy Aggregated Resource or External Asynchronous Resource for Dispatch Interval i is calculated as follows.

i. If

$RTSdrc_i < DASdrc_h$

Then:

$CDAMAPdrc_i = (DASdrc_h - RTSdrc_i) \times RTMCPdrc_i$

ii. If $RTSdrc_i >= DASdrc_h$

Then:

$CDAMAPdrc_i = MIN\{(DASdrc_h - RTSdrc_i) \times RTMCPdrc_i, 0\}$

Where:

$RTSdrc_i$ = Real-Time cleared Down Ramp Capability for Dispatch Interval *i*.

$DASdrc_h$ = Day-Ahead Schedule for Down Ramp Capability for Dispatch Interval *i*.

$CDAMAPdrc_i$ = Down Ramp Capability contribution to DAMAP for Dispatch Interval *i*.

$RTMCPdrc_i$ = Real-Time Market Clearing Price for Down Ramp Capability for Dispatch Interval *i*.

f. The Short-Term Reserve contribution to DAMAP for a Generation Resource, Demand Response Resource - Type II, Electric Storage Resource, Distributed Energy Aggregated Resource or External Asynchronous Resource for Dispatch Interval *i* is calculated as follows.

i. If $RTSstr_i < DASstr_h$

Then:

$$CDAMAPstr_i = (AdjDASstr_i - RTSstr_i) \times RTMCPstr_i$$

ii. If $RTSstr_i >= DASstr_h$

Then:

$$CDAMAPstr_i = MIN\{(AdjDASstr_i - RTSstr_i) \times RTMCPstr_i, 0\}$$

Where:

$RTSstr_i$ = Real-Time cleared Short-Term Reserve for Dispatch Interval *i*.

$AdjDASstr_i$ = Adjusted Day-Ahead Schedule for Short-Term Reserve for Dispatch Interval *i*.

$CDAMAPstr_i$ = Short-Term Reserve contribution to DAMAP for Dispatch Interval *i*.

$RTMCPstr_i$ = Real-Time Market Clearing Price for Short-Term Reserve for Dispatch Interval *i*.

g. The total contribution to the DAMAP for a Generation Resource, Demand Response Resource–Type II, Electric Storage Resource, Distributed Energy Aggregated Resource or External Asynchronous Resource for Dispatch Interval *i* is calculated as follows.

$$CDAMAP_i = (CDAMAPen_i + \sum_p CDAMAPcr_{ip} + CDAMAPreg_{i +} CDAMAPurc_i + CDAMAPdrc_i + CDAMAPstr_i)) \times s_i / 3600$$

Where:

$CDAMAP_i$ = Dispatch Interval *i* contribution to DAMAP for hour *h*.

$CDAMAPen_i$ = Energy contribution to DAMAP for Dispatch Interval *i*.

$CDAMAPcr_{ip}$ = Contingency Reserve, product *p*, contribution to DAMAP for Dispatch Interval *i*.

$CDAMAPreg_i$ = Regulating Reserve contribution to DAMAP for Dispatch Interval *i*.

$CDAMAPurc_i$ = Up Ramp Capability Contribution to DAMAP for

Dispatch Interval *i*.

$CDAMAPdrc_i$ = Down Ramp Capability Contribution to DAMAP for Dispatch Interval *i*.

$CDAMAPstr_i$ = Short-Term Reserve Contribution to DAMAP for Dispatch Interval *i*.

S_i = Length of Dispatch Interval *i* in seconds.

3. Step Three: Calculation of Hourly DAMAP:

a. If the sum of the eligible Generation Resource's, Demand Response Resource's Type II, Electric Storage Resource's, Distributed Energy Aggregated Resource's or External Asynchronous Resource's Dispatch Interval contribution to DAMAP is greater than zero, then the Resource will receive a DAMAP credit for the Hour.

b. The DAMAP shall be calculated at an hourly level as specified below.

$DAMAP_h = MAX(\sum_{Hour} CDAMAP_i , 0) * Performance\ Factor_h * Ramp\ Rate\ Factor_h$

Where:

$DAMAP_h$ = Day Ahead Margin Assurance Payment to a Resource for hour *h*.

$CDAMAP_i$ = Dispatch Interval *i* contribution to DAMAP for hour *h*.

$Performance\ Factor_h$ = Performance Factor in Hour *h* calculated as:

If $MrdFl_h = 1$, then 1, else

$= MAX (0, MIN (1, (Performance\ Ratio_h – 0.2) / (0.8 – 0.2)))$

Where:

$Performance\ Ratio_h = (RR_h – AvgDev_h) / RR_h$

Where:

$RR_h = \sum_{Hour} (RTRR_i * 10) / 12$

$AvgDev_h = \sum_{Hour} ABS(AvgRTSP_i – Act_i) / 12$

Where:

$RTRR_i$ = Real-Time Ramp Rate for Dispatch Interval *i.*

$AvgRTSP_i$ = average setpoint for a given Dispatch Interval *i*. This value represents the average of the Dispatch Target for Energy of the current Dispatch Interval and previous Dispatch Interval, plus any Regulation Deployment in the current Dispatch Interval.

Act_i = Dispatch Interval Actual Energy Injections for Dispatch Interval *i*.

$Ramp\ Rate\ Factor_h$ = The ratio of the time-weighted Real-Time Ramp Rate to Day-Ahead Ramp Rate in Hour *h* calculated as:

If $MrdFl_h = 1$, then *1,* else

$= MIN (MAX (RTRR\_tw_h / DARR_h, 0), 1)$

Where:

$RTRR\_tw_h$ = time-weighted Real-Time Ramp Rate for Hour *h*.

$DARR_h$ = Day-Ahead Ramp Rate for Hour *h.*