

Demand Response Settlements

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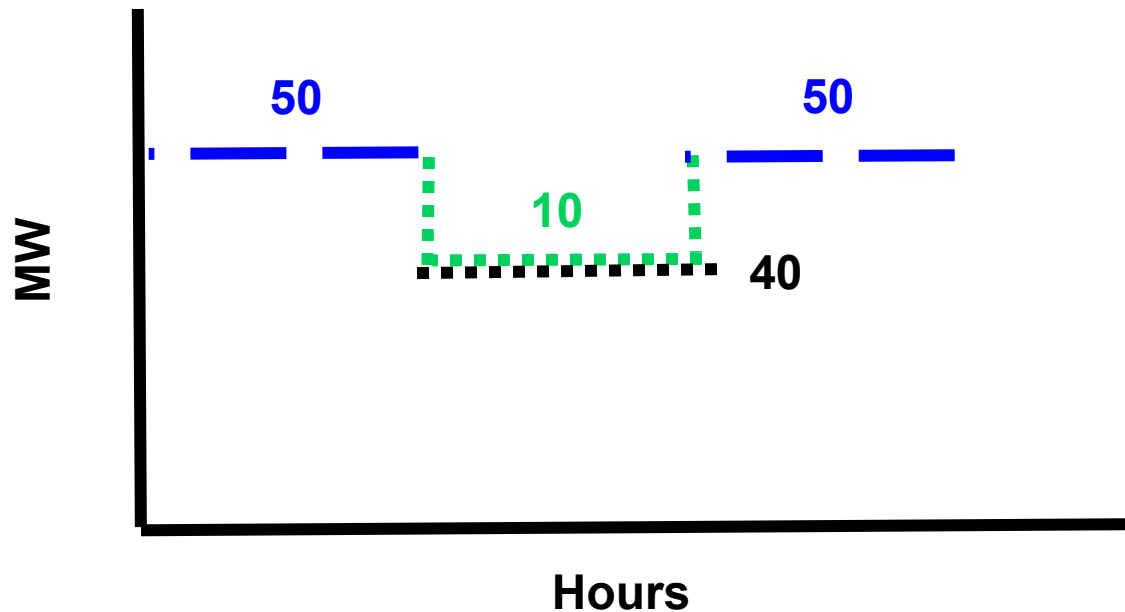
Manager, Market Training, *New York Independent System Operator*

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Remote Learning

What is Demand Response?



Typical Output vs. **Curtable Load**
(consumption MW) *(reduction MW)*

Categories of Demand Response Programs

1. Reliability-Based Programs

- *Purpose: provide load reductions in response to NYISO Operations' instructions for a discrete period of time to supplement generation when Operating Reserves are forecast to be short or when there is an actual Operating Reserve Deficiency or other system emergency*
- *Event driven*
- *NYISO determines activation*
 - Emergency Demand Response Program (EDRP)
 - ICAP-Special Case Resources (SCR)

Categories of Demand Response Programs

2. Economic-Based Programs

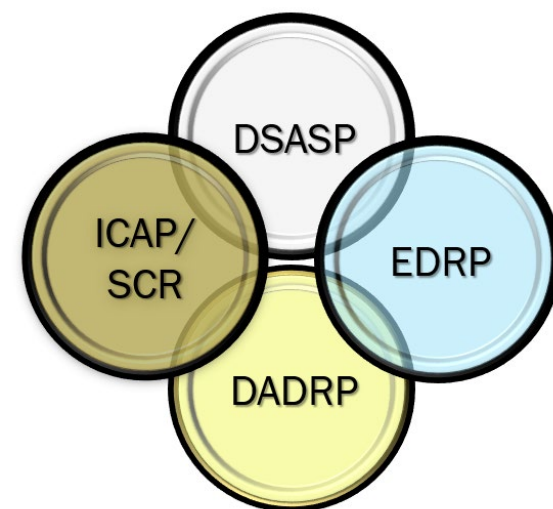
- *Purpose: load reduction, competing with generation, is scheduled by NYISO based upon economic offers*
- *Market driven / Not event driven*
- *Resource determines when to participate (through supply offers)*
 - Day-Ahead Demand Response Program (DADRP)
 - Demand-Side Ancillary Service Program (DSASP)

Demand Response Settlements

- **Reliability-based Program Settlement Name:**
 - Emergency Demand Response (EDRP)
 - Special Case Resource (SCR)
 - SCR BCG

- **Economic-based Program Settlement Name:**
 - Day Ahead Demand Response Program (DADRP) – *see appendix
 - Demand Side Ancillary Services Program (DSASP)
 - Reserves
 - DAM Reserve
 - Balancing Reserve
 - Supplemental
 - Regulation

- **OATT Rate Schedule 1**
 - Applies to SCR, EDRP, and DADRP



Demand Response Settlements

- **Objectives Per Settlement Name:**
 - Provide Settlement Description
 - Identify Settlement Eligibility
 - Name Settlement Determinants
 - Name Settlement Intermediates
 - Explain Settlement Algorithm
 - Step Through Settlement Scenario
 - Perform Settlement Example
 - Note Settlement Reference Material

Emergency Demand Response

- **Emergency Demand Response (EDRP) Settlement Description**
 - Intended to pay Emergency Demand Response Providers a Reduction Settlement for responding to the deployment of the Emergency Demand Response Program.

Emergency Demand Response

■ Settlement Eligibility

- Demand Response Providers will receive an EDRP Reduction Payment if:
 - EDRP is deployed
 - Provider participates in EDRP
 - Causes a verified demand reduction

Note:

Payment is established for eligibility period (as described in MST 22 Attachment G)

****Payment Eligibility Period is Minimum of 4 Hours*****

Emergency Demand Response

- **Settlement Determinants**
 - Interval Start Hour (Eastern)

Emergency Demand Response

- **Settlement Intermediates**
 - Hr EDRP Reduction (MWh)

- **Settlement Results**
 - Hr EDRP Stlmnt (\$)

EDRP – Stlmnt Algorithm

Program Deployment Duration Hrs.	Applicable Hours	Interim Calc	Hr EDRP Stlmnt (\$)
≤ 2 Hrs. (Starts at top of Hr.)	1 st 2 Hrs	Step 1) Hr EDRP Reduction (MWh) * Max {\$500/MWh, RTD Zonal LBMP}	(Step 1) + (Step 2)
	Next 2 Hrs	Step 2) Hr EDRP Reduction (MWh) * RTD Zonal LBMP	
≤ 2 Hrs. (Starts after top of Hr.)	1 st 3 Hrs	Step 1) Hr EDRP Reduction (MWh) * Max {\$500/MWh, RTD Zonal LBMP}	(Step 1) + (Step 2)
	Remaining Hrs	Step 2) Hr EDRP Reduction (MWh) * RTD Zonal LBMP	
> 2 and ≤ 3	1 st 3 Hrs	Step 1) Hr EDRP Reduction (MWh) * Max {\$500/MWh, RTD Zonal LBMP}	(Step 1) + (Step 2)
	Remaining Hrs	Step 2) Hr EDRP Reduction (MWh) * RTD Zonal LBMP	
> 3	All Hrs	N/A	Hr EDRP Reduction (MW) * Max {\$500/MWh, RTD Zonal LBMP}

Emergency Demand Response

■ Summary

- Intended to pay Emergency Demand Response Providers a Reduction Settlement for responding to the deployment of the Emergency Demand Response Program.

Emergency Demand Response

- **Settlement Reference Material**
 - MST Section 22
 - Attachment G
 - Accounting and Billing Manual Section 4.5
 - Advisory Billing File
 - Demand Response
 - EDRP Demand Response Reduction MWhr
 - EDRP Demand Response Credit \$
 - Hourly Bill Code 2020 & 2021
 - Daily Bill Code 2025 & 2026

Demand Response Settlements

- **Reliability-based Program Settlement Name:**
 - Emergency Demand Response (EDRP)
 - **Special Case Resource (SCR)**
 - SCR BCG
- **Economic-based Program Settlement Name:**
 - Day Ahead Demand Response Program (DADRP)
 - Demand Side Ancillary Services Program (DSASP)
 - Reserves
 - Regulation
- **OATT Rate Schedule 1**
 - Applies to SCR, EDRP, and DADRP

Special Case Resources

■ Special Case Resources (SCR) Settlement Description

- Intended to pay Demand Response Providers a Reduction Settlement for responding to the deployment of the Special Case Resource Program.

Special Case Resources

■ Settlement Eligibility

- Demand Response Providers will receive an SCR Reduction Payment if:
 - SCR is deployed
 - Provider participates in SCR
 - Causes a verified demand reduction

Special Case Resources

- **Settlement Determinants**
 - Interval Start Hour (Eastern)

Special Case Resources

- **Settlement Intermediates**
 - Hr SCR Reduction (MWh)

- **Settlement Results**
 - Hr SCR Stlmnt (\$)

Special Case Resources

■ Settlement Algorithm

Hr SCR Stlmnt (\$) =
Hr SCR Reduction (MWh) * RTD Zonal LBMP

Where:

Payment is established for eligibility period (as described in MST 5 Section 5.12.11)

*****Payment Eligibility Period is Minimum of 4 Hours*****

Special Case Resources

■ Summary

- Intended to pay Demand Response Providers a Reduction Settlement for responding to the deployment of the Special Case Resource Program.

Special Case Resources BCG

- **Special Case Resources (SCR) Bid Cost Guarantee (BCG) Settlement Description**
 - Intended to recover a Demand Response Providers Minimum Payment Nomination not recovered through Real Time LBMP Revenues.

Special Case Resources BCG

■ Settlement Eligibility

- Demand Response Providers will receive an SCR Bid Cost Guarantee Payment if:
 - SCR is committed by NYISO for a RT Event
 - *NYISO will set to 0 the Minimum Payment Nomination for SCR capacity that was scheduled in DAM through DADRP and DSASP*
 - » *For Energy, Regulation, Reserves*
- Determination for receipt of SCR BCG Payment is based on entire Dispatch Day

Special Case Resources BCG

- **Settlement Determinants**
 - Interval Start Hour (Eastern)
 - Minimum Payment Nomination

Special Case Resources BCG

- **Settlement Intermediates**
 - Hr SCR Reduction (MWh)
 - Hr RT Zonal LBMP (\$/MWh)

- **Settlement Results**
 - Day SCR Bid Cost Guarantee (\$)

Special Case Resources BCG

- Settlement Algorithm

Day SCR Bid Cost Guarantee (\$) =

$\sum \text{Max} \{((\text{Min Pymnt Nomination} (\$) - \text{RT Zonal LBMP} (\$/\text{MWh})) * \text{Hr SCR Reduction MWh}), 0\}$

For all event hours in a day

Special Case Resources BCG

■ Summary

- Intended to recover a Demand Response Providers Minimum Payment Nomination not recovered through Real Time LBMP Revenues.

Special Case Resources

■ Settlement Reference Material

- MST 05
 - Section 5.12.11
- Accounting and Billing Manual Section 4.5
- Advisory Billing File
 - Demand Response
 - SCR Demand Response Reduction MWhr
 - SCR Demand Response Credit \$
 - SCR Bid Cost Guarantee \$
 - Hourly Bill Code 2022 & 2023
 - Daily Bill Code 2027 & 2028, 2029

DR Provider Settlements

- **Reliability-based Program Settlement Name:**
 - Emergency Demand Response (EDRP)
 - Special Case Resource (SCR)
 - SCR BCG
- **Economic-based Program Settlement Name:**
 - Day Ahead Demand Response Program (DADRP)
 - Demand Side Ancillary Services Program (DSASP)
 - Reserves
 - Regulation
- **OATT Rate Schedule 1**
 - Applies to SCR, EDRP, and DADRP

Demand Side Ancillary Services Program Settlements

- **DAM Reserve Availability Description**
 - Intended to compensate DSASP Suppliers who offer their resource's capacity as Reserve Service to the NYISO in the DAM.

DAM Reserve Availability

■ Settlement Eligibility

- DSASP Suppliers will receive a payment for DAM Reserve Availability if:
 - Hr DAM Sched Res Avail (MWh) > 0
 - 10 Minute Spinning Reserves
 - 10 Minute Non-Synchronous Reserves
 - 30 Minute Spinning & Non-Synchronous Reserves

DAM Reserve Availability

■ Settlement Determinants

- Hr DAM 'Reserve Type' Price (\$/MW)
- Hr DAM Sched 'Reserve Type' Avail (MWh)

DAM Reserve Availability

- **Settlement Intermediates**
 - N/A

- **Settlement Results**
 - Hr DAM 'Reserve Type' Avail Stlmnt (\$)

DAM Reserve Availability

- Settlement Algorithm

Hr DAM 'Reserve Type' Avail Stlmnt (\$) =
Hr DAM Sched 'Reserve Type' Avail (MWh) * Hr DAM 'Reserve Type' Price (\$/MW)

Demand Side Ancillary Services Program Settlements

- **Balancing Reserve Availability Description**
 - Intended to compensate DSASP Suppliers who offer their resource's capacity as Reserve Service to the NYISO in the RT Market.

Balancing Reserve Availability

■ Settlement Eligibility

- DSASP Suppliers will receive a payment for Balancing Reserve Availability if:
 - Hr DAM Sched 'Reserve Type' Avail (MWh) > 0
- Or
- RTD BalMkt Sched 'Reserve Type' Avail (MWh) > 0
 - 10 Minute Spinning Reserves
 - 10 Minute Non-Synchronous Reserves
 - 30 Minute Spinning & Non-Synchronous Reserves

Balancing Reserve Availability

■ Settlement Determinants

- RTD Interval Seconds
- Hr DAM Sched 'Reserve Type' Avail (MWh)
- RTD RT Sched 'Reserve Type' Avail (MW)
- RTD RT 'Reserve Type' Price (\$/MW)

Balancing Reserve Availability

■ Settlement Intermediates

- RTD BalMkt Sched 'Reserve Type' Avail (MW)

■ Settlement Results

- RTD BalMkt 'Reserve Type' Avail Stlmnt (\$)

Balancing Reserve Availability

- Settlement Algorithm

RTD BalMkt 'Reserve Type' Avail Stlmnt (\$) =
RTD BalMkt Sched 'Reserve Type' Avail (MW) * RTD RT 'Reserve Type' Price (\$/MW) * RTD
Interval Seconds/3600

Where:

RTD BalMkt Sched 'Reserve Type' Avail (MW) =
RTD RT Sched 'Reserve Type' Avail (MW) – Hr DAM Sched 'Reserve Type' Avail (MWh)

Reserve Availability

■ Summary

- DAM Reserve
 - Compensating DSASP Suppliers offering capacity as Reserve Service to NYISO in DAM
 - Based on...
 - » Reserve Product Type
 - » Reserve Product Location
- Balancing Reserve
 - Compensating DSASP Suppliers offering capacity as Reserve Service to NYISO in RT Market
 - Based on...
 - » Reserve Product Type
 - » Reserve Product Location

Reserve Availability

- **Settlement Reference Material**
 - MST Section 15.4 – Schedules
 - Accounting and Billing Manual Section 5.3

DAM Reserve Availability

- Settlement Reference Material
 - Advisory Billing File
 - Power Supplier
 - Reserve Availability \$
 - Reserve MCP \$
 - Reserve MWhr
 - Hourly Bill Code 223 - 246
 - Daily Bill Code 310
 - Operating Reserve Payment \$
 - DSS Corporate Report
 - Settlement Details- Power Supplier – DAM ‘Reserve Type’ Availability

Balancing Reserve Availability

- Settlement Reference Material
 - Advisory Billing File
 - Power Supplier
 - Reserve Availability \$
 - Reserve MCP \$
 - Reserve MWhr
 - Hourly Bill Code 223 - 246
 - Daily Bill Code 310
 - Operating Reserve Payment \$
 - DSS Corporate Report
 - Settlement Details- Power Supplier – Balancing Market ‘Reserve Type’ Availability

Supplemental DSASP Reserve Payments

- Day-Ahead Bid Production Cost Guarantee (DAM BPCG)
- Real-Time Bid Production Cost Guarantee (RT BPCG)
- Day-Ahead Marginal Assurance Payment (DAMAP)

Day-Ahead Market BPCG

- **Day-Ahead Bid Production Cost Guarantee (DAM BPCG) Description**
 - Intended to guarantee DSASP Suppliers that a resource will not incur a net loss, if committed in DAM.
 - Based on Net Ancillary Service Revenues
 - Net Loss Determined at the Daily Level

Day-Ahead Market BPCG

■ Settlement Eligibility

- DSASP resources are eligible for DAM BPCG Settlement (\$) if:
 - DSASP resource's DAM total costs exceed its DAM Ancillary Services Settlements

Day-Ahead Market BPCG

■ Settlement Determinants

- Hr DAM Spin Avail Stlmnt (\$)
- Hr DAM Sched Spin Avail (MWh)
- Hr DAM AS Bid: Spin Price (\$/MWh)
- Hr DAM 30Spin Res Cr (\$)
- Hr DAM Sched Spin 30Min Avail (MWh)
- Hr DAM AS Bid: Spin 30Min Avail Price (\$/MWh)

■ Settlement Intermediates

- Hr DAM NASR OpRes Margin (\$)
- Hr DAM Net AS Rev (\$)

Day-Ahead Market BPCG

- **Settlement Results**
 - Day DAM BPCG Stlmnt (\$)

Day-Ahead Market BPCG

Settlement Algorithm

$$\text{Day DAM BPCG Stlmnt (\$)} = \text{Max} \{ \text{Day DAM Total Net Cost (\$)}, 0 \}$$

Where:

$$\text{Day DAM Total Net Cost (\$)} = \sum \text{Hr DAM Total Net Cost (\$)}, \text{ for all hours in a day}$$

$$\text{Hr DAM Total Net Cost (\$)} = (-1) * \text{Hr DAM Net AS Rev (\$)}$$

$$\text{Hr DAM Net AS Rev (\$)} = \text{Hr DAM NASR OpRes Margin (\$)}$$

$$\text{Hr DAM NASR OpRes Margin (\$)} =$$

$$\{ \text{Hr DAM Spin Avail Stlmnt (\$)} - [\text{Hr DAM Sched Spin Avail (MWh)} * \text{Hr DAM AS Bid: Spin Price (\$/MWh)}] \} + \{ \text{Hr DAM 30Spin Res Cr (\$)} - [\text{Hr DAM Sched Spin 30Min Avail (MWh)} * \text{Hr DAM AS Bid: Spin 30Min Price (\$/MWh)}] \}$$

Day-Ahead BPCG

- **Settlement Reference Material**
 - MST Attachment C Section 18
 - Accounting and Billing Manual Section 4

Day-Ahead BPCG

- **Settlement Reference Material**
 - Advisory Billing File
 - Power Supplier
 - Day Ahead BPCG \$
 - Hourly Bill Code 205
 - Hourly Bill Code 206
 - Daily Bill Code 302
 - DSS Corporate Report
 - Settlement Details- Power Supplier-Day Ahead Market BPCG

Real-Time BPCG

■ Real-Time Bid Production Cost Guarantee (RT BPCG) Description

- Intended to guarantee DSASP Suppliers that a resource will not incur a net loss, if committed above that committed in DAM.
 - Based on Ancillary Service Revenues
 - Net Loss Determined at the Daily Level

Real-Time BPCG

■ Settlement Eligibility

- DSASP resources are eligible for RT BPCG Settlement (\$) if:
 - DSASP resource's RT total costs exceed its RT Ancillary Services Settlements

Real-Time BPCG

■ Settlement Determinants

- RTD RT Sched 10Synch Avail (MW)
- Hr DAM Sched 10Synch Avail (MW)
- RTD RT Sched Spin 30Min Avail (MW)
- Hr DAM Sched Spin 30Min Avail (MW)
- RTD RT 10Spin Price (\$/MWh)
- RTD RT 30Min Price (\$/MWh)

■ Settlement Intermediates

- RTD BalMkt 10Synch Avail Stlmnt (\$)
- RTD BalMkt 30Spin Avail Stlmnt (\$)
- RTD RT Net AS Revenue (\$)
- RTD RT Total Net Cost (\$)
- Hr RT Total Net Cost (\$)

Real-Time BPCG

- **Settlement Results**
 - Day RT BPCG Stlmnt (\$)

Real-Time BPCG

Settlement Algorithm

$$\text{Day RT BPCG Stlmnt (\$)} = \text{Max} \{ \text{Day RT Total Net Cost (\$)}, 0 \}$$

Where:

$$\text{Day RT Total Net Cost (\$)} = \sum \text{RTD RT Total Net Cost (\$)}, \text{ for all RTD intervals in a day}$$

$$\text{RTD RT Total Net Cost (\$)} = (-1) * \text{RTD RT Net AS Rev (\$)}$$

$$\text{RTD RT Net AS Rev (\$)} = \text{RTD BalMkt 10Synch Avail Stlmnt (\$)} + \text{RTD BalMkt 30Spin Avail Stlmnt (\$)}$$

$$\begin{aligned} \text{RTD BalMkt 10Synch Avail Stlmnt (\$)} = \\ \{ \text{RTD RT Sched 10Synch Avail (MW)} - \text{Hr DAM Sched 10Synch Avail (MW)} \} * \text{RTD RT} \\ \text{10Min Price (\$/MWh)} * \text{RTD Interval seconds} / 3600 \end{aligned}$$

$$\begin{aligned} \text{RTD BalMkt 30Spin Avail Stlmnt (\$)} = \\ \{ \text{RTD RT Sched 30Spin Avail (MW)} - \text{Hr DAM Sched 30Spin Avail (MW)} \} * \text{RTD RT} \\ \text{30Min Price (\$/MWh)} * \text{RTD Interval seconds} / 3600 \end{aligned}$$

Real-Time BPCG

- **Settlement Reference Material**
 - MST Attachment C Section 18.4
 - Accounting and Billing Manual Section 4
 - Appendix E

Real-Time BPCG

- **Settlement Reference Material**
 - Advisory Billing File
 - Power Supplier
 - RT BPCG \$
 - Hourly Bill Code 210
 - Hourly Bill Code 211
 - Daily Bill Code 305
 - DSS Corporate Report
 - Settlement Details- Power Supplier- RT BPCG

Day-Ahead Margin Assurance

■ Day-Ahead Margin Assurance Payment (DAMAP)

Description

- A payment for DSASP Suppliers that are required to purchase Ancillary Services in the NYISO Balancing Market; as a result of being dispatched below their DAM Schedule, by NYISO.

Day-Ahead Margin Assurance

- **Settlement Determinants**
 - Hr DAM Sched Spin Avail (MW)
 - RTD RT Sched Spin Avail (MW)
 - Hr DAM Sched 10NSync Avail (MW)
 - RTD RT Sched 10NSync Avail (MW)
 - Hr DAM Sched 30Min Avail (MW)
 - RTD RT Sched 30Min Avail (MW)
 - RTD RT Spin Price (\$/MWh)
 - RTD RT 10NSync Price (\$/MWh)
 - RTD RT 30Min Price (\$/MWh)
 - Hr DAM AS Bid: Spin Price (\$/MWh)
 - Hr DAM AS Bid: 10NSync Price (\$/MWh)
 - Hr DAM AS Bid: 30Min Price (\$/MWh)
 - **RTD Reserve Performance Index**
 - RTD Interval Seconds

Day-Ahead Margin Assurance

- **Settlement Intermediates**
 - RTD DAM MargAsrc: Spin Res (\$)
 - RTD DAM MargAsrc: 10NSync Res(\$)
 - RTD DAM MargAsrc: 30Min Res (\$)
 - RTD DAM MargAsrc: Total (\$)

- **Settlement Results**
 - Hr DAM MargAsrc Stlmnt (\$)

Day-Ahead Margin Assurance

- Settlement Algorithm

Hr DAM MargAsrc Stlmnt (\$) =

Max (0, \sum RTD DAM MargAsrc: Total (\$), for all RTD Intervals in given hour)

Where:

RTD DAM MargAsrc: Total (\$) =

{RTD DAM MargAsrc: SpinRes (\$) + RTD DAM MargAsrc: 10NSync Res (\$) + RTD DAM MargAsrc: 30Min Res (\$) } * RTD Interval seconds / 3600

Day-Ahead Margin Assurance

■ Settlement Algorithm

Where:

Scenario 1

RTD DAM MargAsrc: Spin Res (\$/hr) =
 $\{ \text{Hr DAM Sched Spin Avail (MW)} - \text{RTD RT Sched Spin Avail (MW)} \} * \{ \text{RTD RT Spin Price} (\$/\text{MWh}) - \text{Hr DAM AS Bid: Spin Price} (\$/\text{MWh}) \} * \text{RTD Reserve Performance Index}$ **if**
 $\text{RTD RT Sched Spin Avail (MW)} < \text{Hr DAM Sched Spin Avail (MW)}$

Scenario 2

RTD DAM MargAsrc: Spin Res (\$/hr) =
 $\{ \text{Hr DAM Sched Spin Avail (MW)} - \text{RTD RT Sched Spin Avail (MW)} \} * \text{RTD RT Spin Price} (\$/\text{MWh}) * \text{RTD Reserve Performance Index}$ **if**
 $\text{RTD RT Sched Spin Avail (MW)} \geq \text{Hr DAM Sched Spin Avail (MW)}$

Day-Ahead Margin Assurance

■ Settlement Algorithm

Where:

Scenario 1

RTD DAM MargAsrc: 10NSync Res (\$/hr) =
{Hr DAM Sched 10NSync Avail (MW) – RTD RT Sched 10NSync Avail (MW)} * {RTD RT
10NSync Price(\$/MWh) – Hr DAM AS Bid: 10NSync Price (\$/MWh)} * RTD Reserve
Performance Index **if** RTD RT Sched 10NSync Avail (MW) < Hr DAM Sched 10NSync Avail (MW)

Scenario 2

RTD DAM MargAsrc: 10NSync Res (\$/hr) =
{Hr DAM Sched 10NSync Avail (MW) – RTD RT Sched 10NSync Avail (MW)} *
RTD RT 10NSync Price (\$/MWh) * RTD Reserve Performance Index **if**
RTD RT Sched 10NSync Avail (MW) ≥ Hr DAM Sched 10NSync Avail (MW)

Day-Ahead Margin Assurance

■ Settlement Algorithm

Where:

Scenario 1

RTD DAM MargAsrc: 30Min Res (\$/hr) =
{Hr DAM Sched 30Min Avail (MW) – RTD RT Sched 30Min Avail (MW)} * {RTD RT
30Min Price(\$/MWh) – Hr Calc DAM AS Bid: 30Min Price (\$/MWh)} * RTD Reserve Performance
Index **if** RTD RT Sched 30Min Avail (MW) < Hr DAM Sched 30Min Avail (MW)

Scenario 2

RTD DAM MargAsrc: 30Min Res (\$/hr) =
{Hr DAM Sched 30Min Avail (MW) – RTD RT Sched 30Min Avail (MW)} *
RTD RT 30Min Price (\$/MWh) * RTD Reserve Performance Index **if**
RTD RT Sched 30Min Avail (MW) ≥ Hr DAM Sched 30Min Avail (MW)

Day-Ahead Margin Assurance

- **Settlement Reference Material**
 - MST Attachment J
 - Accounting and Billing Manual Section 4

Day-Ahead Margin Assurance

- **Settlement Reference Material**
 - Advisory Billing File
 - Power Supplier
 - DAM Contract Balancing \$
 - Hourly Bill Code 238
 - Hourly Bill Code 239
 - Daily Bill Code 313
 - DSS Corporate Report
 - Settlement Details- Power Supplier-Day Ahead Margin Assurance

Demand Side Ancillary Services Program Settlements

- **DAM Regulation Capacity Description**
 - Intended to compensate DSASP Suppliers who offer their resource's capacity as Regulation Service to the NYISO in the DAM.

DAM Regulation Capacity

■ Settlement Eligibility

- DSASP Suppliers will receive a payment for DAM Regulation Capacity if:
 - DSASP supplier is interruptible load
 - Hr DAM Sched Reg Avail (MWh) > 0

DAM Regulation Capacity

- **Settlement Determinants**
 - Hr DAM Regulation Capacity Price (\$/MW)
 - Hr DAM Sched Regulation Capacity (MWh)

DAM Regulation Capacity

- **Settlement Intermediates**
 - N/A

- **Settlement Results**
 - Hr DAM Regulation Capacity Stlmnt (\$)

DAM Regulation Capacity

- Settlement Algorithm

Hr DAM Regulation Capacity Settlement (\$) =
Hr DAM Sched Reg Capacity (MWh) * Hr DAM Regulation Capacity Price (\$/MW)

Demand Side Ancillary Services Program Settlements

- **Balancing Regulation Capacity Description**
 - Intended to compensate DSASP Suppliers who offer their resource's capacity as Regulation Capacity to the NYISO in the RT Market.

Balancing Regulation Capacity

■ Settlement Eligibility

- DSASP Suppliers will receive a settlement for Balancing Regulation Capacity if:
 - Hr DAM Sched Regulation Capacity (MWh) > 0
- Or
- RTD BalMkt Sched Regulation Capacity Avail (MWh) > 0

Balancing Regulation Capacity

- **Settlement Determinants**
 - RTD Interval Seconds
 - Hr DAM Sched Regulation Capacity (MWh)
 - RTD RT Sched Regulation Capacity (MW)
 - RTD RT Regulation Capacity Price (\$/MW)

Balancing Regulation Capacity

- **Settlement Intermediates**
 - RTD BalMkt Sched Regulation Capacity (MW)

- **Settlement Results**
 - RTD BalMkt Regulation Capacity Stlmnt (\$)

Balancing Regulation Capacity

- Settlement Algorithm

RTD BalMkt Regulation Capacity Stlmnt (\$) =
RTD BalMkt Sched Regulation Capacity (MW) * RTD RT Regulation Capacity Price (\$/MW) *
RTDInterval Seconds/3600

Where:

RTD BalMkt Sched Regulation Capacity (MW) =
RTD RT Sched Regulation Capacity (MW) – Hr DAM Sched Regulation Capacity (MWh)

Regulation Capacity

■ Summary

- DAM Regulation Capacity
 - Compensating DSASP Suppliers offering capacity as Regulation Service to NYISO in DAM
- Balancing Regulation Capacity
 - Compensating DSASP Suppliers offering capacity as Regulation Service to NYISO in RT Market

Regulation Capacity

- **Settlement Reference Material**
 - MST Section 15.3 – Rate Schedule 3
 - Accounting and Billing Manual Section 5.2

DAM Regulation Capacity

- **Settlement Reference Material**
 - Advisory Billing File
 - Power Supplier
 - Hourly Bill Code 217
 - Hrly DAM Reg Capacity
 - Hourly Bill Code 218
 - Hrly DAM Reg MCP \$
 - Daily Bill Code 308
 - Regulation Payment \$
 - DSS Corporate Report
 - Settlement Details - Power Supplier – DAM Regulation Capacity

Balancing Regulation Capacity

■ Settlement Reference Material

- Advisory Billing File
 - Power Supplier
 - Hourly Bill Code 250
 - Hrly Bal Mkt Reg Capacity MWHr
 - Hourly Bill Code 251
 - Hrly Bal Mkt Avail \$
 - Daily Bill Code 308
 - Regulation Payment \$
- DSS Corporate Report
 - Settlement Details - Power Supplier – RT Regulation Service

Demand Side Ancillary Services Program Settlements

■ Regulation Movement Description

- Intended to compensate DSASP Suppliers with real-time Regulation Capacity schedules a real-time payment for Regulation Movement that is provided to the NYISO for each applicable real-time interval.

Regulation Movement

■ Settlement Eligibility

- DSASP Suppliers will receive a settlement for Regulation Movement if:
 - RTD BalMkt Sched Regulation Capacity Avail (MWh) > 0
 - Suppliers Movement (MW) > or < 0

Regulation Movement

■ Settlement Determinants

- RTD RT Movement (MW)
- RTD RT Perf Index: Non-Time Weight
- RTD RT Reg Movement Market Price (\$/MW)

Regulation Movement

- **Settlement Intermediates**
 - N/A

- **Settlement Results**
 - RTD RT Regulation Movement Stlmnt (\$)

Regulation Movement

- Settlement Algorithm

RTD RT Regulation Movement Stlmnt (\$) =
RTD RT Sched Regulation Movement (MW) * RTD RT Regulation Movement Price (\$/MW) *
RTD RT Perf Index: Non-Time Weight

Regulation Movement

■ Summary

- Real Time Regulation Movement
 - Compensating Demand Side Providers for responding to six second base points, as directed by NYISO
 - Factors in RT Supplier Performance

RT Regulation Movement

■ Settlement Reference Material

- Advisory Billing File
 - Power Supplier
 - Hourly Bill Code 265
 - Hrly Reg Movement MWHr
 - Hourly Bill Code 266
 - Hrly RT Reg Movement \$
 - Daily Bill Code 329
 - Regulation Movement \$
- DSS Corporate Report
 - Settlement Details - Power Supplier – RT Regulation Service

Regulation Performance Charge

■ Real Time Regulation Performance Charge

Description

- Intended to charge Regulation Response Service Resources who are not responding or are responding poorly to NYISO's six second dispatch, correcting for Area Control Error (ACE)

Regulation Performance Charge

- **Settlement Eligibility**
 - Demand Side Regulation Response Service Resources are eligible to be assessed the RT Regulation Performance Charge if:
 - RTD Perf Index: Non-Time Weight < 1

Regulation Performance Charge

■ Settlement Determinants

- RTD Perf Index: Non Time Weight
- RTD RT Reg Capacity Price (\$/MWh)
- RTD RT Sched Reg Capacity (MW)
- Hr DAM Sched Reg Capacity (MW)
- Hr DAM Reg Capacity Price (\$/MWh)
- RTD Interval Seconds

Regulation Performance Charge

- **Settlement Intermediates**
 - RTD RT Increm Sched Reg Capacity (MW)

- **Settlement Results**
 - RTD RT Reg Performance Charge (\$)

Regulation Performance Charge

■ Settlement Algorithm

RTD RT Reg Performance Charge (\$) =

$$\{[(1-\text{RTD Perf Index: Non-Time Weight}) * \text{RTD RT Increm Sched Reg Capacity (MW)} * -1.1 * \text{RTD RT Reg Capacity Price (\$/MWh)}] + [(1-\text{RTD Perf Index: Non-Time Weight}) * (\text{RTD RT Sched Reg Capacity (MW)} - \text{RTD RT Increm Sched Reg Capacity (MW)}) * -1.1 * \text{Max(Hr DAM Reg Capacity Price (\$/MWh), RTD RT Reg Capacity Price (\$/MWh))}] * \text{RTD Interval Seconds}/3600$$

Where:

RTD RT Increm Sched Reg Capacity =

RTD RT Sched Reg Capacity (MW) – Hr DAM Sched Reg Capacity (MW)

If

RTD RT Sched Reg Capacity (MW) > Hr DAM Sched Reg Capacity (MW)

Or

RTD RT Increm Sched Reg Capacity = 0

If

RTD RT Sched Reg Capacity (MW) < Hr DAM Sched Reg Capacity (MW)

Regulation Performance Charge

■ Settlement Scenario

- ‘DRP A’ has a 45 MWh DAM Regulation Capacity Schedule for HB 0
- ‘DRP A’ was subsequently issued a RT Regulation Capacity Schedule of 60 MWs for HB 0
- Their Performance Index is determined to be 0.933
- Regulation Capacity Prices for HB 0 are:
 - DAM = \$8/MWh
 - RT = \$5/MWh
- The RTD Interval Seconds are 300 each interval across the hour

Regulation Performance Charge

■ Settlement Example

RTD RT Reg Performance Charge (\$) = **-\$2.67**

$$[(1 - 0.933) * 15 * -1.1 * \$5] + [(1 - 0.933) * (60 - 15) * -1.1 * \text{Max}(\$8, \$5)] * 300/3600$$

$$[0.067 * 15 * -1.1 * \$5] + [0.067 * 45 * -1.1 * \$8] * 300/3600$$

$$-5.5275 + -26.532 * 300/3600$$

Where:

RTD RT Increm Sched Reg Capacity = 15

60 - 45

Regulation Performance Charge

■ Summary

- Regulation Performance Charge
 - Charge assessed to Demand Side Providers in the event they respond poorly or not at all to their six second dispatch
 - Factors in a 10% adder

Regulation Performance Charge

■ Settlement Reference Material

- Advisory Billing File
 - Power Supplier
 - Hourly Bill Code 267
 - Hrly Reg Performance Charge \$
 - Daily Bill Code 330
 - Regulation Performance Charge \$
- DSS Corporate Report
 - Settlement Details - Power Supplier – RT Regulation Service (*RT Regulation Movement Tab*)

DSASP Regulation – Other Payments

- Demand Side Resources that provide Regulation Service may be eligible to receive:
 - Day-Ahead Bid Production Cost Guarantee payment
 - Refer to Section 18.10 of the MST for calculation
 - Real-Time Bid Production Cost Guarantee payment
 - Refer to Section 18.11 of the MST for calculation
 - Day Ahead Market Assurance payment (DAMAP)
 - Refer to App H of Accounting and Billing Manual

Demand Response Settlements

- **Reliability-based Program Settlement Name:**
 - Emergency Demand Response (EDRP)
 - Special Case Resource (SCR)
 - SCR BCG
- **Economic-based Program Settlement Name:**
 - Day Ahead Demand Response Program (DADRP)
 - Demand Side Ancillary Services Program (DSASP)
 - Reserves
 - Regulation
- **OATT & MST Rate Schedule 1**
 - Applies to SCR, EDRP, and DADRP

Demand Response Rate Schedule 1

■ Settlement Description

- OATT & MST Rate Schedule 1:

Intended to recover a portion of NYISO's operating costs and NYISO assessed FERC fees from Demand Response Providers

Scheduling, System Control, and Dispatch (S,SC & D)
+
FERC Fees

Demand Response Rate Schedule 1

■ Settlement Eligibility

- Demand Response Providers will receive a charge for OATT & MST Rate Schedule 1 if they participate in:
 - Reliability Based Programs
 - Special Case Resource (SCR)
 - Emergency Demand Response Program (EDRP)
 - Economic Based Programs
 - Day Ahead Demand Response Program (DADRP)

Demand Response Rate Schedule 1 – S, SC, & D

- **Settlement Determinants**
 - Total Demand Response Load Reduction (MWh)

Demand Response Rate Schedule 1 – S, SC, & D

- **Settlement Intermediates**
 - Hr OATT Rate Sched 1 Rate: Inj (\$/MWh)

- **Settlement Results**
 - Hr OATT Rate Sched 1 Inj Stlmnt: Non-Phys (\$)

Demand Response Rate Schedule 1 – S, SC, & D

- Settlement Algorithm – S, SC, & D

Hr MST/OATT Sched 1 Inj Stlmnt: Non-Phys (\$) =

Hr MST/OATT Sched 1 Rate: Inj (\$/MWh) * Total Demand Response Load Reduction (MWh) *(-1)

Where:

Hr MST/OATT Sched 1 Rate: Inj (\$/MWh) =

.28 * {(NYISO Cost of Ops)/Forecasted MWh Volume}

Demand Response Rate Schedule 1 – FERC Fees

- **Settlement Determinants**
 - Hr DRP Avg Actual Reduction (MWh)
 - Hr DRP Metered Reduction (MWh)
 - Hr Proj FERC Fee NYISO Total (\$)
 - Hr True-up FERC Fee NYISO Total (\$)

Demand Response Rate Schedule 1 – FERC Fees

- **Settlement Intermediates**
 - Hr DRP Sched 1 Inject (MWh)
 - Hr OATT Sched 1 FERC Fees Rate: Inj (\$/MWh)

- **Settlement Results**
 - Hr OATT Sched 1 FERC Fees Inj Stlmnt: DRB (\$)

Demand Response

Rate Schedule 1 – FERC Fees

- Settlement Algorithm - *FERC Fees*

Hr OATT Sched 1 FERC Fees Inj Stlmnt: DRB (\$) =

*Hr OATT Sched 1 FERC Fees Rate: Inj (\$/MWh) * Hr DRP Sched 1 Inject (MWh) * (-1)*

Where:

Hr OATT Sched 1 FERC Fees Rate: Inj (\$/MWh) =

actual billed fees – annual estimated fees + true up interest accrual

- Broken down to a monthly level and then an hourly level rate
- Demand Response Providers assessed 28% of the 94% Physical Allocation

Hr DRP Sched 1 Inject (MWh) = Total injected Demand Response MWh

Demand Response Rate Schedule 1

- **Settlement Reference Material**
 - OATT Rate Schedule 1

Demand Response Settlements

- **Reliability-based Program Settlement Name:**
 - Emergency Demand Response (EDRP)
 - Special Case Resource (SCR)
 - SCR BCG
- **Economic-based Program Settlement Name:**
 - Day Ahead Demand Response Program (DADRP)
 - Demand Side Ancillary Services Program (DSASP)
 - Reserves
 - Regulation
- **OATT Rate Schedule 1**
 - Applies to SCR, EDRP, and DADRP

Day-Ahead Demand Response

Appendix

Economic DRP Settlements

- **Settlement Name:**
 - DADRP Incentive
 - DADRP Reduction
 - DADRP Load Balance
 - DADRP Penalty
 - Demand Response Providers
 - Load Serving Entities
 - DADRP Bid Cost Guarantee

DADRP Incentive

■ Incentive Description

- Designed to offer an incentive to Market Participants with curtailable loads to participate in the NYISO DADRP.

DADRP Incentive

■ Settlement Eligibility

- Demand Response Providers will be credited for DADRP Incentive if:
 - DADRP is scheduled in NYISO DAM and...
 - Hr DADRP Actual Reduction (MWh) > 0

DADRP Incentive

- **Settlement Determinants**
 - Hr DAM Energy Price: DADRP (\$/MWh)
 - Hr DAM Loss Price: DADRP (\$/MWh)
 - Hr DAM Cong Price: DADRP (\$/MWh)
 - Hr DADRP Sched Reduction (MWh)
 - Hr DADRP Actual Reduction (MWh)

DADRP Incentive

- **Settlement Intermediates**
 - Hr DAM Total Price: DADRP (\$/MWh)

- **Settlement Results**
 - Hr DADRP Incentive (\$)

DADRP Incentive

■ Settlement Algorithm

Hr DADRP Incentive (\$) =

Hr DADRP Actual Reduction (MWh)* Hr DAM Total Price: DADRP (\$/MWh)

Where:

Hr DAM Total Price: DADRP (\$/MWh) =

Hr DAM Energy Price: DADRP (\$/MWh) + Hr DAM Loss Price: DADRP (\$/MWh) - Hr DAM Cong

Price: DADRP (\$/MWh)

DADRP Incentive

■ Summary

- Designed to offer an incentive to Market Participants with curtailable loads to participate in the NYISO DADRP.

DADRP Incentive

■ Settlement Reference Material

- MST Section 4
- Accounting and Billing Manual Section 4.2
 - Appendix B
- Advisory Billing File
 - Demand Response Incentive \$
 - Hourly Bill Code 2006
 - Daily Bill Code 2011
- DSS Corporate Report
 - Demand Response Program Customer – Incentive

Economic DRP Settlements

- **Settlement Name:**
 - DADRP Incentive
 - **DADRP Reduction**
 - DADRP Load Balance
 - DADRP Penalty
 - Demand Response Providers
 - Load Serving Entities
 - DADRP Bid Cost Guarantee

DADRP Reduction

■ Reduction Description

- Payment to LSEs designed to offset the amount of DAM load purchase costs when a curtailable load is scheduled to reduce consumption.

DADRP Reduction

■ Settlement Eligibility

- LSEs will be credited for DADRP Reduction if:
 - DADRP is scheduled to provide load reduction in DAM
 - Hr DADRP Sched Reduction (MWh) > 0

DADRP Reduction

■ Settlement Determinants

- Hr DAM Energy Price: DADRP (\$/MWh)
- Hr DAM Loss Price: DADRP (\$/MWh)
- Hr DAM Cong Price: DADRP (\$/MWh)
- Hr DADRP Sched Reduction (MWh)

DADRP Reduction

■ Settlement Intermediates

- Hr DAM Total Price: DADRP (\$/MWh)

■ Settlement Results

- Hr DADRP Reduction (\$)

DADRP Reduction

- Settlement Algorithm

Hr DADRP Reduction (\$) =

Hr DADRP Sched Reduction (MWh)* Hr DAM Total Price: DADRP (\$/MWh)

Where:

Hr DAM Total Price: DADRP (\$/MWh) =

Hr DAM Energy Price: DADRP (\$/MWh) + Hr DAM Loss Price: DADRP (\$/MWh) - Hr DAM Cong
Price: DADRP (\$/MWh)

DADRP Reduction

■ Summary

- Payment to LSEs designed to offset the amount of DAM load purchase costs when a curtailable load is scheduled to reduce consumption.

DADRP Reduction

- **Settlement Reference Material**
 - MST Section 4
 - Accounting and Billing Manual Section 4.2
 - Appendix B
 - Advisory Billing File
 - Demand Response Reduction \$
 - Hourly Bill Code 2006
 - Daily Bill Code 2012
 - DSS Corporate Report
 - Demand Response Program Customer – Reduction

Economic DRP Settlements

- **Settlement Name:**
 - DADRP Incentive
 - DADRP Reduction
 - **DADRP Load Balance**
 - DADRP Penalty
 - Demand Response Providers
 - Load Serving Entities
 - DADRP Bid Cost Guarantee

DADRP Load Balance

- **Load Balance Description**
 - Charge to LSEs designed to offset the amount of Balancing Market load sold back, due to the actual Demand Reduction in the RT Market.

DADRP Load Balance

■ Settlement Eligibility

- Load Serving Entities will be charged for DADRP Load Balance if:
 - DADRP is scheduled to provide load reduction in DAM
 - Hr DADRP Actual Reduction (MWh) > 0

DADRP Load Balance

■ Settlement Determinants

- Hr RT Zonal Energy Price: DADRP (\$/MWh)
- Hr RT Zonal Loss Price: DADRP (\$/MWh)
- Hr RT Zonal Cong Price: DADRP (\$/MWh)
- Hr DADRP Sched Reduction (MWh)
- Hr DADRP Actual Reduction (MWh)

DADRP Load Balance

- **Settlement Intermediates**
 - Hr RT Zonal Total Price: DADRP (\$/MWh)

- **Settlement Results**
 - Hr DADRP Load Balance (\$)

DADRP Load Balance

- Settlement Algorithm

Hr DADRP Load Balance (\$) =

Hr DADRP Actual Reduction (MWh)* Hr RT Zonal Total Price: DADRP (\$/MWh) * -1

Where:

Hr RT Zonal Total Price: DADRP (\$/MWh) =

Hr RT Zonal Energy Price: DADRP (\$/MWh) + Hr RT Zonal Loss Price: DADRP (\$/MWh) - Hr RT

Zonal Cong Price: DADRP (\$/MWh)

DADRP Load Balance

■ Summary

- Charge to LSEs designed to offset the amount of Balancing Market load sold back, due to the actual Demand Reduction in the RT Market.

DADRP Load Balance

- **Settlement Reference Material**
 - MST Section 4
 - Accounting and Billing Manual Section 4.2
 - Appendix J
 - Advisory Billing File
 - Demand Response Load Balancing \$
 - Hourly Bill Code 2008
 - Daily Bill Code 2014
 - DSS Corporate Report
 - Demand Response Program Customer – Load Balance

Economic DRP Settlements

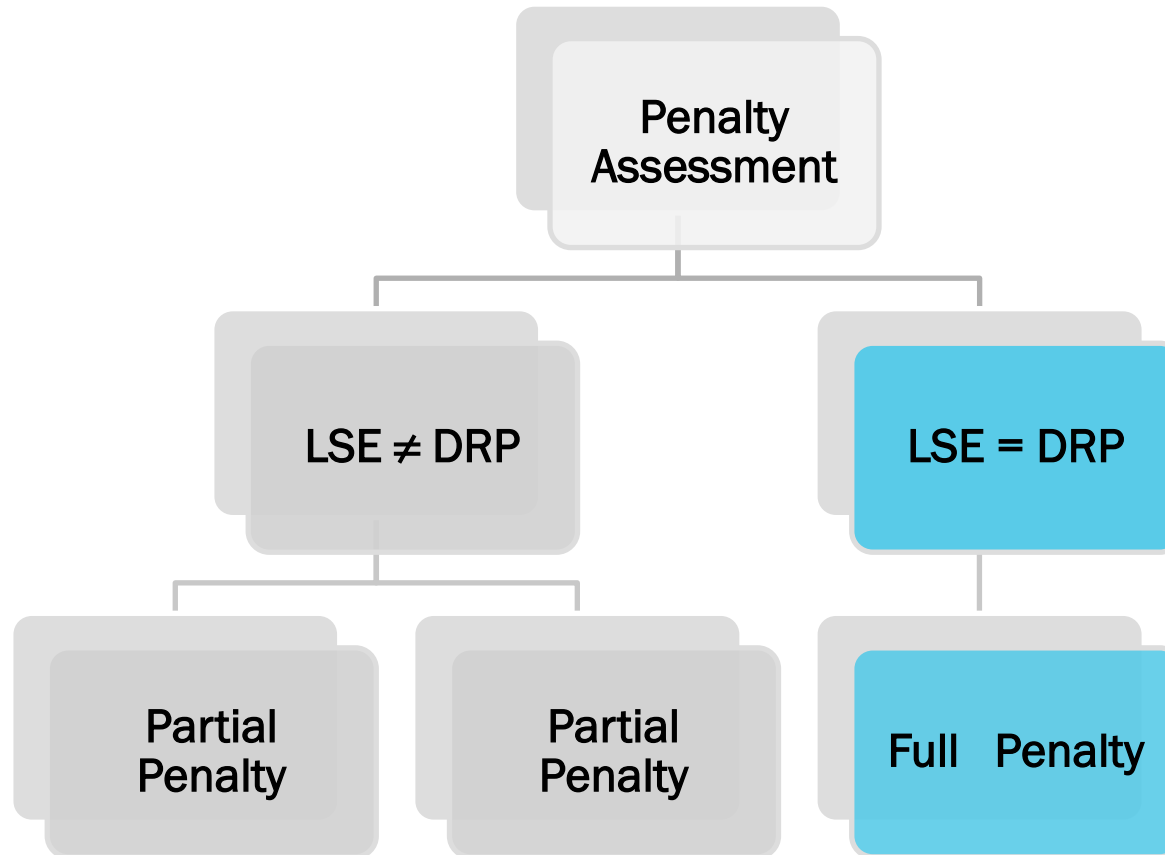
- **Settlement Name:**
 - DADRP Incentive
 - DADRP Reduction
 - DADRP Load Balance
 - **DADRP Penalty**
 - **Demand Response Providers**
 - **Load Serving Entities**
 - DADRP Bid Cost Guarantee

DADRP Penalty

■ Penalty Description

- DRP and LSE are Same Org
 - Charge to Demand Response Provider
 - when NYISO schedules curtailable load in DAM; however, scheduled load reduction does not physically occur.
- DRP and LSE are Different Org
 - Charge to Demand Response Provider
 - Charge to Load Serving Entities
 - when NYISO schedules curtailable load in DAM; however, scheduled load reduction does not physically occur.

DADRP Penalty



DADRP Penalty

■ Settlement Eligibility – LSE = DRP

- Demand Response Providers will be charged for a DADRP Penalty if:
 - DADRP is scheduled to provide load reduction in DAM
 - Hr DADRP Sched Reduction (MWh) > 0
 - DADRP does not fully reduce RT Load
 - Hr DADRP Actual Reduction (MWh) < Hr DADRP Sched Reduction (MWh)

DADRP Penalty

- **Settlement Determinants**
 - DRP Org ID
 - LSE ID
 - LSE Org ID
 - Hr DAM Energy Price: DADRP (\$/MWh)
 - Hr DAM Loss Price: DADRP (\$/MWh)
 - Hr DAM Cong Price: DADRP (\$/MWh)
 - Hr DADRP Sched Reduction (MWh)
 - Hr DADRP Actual Reduction (MWh)

DADRP Penalty

- **Settlement Determinants**
 - Hr RT Energy Price: DADRP (\$/MWh)
 - Hr RT Loss Price: DADRP (\$/MWh)
 - Hr RT Cong Price: DADRP (\$/MWh)

DADRP Penalty

- **Settlement Intermediates**
 - Hr DAM Total Price: DADRP (\$/MWh)
 - Hr RT Total Price: DADRP (\$/MWh)

- **Settlement Results**
 - Hr DADRP Penalty: DRP (\$)
 - Hr DADRP Penalty: LSE (\$)

DADRP Penalty

- Settlement Algorithm – LSE = DRP

Hr DADRP Penalty: DRP (\$) =

{Hr DADRP Actual Reduction (MWh)- Hr DADRP Sched reduction (MWh)} * Max{Hr DAM Total Price: DADRP (\$/MWh), Hr RT Total Price: DADRP (\$/MWh)}

if

LSE Org ID = DRP Org ID

Where:

Hr DAM Total Price: DADRP (\$/MWh) =

Hr DAM Energy Price: DADRP (\$/MWh) + Hr DAM Loss Price: DADRP (\$/MWh) – Hr DAM Cong Price: DADRP (\$/MWh)

Hr RT Total Price: DADRP (\$/MWh) =

Hr RT Energy Price: DADRP (\$/MWh) + Hr RT Loss Price: DADRP (\$/MWh) - Hr RT Cong Price: DADRP (\$/MWh)

DADRP Penalty

■ Settlement Eligibility – LSE ≠ DRP

- Load Serving Entity will be charged for a DADRP Penalty if:
 - DADRP is scheduled to provide load reduction in DAM
 - Hr DADRP Sched Reduction (MWh) > 0
 - DADRP does not fully reduce RT Load
 - Hr DADRP Actual Reduction (MWh) < Hr DADRP Sched Reduction (MWh)

DADRP Penalty

- Settlement Algorithm – LSE ≠ DRP

Hr DADRP Penalty: LSE (\$) =

{Hr DADRP Actual Reduction (MWh) - Hr DADRP Sched reduction (MWh)} * Hr DAM Total Price: DADRP (\$/MWh)

Where:

Hr DAM Total Price: DADRP (\$/MWh) =

Hr DAM Energy Price: DADRP (\$/MWh) + Hr DAM Loss Price: DADRP (\$/MWh) – Hr DAM Cong Price: DADRP (\$/MWh)

DADRP Penalty

■ Settlement Eligibility – LSE ≠ DRP

- Demand Response Providers will be charged for a DADRP Penalty if:
 - DADRP is scheduled to provide load reduction in DAM
 - Hr DADRP Sched Reduction (MWh) > 0
 - DADRP does not fully reduce RT Load
 - Hr DADRP Actual Reduction (MWh) < Hr DADRP Sched Reduction (MWh)

DADRP Penalty

- Settlement Algorithm – LSE ≠ DRP

Hr DADRP Penalty: DRP (\$) =

$$\left[\left\{ \text{Hr DADRP Actual Reduction (MWh)} - \text{Hr DADRP Sched reduction (MWh)} \right\} * \text{Max}\left\{ \text{Hr DAM Total Price: DADRP (\$/MWh)}, \text{Hr RT Total Price: DADRP (\$/MWh)} \right\} \right] - \left[\left\{ \text{Hr DADRP Actual Reduction (MWh)} - \text{Hr DADRP Sched reduction (MWh)} \right\} * \text{Hr DAM Total Price: DADRP (\$/MWh)} \right]$$

Where:

Hr DAM Total Price: DADRP (\\$/MWh) =

Hr DAM Energy Price: DADRP (\\$/MWh) + Hr DAM Loss Price: DADRP (\\$/MWh) – Hr DAM Cong Price: DADRP (\\$/MWh)

Hr RT Total Price: DADRP (\\$/MWh) =

Hr RT Energy Price: DADRP (\\$/MWh) + Hr RT Loss Price: DADRP (\\$/MWh) - Hr RT Cong Price: DADRP (\\$/MWh)

DADRP Penalty Example 1

HR DADRP Penalty

Off Setting \$ paid in DAM for Incentive

LSE = DRP

LSE Charge – Covers the higher of the DAM and RT Costs

$[(15-20) * \text{Max}(\text{DAM LBMP } \$10, \text{RT LBMP } \$12)]$

$-5 * \text{RT LBMP } \$12$

-\$60

LSE ≠ DRP

LSE Charge – Covers the DAM Costs

$-5 * \text{DAM LBMP } \$10$

-\$50

DRP Charge – Covers cost Delta between DAM & RT Market

$(-5 * \text{Max}(\$10, \$12) - (-5 * \text{DAM LBMP } \$10))$

$(-\$60) - (-\$50)$

-\$10

DADRP Penalty Example 2

HR DADRP Penalty

Off Setting \$ paid in DAM for Incentive

LSE = DRP

LSE Charge – Covers the higher of the DAM and RT Costs

$[(15-20) * \text{Max}(\text{DAM LBMP } \$10, \text{RT LBMP } \$6)]$

$-5 * \text{DAM LBMP } \$10$

-\$50

LSE ≠ DRP

LSE Charge – Covers the DAM Costs

$-5 * \text{DAM LBMP } \$10$

-\$50

DRP Charge – Covers cost Delta between DAM & RT Market

$(-5 * \text{Max}(\$10, \$6) - (-5 * \text{DAM LBMP } \$10))$

$(-\$50) - (-\$50)$

\$0

DADRP Penalty

■ Summary

- DRP and LSE Same Org
 - Charge to Demand Response Provider
 - when NYISO schedules curtailable load in DAM; however, scheduled load reduction does not physically occur.
- DRP and LSE Different Org
 - Charge to Demand Response Provider
 - Charge to Load Serving Entities
 - when NYISO schedules curtailable load in DAM; however, scheduled load reduction does not physically occur.

DADRP Penalty

- **Settlement Reference Material**
 - MST Section 4
 - DA Demand Reduction Program Manual
 - Section 4.2
 - Advisory Billing File
 - Demand Response DADRP Penalty \$
 - Hourly Bill Code 2007
 - Daily Bill Code 2013
 - DSS Corporate Report
 - Demand Response Program Customer – Penalty for Demand Response Provider

Economic DRP Settlements

- **Settlement Name:**
 - DADRP Incentive
 - DADRP Reduction
 - DADRP Load Balance
 - DADRP Penalty
 - Demand Response Providers
 - Load Serving Entities
 - **DADRP Bid Cost Guarantee**

DADRP BCG

- **Bid Cost Guarantee Description**
 - Payment to Demand Response Provider when NYISO schedules curtailable load in DAM and revenue earned does not out-weigh bid costs.

DADRP BCG

■ Settlement Eligibility

- Demand Response Providers will be credited for DADRP Bid Cost Guarantee if:
 - DADRP is scheduled to provide load reduction in DAM
 - Hr DADRP Sched Reduction (MWh) > 0
 - DRP reduces its RT Load
 - Hr DADRP Actual Reduction (MWh) > 0
 - DRP's Bid Costs exceed their revenue for the Day
 - DADRP must have a flexible bid

DADRP BCG

■ Settlement Determinants

- Hr DADRP Bid: Min Reduction Cost (\$)
- Hr DADRP Bid: Min Reduction (MWh)
- Hr DADRP Bid: Price # (\$/MWh)
 - Bid Prices 1-6
- Hr DADRP Bid: Reduction # (\$/MWh)
 - Reduction MWs 1-6
- Hr DADRP Bid: Reduct Init Cost (\$)
- Hr DADRP Sched Reduct: Prior Hr (MWh)

DADRP BCG

- **Settlement Determinants**
 - Hr DAM Energy Price: DADRP (\$/MWh)
 - Hr DAM Loss Price: DADRP (\$/MWh)
 - Hr DAM Cong Price: DADRP (\$/MWh)
 - Hr DADRP Sched Reduction (MWh)
 - Hr DADRP Actual Reduction (MWh)

DADRP BCG

■ Settlement Intermediates

- Hr DAM Total Price: DADRP (\$/MWh)
- Hr DADRP Alloc Min Reduct Cost (\$)
- Hr DADRP Alloc Reduct init Cost (\$)
- HR DADRP Incrmntl Reduct Cost (\$)
- Hr Total DADRP Cost (\$)
- Hr Total DADRP Revenue (\$)

■ Settlement Results

- Day DADRP BCG Stlmnt (\$)

DADRP BCG

■ Settlement Algorithm

Day DADRP BCG Stlmnt (\$) =

Max{ \sum Hr Total DADRP Net Cost (\$) for all hours in a day, 0}

Where:

Hr Total DADRP Net Cost (\$) =

Hr Total DADRP Cost (\$) – Hr Total DADRP Revenue (\$)

Hr Total DADRP Cost (\$) =

Hr DADRP Alloc Min Reduct Cost (\$) + Hr DADRP Alloc Reduct Init Cost (\$) + Hr DADRP Incrmntl Reduct Cost (\$)

Hr Total DADRP Revenue (\$) =

Hr DADRP Actual Reduction (MWh) * Hr DAM Total Price: DADRP (\$/MW)

DADRP BCG

■ Summary

- Payment to Demand Response Provider when NYISO schedules curtailable load in DAM and revenue earned does not out-weigh bid costs.

DADRP BCG

- **Settlement Reference Material**
 - MST Section 4
 - Attachment C
 - DA Demand Reduction Program Manual
 - Section 7
 - Advisory Billing File
 - Load Reduction Bid Guarantee \$
 - Hourly Bill Code 2009
 - Daily Bill Code 2015
 - DSS Corporate Report
 - Demand Response Program Customer – Bid Cost Guarantee

DADRP Wrap Up Exercise

DADRP Scenario

- Revenue earned does not exceed bid costs
- Off-Sets DAM Load Purchase Costs
- Scheduled Load Reduction does not physically occur
- Covers a portion of NYISO Costs of Operations
- Encourages Curtailable Load Participation
- Off-Sets RT Load Sold Back to NYISO

DADRP Settlement

- DADRP Bid Cost Guarantee
- DADRP Reduction
- DADRP Penalty
- DADRP Rate Schedule 1
- DADRP Incentive
- DADRP Load Balance

Economic DRP Settlements

- **Settlement Name:**
 - DADRP Incentive
 - DADRP Reduction
 - DADRP Load Balance
 - DADRP Penalty
 - Demand Response Providers
 - Load Serving Entities
 - DADRP Bid Cost Guarantee