

# Supplemental Power Supplier Settlements

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Remote Learning

# Supplemental Supplier Payments

- **Objectives Per Settlement Name:**
  - **Day Ahead Bid Production Cost Guarantee**
  - Economic Operating Point (EOP)
  - Real Time Bid Production Cost Guarantee
  - LRR I-R3 & I-R5 Restoration Payment
  - Day Ahead Margin Assurance
    - 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

# Supplemental Supplier Payments

## ■ Day-Ahead Bid Production Cost Guarantee (DAM BPCG) Description

- Intended to guarantee internal Power Suppliers that a generator will not incur a net loss, if committed in DAM.
  - Based on:
    - Start up Cost
    - Min Gen Cost
    - Incremental Energy Cost
    - Energy & Net Ancillary Service Revenues
  - Net Loss Determined at the Daily Level

# Day Ahead BPCG

## ■ Settlement Eligibility

- Generators are eligible for DAM BPCG Settlement (\$) if:
  - Generator's DAM eligible total costs exceed its DAM Energy & Ancillary Services Settlements
    - Eligible Costs include – minimum generation, energy, start-up and ancillary services

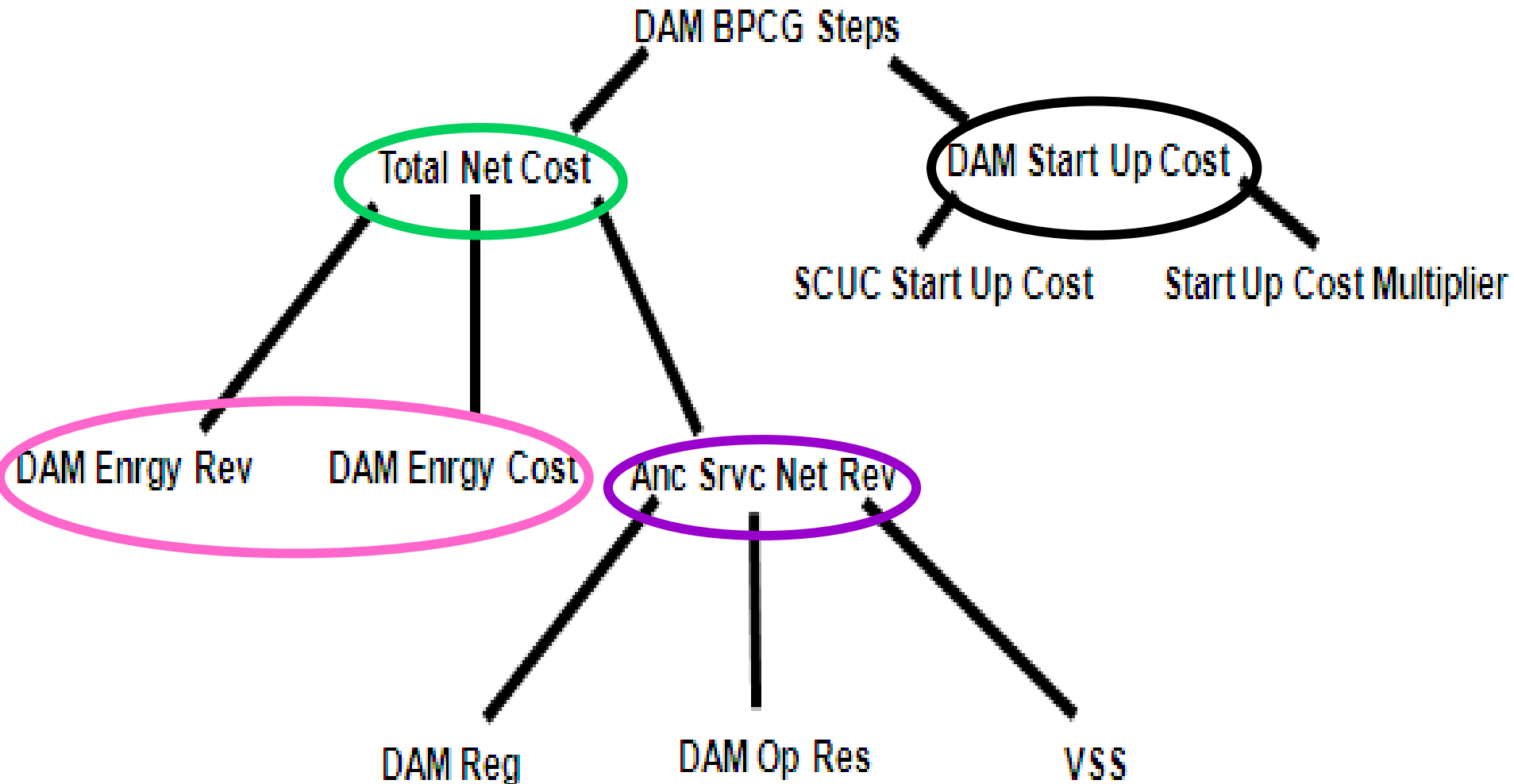
# Day Ahead BPCG

- Settlement Algorithm

**Day DAM BPCG Settlement (\$)** =

$\text{Max} \{ \text{Day DAM Total Net Cost (\$)} + \text{Day DAM Start Up Cost (\$)} , 0 \}$

# Day Ahead BPCG



# Day Ahead BPCG

## ■ Settlement Eligibility

As part of DAM BPCG Settlement...

- Generators are eligible for **Hr DAM Total Net Cost (\$)** if:
  - Generator bid into NYISO DAM Market
    - ISO Committed Flexible
    - ISO Committed Fixed
  - Generator has accepted DAM Bid

# Day Ahead BPCG - Total Net Cost (\$)

## ■ Settlement Determinants

- DAM Energy Price (\$/MWh)
- DAM Loss Price (\$/MWh)
- DAM Cong Price (\$/MWh)
- Hr DAM Gen Bid: Min Gen Cost (\$)
- Hr DAM Gen Bid: Min Gen (MWh)
- Hr DAM Gen Bid: Energy 1-11 (MWh)
- Hr DAM Gen Bid: Offer 1-11 (\$/MWh)
- Hr DAM Sched Gen (MWh)
- Hr DAM Gen Bid: Unit Op Desc



# Day Ahead BPCG - Total Net Cost (\$)

## ■ Settlement Determinants

- Hr DAM Reg Capacity Stlmnt (\$)
- Hr DAM Sched Reg Capacity (MWh)
- Hr DAM AS Bid: Reg Capacity Price (\$/MWh)
- 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)
- Hr VSS Stlmnt (\$)
- UCAP Provider Ind

# Day Ahead BPCG - Total Net Cost (\$)

## ■ Settlement Intermediates

- Hr DAM Energy Stlmnt: Gen (\$)
- Hr DAM Loss Stlmnt: Gen (\$)
- Hr DAM Cong Stlmnt: Gen (\$)
- Hr DAM Total Price – Gen (\$/MWh)
- Hr Total DAM Stlmnt: Gen (\$)
- Hr DAM Incremental Energy Cost (\$)
- Hr DAM Energy Cost (\$)
- Hr DAM Net Energy Cost (\$)
- Hr DAM NASR Reg Margin (\$)
- Hr DAM NASR OpRes Margin (\$)
- Hr DAM NASR VSS (\$)
- Hr DAM Net AS Rev (\$)

# Day Ahead BPCG - Total Net Cost (\$)

- **Settlement Results**
  - Hr DAM Total Net Cost (\$)
  - Day DAM Total Net Cost (\$)

```

graph TD
    TNC((Total Net Cost)) --- DER((DAM Enrgy Rev))
    TNC --- DEC((DAM Enrgy Cost))
    TNC --- ASNR((Anc Srv Net Rev))
    DER --- DR1((DAM Reg))
    DER --- DOR1((DAM Op Res))
    DEC --- DR2((DAM Reg))
    DEC --- DOR2((DAM Op Res))
    ASNR --- DOR3((DAM Op Res))
    ASNR --- VSS((VSS))

    DSC((DAM Start Up Cost)) --- SCUC((SCUC Start Up Cost))
    DSC --- SUM((Start Up Cost Multiplier))
    DBPGS[DAM BPCG Steps] --- DSC
  
```

**FOR TRAINING PURPOSES ONLY**

# Day Ahead BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm

### Where:

Hr DAM Energy Cost (\$) =

Hr DAM Gen Bid: Min Gen Cost (\$) + Hr DAM Incremental Energy Cost (\$)

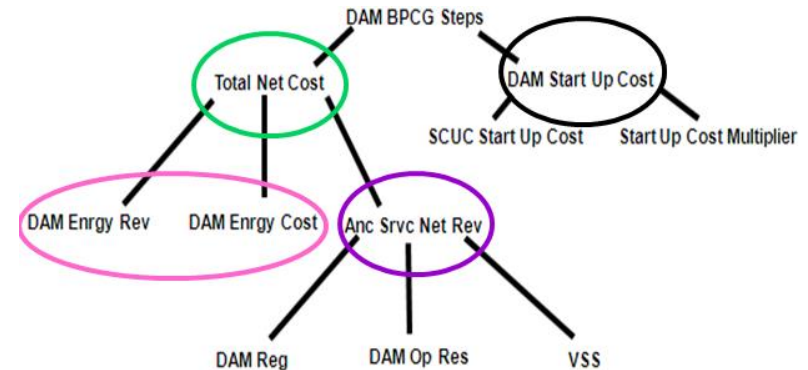
*Incremental Energy is  $\sum$  Gen Bid Curve \$ from Hr DAM Min Gen (MWh)  
to Hr DAM Sched Gen (MWh)*

**or**

*Incremental Energy = \$0 if Hr DAM Sched Gen (MWh) = Hr DAM Min Gen (MWh)*

# Day Ahead BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm



**Where:**

**Hr DAM Net AS Rev (\$) =**

Hr DAM NASR Reg Margin (\$) + Hr DAM NASR OpRes Margin (\$) + Hr DAM NASR VSS (\$)

Hr DAM NASR Reg Margin (\$) =

Hr DAM Reg Capacity Stlmnt (\$) – (Hr DAM Sched Reg Capacity (MWh) \*

Hr DAM AS Bid: Reg Capacity Price (\$/MWh))

Hr DAM NASR OpRes Margin (\$) =

{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 Price (\$/MWh)]}

# Day Ahead BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm

**Where:**

Hr DAM NASR VSS (\$) =  
Hr VSS Stlmnt (\$) *if*  
UCAP Provider Ind = N

**Else**

Hr DAM NASR VSS (\$) = 0

# Day Ahead BPCG

- Settlement Algorithm

**Day DAM BPCG Stlmnt (\$) =**

**Max {Day DAM Total Net Cost (\$) + Day DAM Start Up Cost (\$) , 0}**



# Day Ahead BPCG

## ■ Settlement Eligibility

As part of DAM BPCG Settlement...

- Generators are eligible for Hr DAM Start Up Cost: SCUC (\$) if:
  - Generator bid into NYISO DAM Market
    - ISO Committed Flexible
    - ISO Committed Fixed
  - Generator has accepted DAM Bid
- Generators are ineligible for Hr DAM Start Up Cost: SCUC (\$) if:
  - Start Up Cost Value = 0

# Day Ahead BPCG - Start Up Cost (\$)

## ■ Settlement Determinants

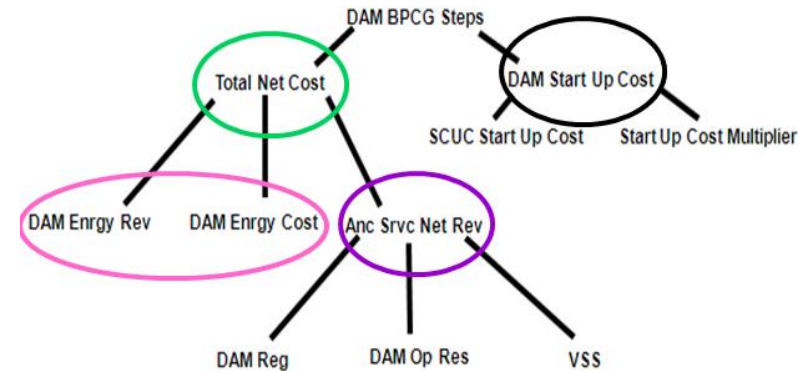
- Hr DAM Start Up Cost: SCUC (\$)
- Hr DAM Gen Credited Run Time for Start-Up (Hr)
- Hr DAM Gen Commitment Duration (Hr)
- Min Run Time Hours (Hr)

# Day Ahead BPCG - Start Up Cost (\$)

- **Settlement Intermediates**
  - Hr DAM Start Up Cost (\$)
  - Hr DAM Gen Start Up Cost Multiplier
  
- **Settlement Results**
  - Hr DAM Start Up Cost (\$)
  - Day DAM Start Up Cost (\$)

# Day Ahead BPCG - Start Up Cost (\$)

## ■ Settlement Algorithm



**Hr DAM Start Up Cost (\$) =**

Hr DAM Start Up Cost: SCUC (\$) \* Hr DAM Generator Start Up Cost Multiplier

**Where:**

Hr DAM Generator Start Up Cost Multiplier =

Hr DAM Gen Credited Run Time for Start-Up (Hr)

/ max (Hr DAM Gen Commitment Duration (Hr) , Min Run Time Hours (Hr) *if*

Generator is Running at Min Gen or higher **or**

Generator was brought down for Reliability by NYISO **or**

Generator was not running but had accepted real-time Non-Synch Schedule by NYISO

**Note: The Credited Run Time is performed at the RTD level and rolled up to the hour**

# DAM BPCG - Start Up Cost (\$) Hour Eligibility

## Scenario

## Eligible vs. Not Eligible

1. For a given hour...Gen is off-line & has accepted RT Non-Synch Sched

1. **Eligible** - Qualified Hour

2. For a given hour...Gen was brought off-line by NYISO

2. **Eligible** - Qualified Hour

3. For a given hour...Gen Adjusted Energy = 0

3. **Not Eligible** - Non Qualified Hour

4. For a given hour...Gen has tripped off-line

4. **Not Eligible** - Non Qualified Hour

# Day Ahead BPCG

## ■ Settlement Intermediates

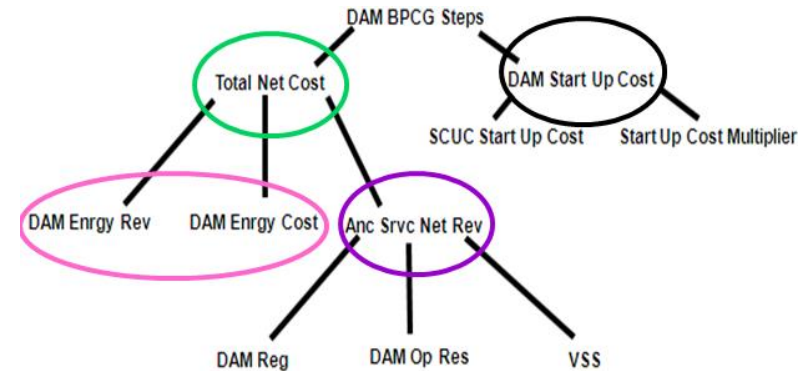
- Day DAM Total Net Cost (\$)
- Day DAM Start Up Cost (\$)

## ■ Settlement Results

- Day DAM BPCG Stlmnt (\$)

# Day Ahead BPCG

## ■ Settlement Algorithm



**Day DAM BPCG Stlmnt (\$) =**

Max {Day DAM Total Net Cost (\$) + Day DAM Start Up Cost (\$), 0}

**Where:**

Day DAM Total Net Cost (\$) =

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

Day DAM Start Up Cost (\$) =

$\sum \text{Hr DAM Start Up Cost } (\$), \text{ for all hours in a day}$

# DAM BPCG Exercise 1

- DAM BPCG Exercise = \$ ?
- $\text{Max}\{ ? + ?, 0\}$
- Where DAM Start Up Cost = \$300

HB      \$ Net Cost

HB 0 = -300

HB 1 = 150

HB 2 = 25

HB 3 = 75

HB 4 = -250

HB 5 = -130

Summed \$ Net Cost = -\$430

$\text{Max}\{-430 + 300, 0\}$

$\text{Max}\{-130, 0\}$

No DAM BPCG

\*\*\* Note\*\*\*

Negative \$ = Revenue to MP greater than Cost

Positive \$ = Revenue to MP less than Cost



# DAM BPCG Example

**DAM BPCG Example:**

**Max {Daily **DAM Total Net Cost** + Day DAM Start Up Cost, 0}**

**DAM Total Net Cost = 1) DAM Net Energy Cost – 2) DAM Net Ancillary Service Revenue**

**1) DAM Net Energy Cost = 1a) DAM Energy Cost – 1b) Total DAM Settlement**

\*\*\*DAM Energy Cost represents the cost for a supplier to supply to the NYISO their day ahead scheduled MW\*\*\*

\*\*\*Total DAM Settlement represents the money the revenue received in the DAM supplying energy to INYSO , made up of their DAM schedule and the DAM LBMP

**2) DAM Net AS Revenue = DAM Reg + DAM Reserves + VSS**

\*\*\*DAM Net AS Revenue represents the amount of money the supplier made by providing any DAM Regulation/DAM Reserves/VSS\*\*\*

# DAM BPCG Example

## DAM BPCG Example:

$\text{Max}\{\text{Daily DAM Total Net Cost} + \text{Day DAM Start Up Cost}, 0\}$

DAM Energy Cost = \$2,000

Total DAM Stlmnt = \$1,000

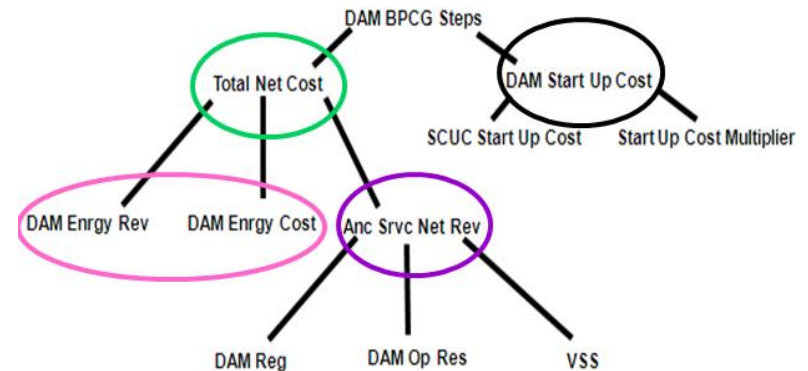
DAM Net AS Revenue = \$35

$(2000 - 1000) - 35 = \$965$

Day DAM Start Up Cost = \$1,000

$\text{Max}\{\$965 + \$1,000, 0\}$

\$1,965 represents the net loss the supplier experienced for one given hour of that operating day. After summing all hours of day, if supplier had an overall net loss for the whole day they receive the BPCG payment for the summed amount.



# Day Ahead BPCG

## ■ Summary

- Intended to guarantee internal Power Suppliers that a generator will not incur a net loss
  - Dependent on Supplier Eligibility:
    - Generator must Bid in DAM as ISO Committed
    - Generator must have Accepted DAM Schedule
    - Generators Adjusted Energy  $> 0$
    - DAM Costs must Exceed DAM Enrgy & Anc Stlmnts
- Net Loss Determined at Daily Level

# 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 \$
    - Day Ahead Startup \$
  - Hourly Bill Code 205
  - Hourly Bill Code 206
  - Daily Bill Code 302
- DSS Corporate Report
  - Settlement Details- Power Supplier-Day Ahead Market BPCG

# Supplemental Supplier Payments

- **Objectives Per Settlement Name:**
  - Day Ahead Bid Production Cost Guarantee
  - **Economic Operating Point (EOP)**
  - Real Time Bid Production Cost Guarantee
  - LRR I-R3 & I-R5 Restoration Payment
  - Day Ahead Margin Assurance

# Supplemental Supplier Payments

- **Determination of a Supplier's Economic Operating Point (EOP) Description**
  - EOP is the point at which the RT LBMP intersects with the Supplier's bid cost curve.
  - EOP is required in the calculation of RT BPCG, DAMAP, VSS LOC Settlements.

# Economic Operating Point

## ■ Settlement Eligibility

- Determination of a Supplier's EOP:
  - Can be performed for all NYISO Generators
  - Typically only used to determine a Generator's RT BPCG, DAMAP, or VSS LOC Settlements



# Economic Operating Point

## ■ Settlement Determinants

- Hr RT Gen Bid: Offer  $n$  (MWh)
- Hr RT Gen Bid: Price  $n$  (\$/MWh)
- RTD RT Total Price: Gen (\$/MWh)
- RTD Basepoint (MW)

# Economic Operating Point

- **Settlement Intermediates**

- N/A

- **Settlement Results**

- RTD EOP: Gen (MW)

# Economic Operating Point

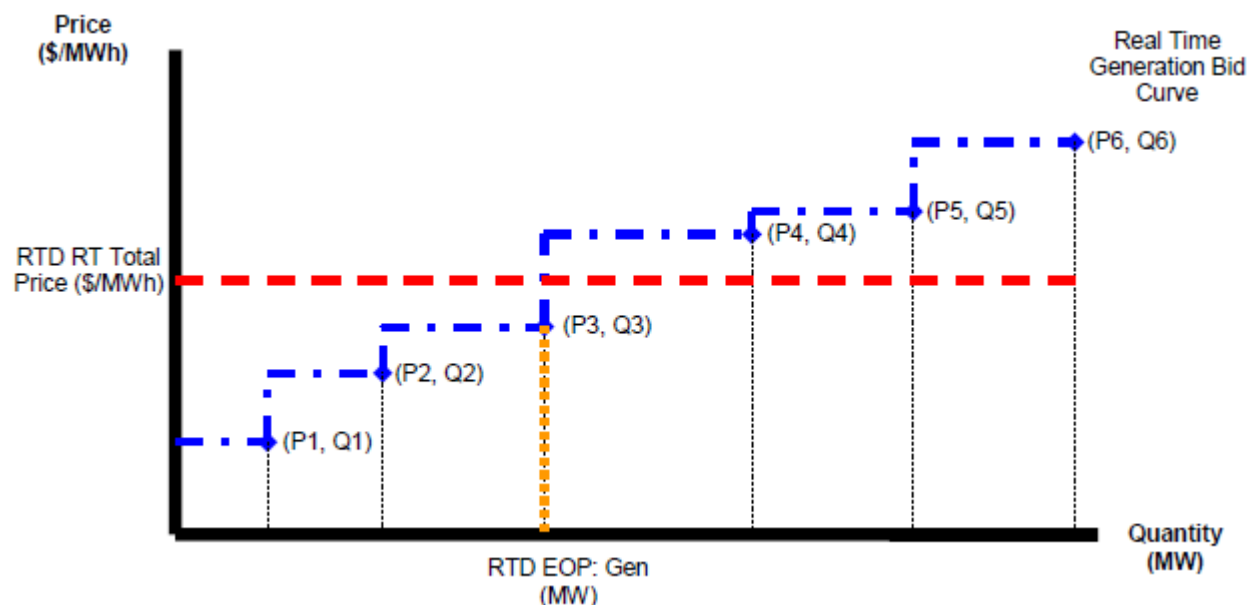
## ■ Settlement Algorithm

RTD EOP: Gen (MW) is calculated as follows:

The Generation Bid block that RTD RT Total Price: Gen (\$/MWh) intersects first must be identified by determining the lowest priced block point where Hr Gen Bid: Price (\$/MWh) is greater than or equal to the RTD RT Total Price: Gen (\$/MWh) (noted below as block "n").

If  $\text{RTD RT Total Price: Gen } (\$/\text{MWh}) < \text{Hr Gen Bid: Price } n (\$/\text{MWh})$

RTD EOP: Gen (MW) = Hr Gen Bid: Gen n-1 (MW)

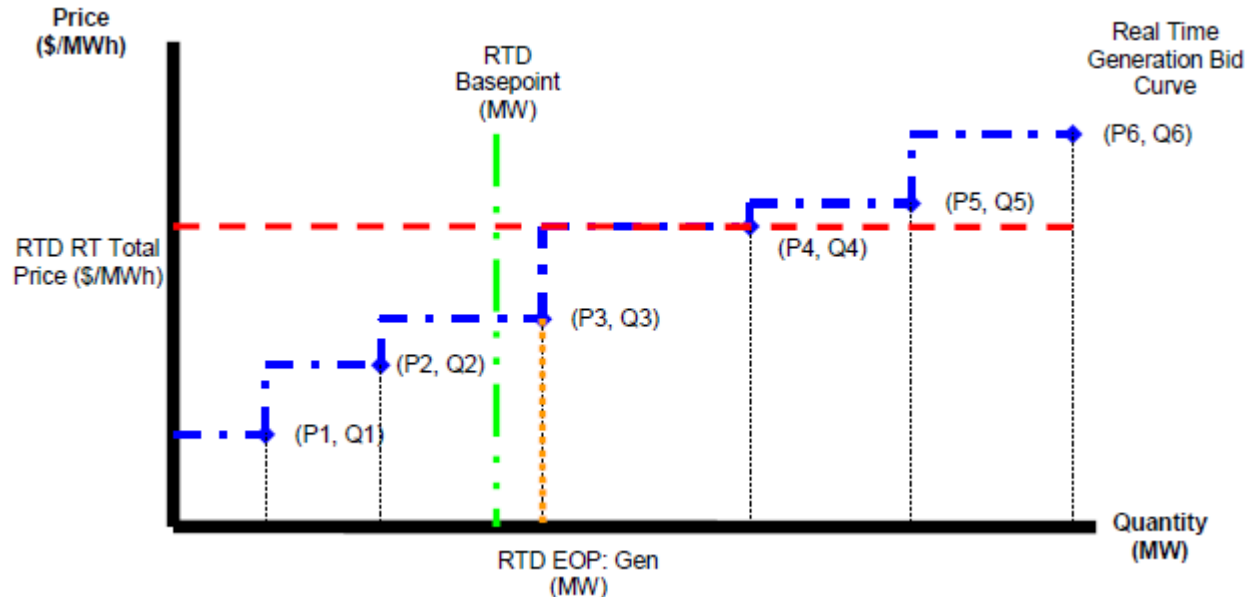


# Economic Operating Point

## ■ Settlement Algorithm

Else if RTD Basepoint (MW) < Hr Gen Bid: Gen n-1 (MW)

RTD EOP: Gen (MW) = Hr Gen Bid: Gen n-1 (MW)



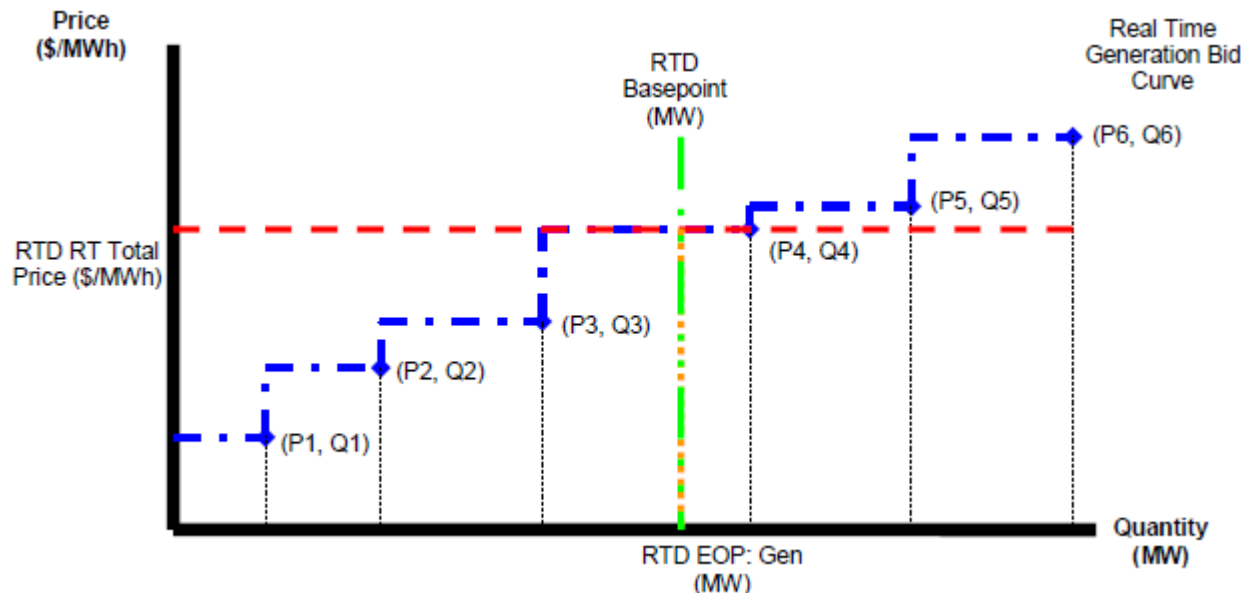
# Economic Operating Point

## ■ Settlement Algorithm

Else if RTD RT Total Price: Gen (\$/MWh) = Hr Gen Bid: Price n (\$/MWh)

If Hr Gen Bid: Gen n-1 (MW) < RTD Basepoint (MW) < Hr Gen Bid: Gen n (MW)

RTD EOP: Gen (MW) = RTD Basepoint (MW)

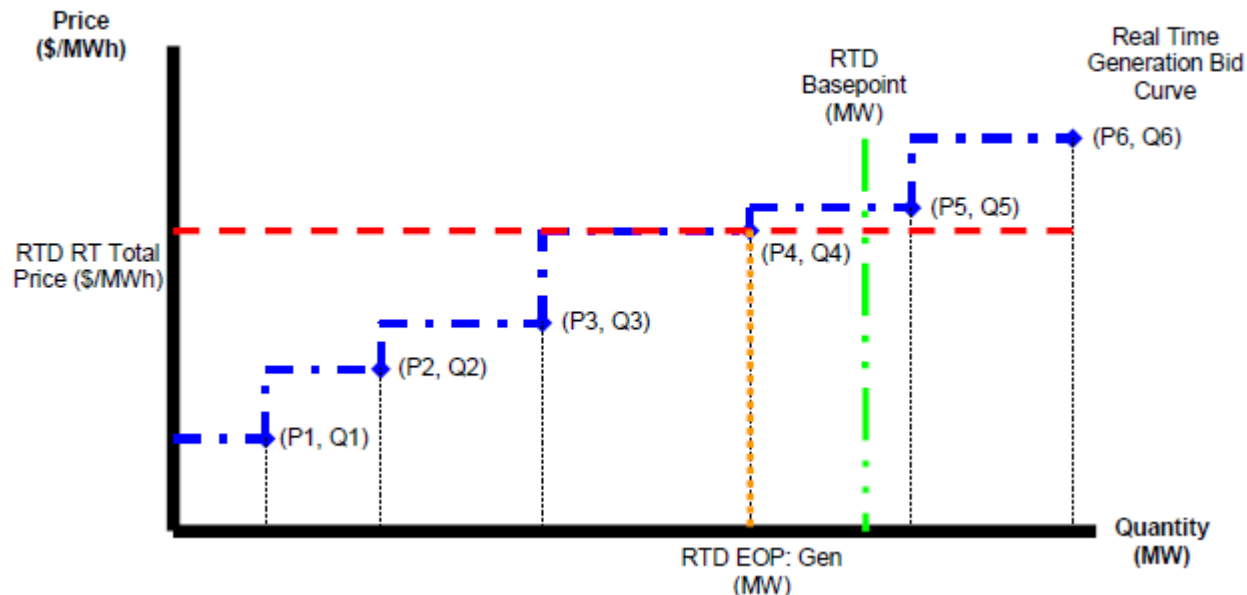


# Economic Operating Point

## ■ Settlement Algorithm

Else if  $\text{RTD Basepoint (MW)} > \text{Hr Gen Bid: Gen } n \text{ (MW)}$

*RTD EOP: Gen (MW) = Hr Gen Bid: Gen n (MW)*



# Economic Operating Point

## ■ Summary

- Determination of Supplier's Economic Operating Point
  - EOP is the point at which the RT LBMP intersects with the Supplier's bid cost curve.
  - EOP is required in the calculation of RT BPCG, DAMAP, VSS LOC Settlements.

# Economic Operating Point

## ■ Settlement Reference Material

- MST
  - Section 2.46e
  - Rate Schedule 2
  - Attachments C & J
- Accounting and Billing Manual Section 4
  - Appendix F
- DSS Corporate Report
  - Settlement Details- Power Supplier-
    - DAM Margin Assurance
    - RT BPCG
    - Supplemental Events
    - Voltage Support Service LOC



# Supplemental Supplier Payments

- **Objectives Per Settlement Name:**
  - Day Ahead Bid Production Cost Guarantee
  - Economic Operating Point (EOP)
  - **Real Time Bid Production Cost Guarantee**
  - LRR I-R3 & I-R5 Restoration Payment
  - Day Ahead Margin Assurance

# Supplemental Supplier Payments

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

- Intended to guarantee internal Power Suppliers that a generator will not incur a net loss, if committed above that committed in DAM.
  - Based on:
    - Start up Cost
    - Net Energy & Ancillary Service Revenues
  - Net Loss Determined at the Daily Level

# RT BPCG

## ■ Settlement Eligibility

- Generators are eligible for RT BPCG Settlement (\$) if:
  - Generator is Scheduled for SRE in the hour containing the RTD interval

Or...

# RT BPCG

## ■ Settlement Eligibility

- Generators are eligible for RT BPCG Settlement (\$) if:
  - Generator is OOM for the following reasons:
    - ISO Reliability
    - TO Reliability
    - Reserves
    - Energy Limited Resources
    - ISO Voltage Support
    - TO Voltage Support
    - ISO Communications Failure
    - TO Communications Failure
    - NYISO Generator Audit

Or...

# RT BPCG

## ■ Settlement Eligibility

- Generators are eligible for RT BPCG Settlement (\$) if:
  - Economic Commitment
    - Generator's RT bid not rejected & bid is ISO Committed Fixed
    - Generator's RT bid is not rejected & bid is ISO Committed Flexible
    - Generator's RT bid is not rejected & bid is Self Committed Flexible
      - » RT Self Committed MW  $\leq$  DAM Scheduled Generation

# RT BPCG

## ■ Settlement Ineligibility

- Generators are ineligible for RT BPCG Settlement (\$) if:
  - Interval is during Large Event Reserve or Max Gen Pick Up (plus three following RTD intervals)
    - Although a Special Event BPCG may be payable for these intervals
  - Interval is during OOM for Testing or SU/SD

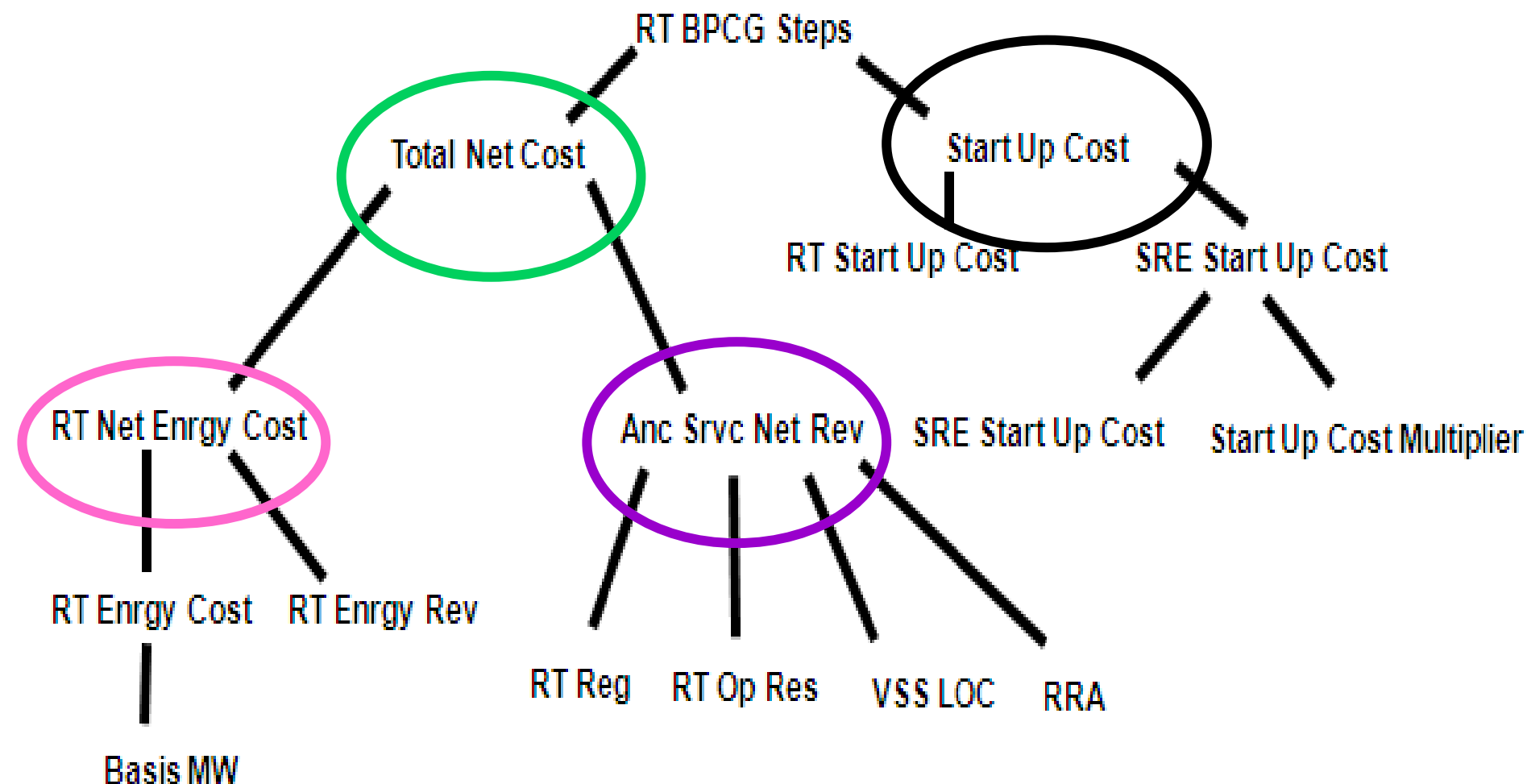
# RT BPCG

- Settlement Algorithm

**Day RT BPCG Stlmnt (\$) =**

**Max {Day RT Total Net Cost (\$) + Day RT Start Up Cost (\$) , 0}**

# RT BPCG





# RT BPCG -

## Total Net Cost (\$)

### ■ Settlement Determinants

- RTD RT Energy Price: Gen (\$/MWh)
- RTD RT Loss Price: Gen (\$/MWh)
- RTD RT Cong Price: Gen (\$/MWh)
- Hr RT Gen Bid: Min Gen Cost (\$/Hr)
- Hr RT Gen Bid: Min Gen (MW)
- Hr RT Gen Bid: Energy 1-11 (MWh)
- Hr RT Gen Bid: Offer 1-11 (\$/MWh)
- Hr DAM Sched Gen (MW)
- Hr RT Gen Bid: Unit Op Desc

# RT BPCG -

## Total Net Cost (\$)

### ■ Settlement Determinants

- RTD Avg Energy Limit (MW)
- RTD AGC Base Point (MW)
- RTD Gen Adjusted Energy (MW)
- RTD Base Point (MW)
- Hr Gen Meter Energy (MWh)
- Hr Gen Avg Actual Energy (MWh)
- RTD EOP: GEN (MW)
- Hr Out of Merit Type Desc
- RTD Interval Seconds

# RT BPCG -

## Total Net Cost (\$)

### ■ Settlement Determinants

- RTD RT Reg Movement (MW)
- RTD RT Sched Reg Capacity (MW)
- Hr DAM Sched Reg Capacity (MW)
- 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)

# RT BPCG -

## Total Net Cost (\$)

### ■ Settlement Determinants

- RTD RT Reg Capacity Price (\$/MWh)
- Hr RT AS Bid: Reg Capacity Price (\$/MWh)
- RTD RT Reg Movement Price (\$/MWh)
- Eff Hr RT AS Bid: Reg Movement Price (\$/MWh)
- RTD RT 10Spin Price (\$/MWh)
- RTD RT 30Min Price (\$/MWh)
- RTD RRA: Gen (\$)
- RTD VSS LOC Stlmnt (\$)

# RT BPCG -

## Total Net Cost (\$)

### ■ Settlement Intermediates

- RTD Gen RT BPCG Basis (MW)
- RTD RT Incremental Energy Cost (\$/Hr)
- RTD RT Total Price: Gen (\$/MWh)
- RTD Total BalMkt Energy Rev (\$)
- RTD RT Energy Cost (\$)
- RTD RT Net Energy Cost (\$)

# RT BPCG -

## Total Net Cost (\$)

### ■ Settlement Intermediates

- RTD BalMkt Reg Capacity Net Revenue (\$)
- RTD BalMkt Reg Movement Net Revenue (\$)
- RTD BalMkt 10Synch Avail Stlmnt (\$)
- RTD BalMkt 30Spin Avail Stlmnt (\$)
- RTD RT Net AS Revenue (\$)

# RT BPCG - Total Net Cost (\$)

- **Settlement Results**
  - RTD RT Total Net Cost (\$)
  - Hr RT Total Net Cost (\$)
  - Day RT Total Net Cost (\$)

# RT BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm

**RTD RT Total Net Cost (\$) =**

RTD RT Net Energy Cost (\$) - RTD RT Net AS Rev (\$)

**Where:**

RTD RT Net Energy Cost (\$) =

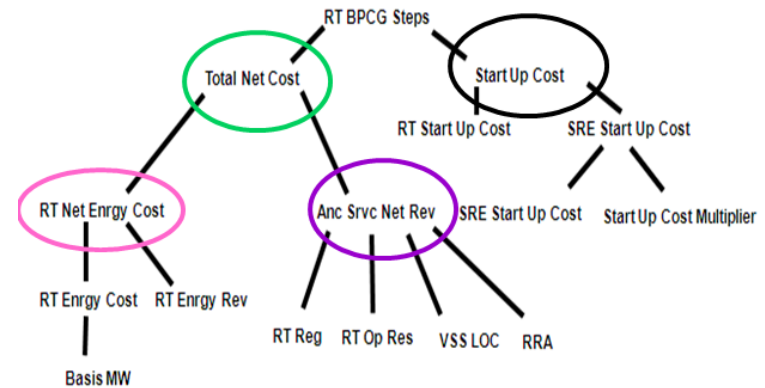
RTD RT Energy Cost (\$) - RTD Total BalMkt Energy Rev (\$)

RTD Total BalMkt Energy Rev (\$) =

$\{[RTD \text{ Gen RT BPCG Basis (MW)} - \text{Hr DAM Sched Gen (MW)}] * RTD \text{ RT Total Price: Gen (\$/MWh)}\} * RTD \text{ Interval Seconds} / 3600 \text{ seconds}$

RTD RT Total : Gen Price (\\$/MWh) =

RTD RT Energy Price: Gen (\\$/MWh) + RTD RT Loss Price: Gen (\\$/MWh) - RTD RT Cong Price: Gen (\\$/MWh)





# RT BPCG -

## Total Net Cost (\$)

### ■ Settlement Algorithm

**Where:**

Scenario 1

RTD RT Energy Cost (\$) =

\$0 *if*

$\text{Min (Gen Adj Energy (MW), RTD Base Point (MW))} \leq (\text{DAM Sched Gen (MW)})$

# RT BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm

**Where:**

Scenario 2

RTD RT Energy Cost (\$) =

$\{(\text{Hr RT Gen Bid: Min Gen Cost (\$/Hr)} + \text{RTD RT Incremental Energy Cost (\$/Hr)}) * \text{RTD Interval Seconds} / 3600\}$  *if*

Gen is Scheduled in RT & DAM Sched = 0

*Incremental Energy is  $\sum$  RT Gen Bid Curve \$ from Min Gen (MW) to RTD Gen RT BPCG Basis MW*

# RT BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm

Where:

*Scenario 3*

RTD RT Energy Cost (\$) =

RTD RT Incremental Energy Cost (\$/Hr) \* RTD Interval Seconds / 3600 seconds **if**  
Gen is Scheduled in RT & DAM **and**

Hr DAM Sched Gen (MW)  $\geq$  Hr RT Gen Bid: Min Gen (MW)

*RT Incremental Energy is  $\sum$  Gen Bid Curve \$ from DAM Sched Gen  
to RTD Gen RT BPCG Basis MW*

# RT BPCG -

## RTD Gen RT BPCG Basis (MW)

- Settlement Algorithm

**Where:**

*Scenario 1*

RTD Gen RT BPCG Basis (MW) =  
RTD Gen Adjusted Energy (MW) *if*  
Generator is Considered OOM for Reliability

# RT BPCG -

## RTD Gen RT BPCG Basis (MW)

- Settlement Algorithm

**Where:**

*Scenario 2*

**If** EOP > Min {RTD Gen Adj Energy (MW), RTD Avg Energy Limit (MW)},

RTD Gen RT BPCG Basis (MW) =  
Min [Max {Min(RTD Gen Adjusted Energy (MW), RTD Avg Energy Limit (MW)),  
RTD Base Point (MW)}, RTD EOP: Gen (MW)]

# RT BPCG -

## RTD Gen RT BPCG Basis (MW)

### ■ Settlement Algorithm

**Where:**

*Scenario 3*

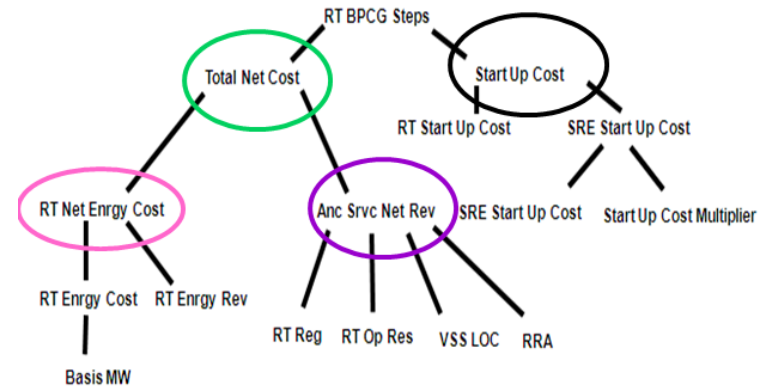
**If**  $EOP \leq \text{Min} \{ \text{RTD Gen Adj Energy (MW)}, \text{RTD Avg Energy Limit (MW)} \},$

RTD Gen RT BPCG Basis (MW) =

Max [Min {Min(RTD Gen Adjusted Energy (MW), RTD Avg Energy Limit (MW)),  
RTD Base Point (MW)}, RTD EOP: Gen (MW)]

# RT BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm



**Where:**

**RTD RT Net AS Rev (\$) =**

RTD NASR Reg (\$) + RTD BalMkt 10Synch Avail Stlmnt (\$) + RTD BalMkt 30Spin Avail Stlmnt (\$) + RTD VSS LOC Stlmnt (\$) + RTD RRA: Gen (\$)

RTD NASR Reg (\$) =

RTD BalMkt Reg Capacity Net Rev (\$) + RTD BalMkt Reg Movement Net Rev (\$)

RTD BalMkt Reg Capacity Net Rev (\$) =

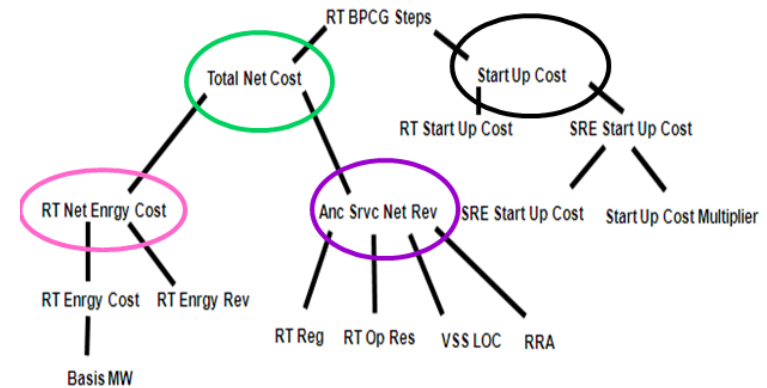
{(RTD RT Sched Reg Capacity (MW) - Hr DAM Sched Reg Capacity (MW)) \* (RTD RT Reg Capacity Price (\$/MWh) - Hr RT AS Bid: Reg Capacity Price (\$/MWh)) \* RTD Interval seconds / 3600

RTD BalMkt Reg Movement Net Rev (\$) =

{RTD RT Reg Movement (MW) \* (RTD RT Reg Movement Price (\$/MW) – Eff Hr RT AS Bid: Reg Movement Price (\$/MW))}

# RT BPCG - Total Net Cost (\$)

## ■ Settlement Algorithm



Where:

**RTD RT Net AS Rev (\$) =**

RTD NASR Reg (\$) + RTD BalMkt 10Synch Avail Stlmnt (\$) + RTD BalMkt 30Spin Avail Stlmnt (\$) + RTD VSS LOC Stlmnt (\$) + RTD RRA: Gen (\$)

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

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



# RT BPCG

- Settlement Algorithm

**Day RT BPCG Stlmnt (\$) =**

**Max {Day RT Total Net Cost (\$) + Day RT Start Up Cost (\$) , 0}**

# RT BPCG

## ■ Settlement Eligibility

As part of RT BPCG Settlement...

- Generators eligible for Hr RT Start Up Cost (\$) if:
  - Eligible for BPCG - due to OOM or Economic Commitment
  - DAM Start Up in Hour = 0
    - Unless GT (Eligible for 2 Start Ups in Hour)
  - RT Commitment not Contiguous with SRE Commitment

# RT BPCG

## ■ Settlement Eligibility

As part of RT BPCG Settlement...

- Generators eligible for Hr SRE Start Up Cost (\$) if:
  - Eligible for SRE Commitment
  - SRE Commitment not Contiguous with DAM Commitment

# RT BPCG - Start Up Cost (\$)

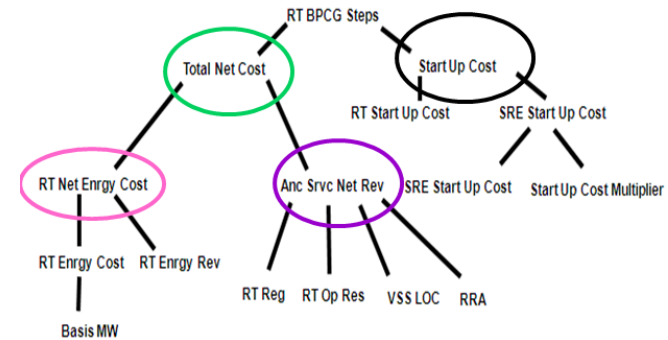
- **Settlement Determinants**
  - RTD RT Sched Start Up Cost (\$)
  - RTD SRE Sched Start Up Cost (\$)

# RT BPCG - Start Up Cost (\$)

- **Settlement Intermediates**
  - N/A
  
- **Settlement Results**
  - Hr RT Start Up Cost (\$)
  - Day RT Start Up Cost (\$)

# RT BPCG - Start Up Cost (\$)

## ■ Settlement Algorithm



**Day RT Start Up Cost (\$) =**

$\sum (\text{Hr RT Start Up Cost } (\$) + (\text{Hr SRE Start Up Cost } (\$))), \text{ for all hours in a given day}$

**Where:**

Hr RT Start Up Cost (\$) =

RTD RT Sched Start Up Cost (\$) **for**

First MIS RTD Schedule > 0 Base Points

**Note** - If RT interval is last interval in given hour, then associated to next hour

Hr SRE Start Up Cost (\$) =

RTD SRE Sched Start Up Cost (\$) **for**

First MIS RTD Schedule of First SRE Hour

*Note : SRE Start Up Cost is prorated in exactly the same way as a DAM Start Up*

# RT BPCG - Start Up Cost (\$) Eligibility

<u>Scenario</u>	<u>Eligible vs. Not Eligible</u>
1. Generator Committed OOM for TO Reliability	1. ?
2. Generator RT Bid is ISO Committed Flexible & is Not Rejected	2. ?
3. Generator is Committed OOM for Testing	3. ?
4. Generator Committed in RT w/ No DAM Start Up	4. ?

# RT BPCG - Start Up Cost (\$) Eligibility

## Scenario

## Eligible vs. Not Eligible

1. Generator Committed OOM for TO Reliability
2. Generator RT Bid is ISO Committed Flexible & is Not Rejected
3. Generator is Committed OOM for Testing
4. Generator Committed in RT w/ No DAM Start Up

1. Eligible
2. Eligible
3. Not Eligible
4. Eligible



# RT BPCG

## ■ Settlement Intermediates

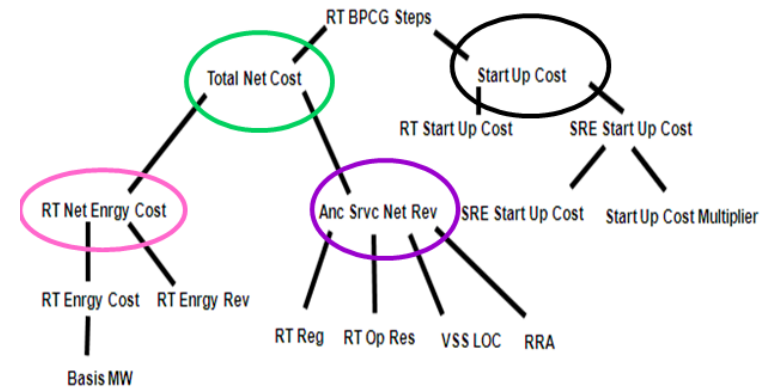
- Day RT Total Net Cost (\$)
- Day RT Start Up Cost (\$)

## ■ Settlement Results

- Day RT BPCG Stlmnt (\$)

# RT BPCG

## ■ Settlement Algorithm



**Day RT BPCG Stlmnt (\$) =**

Max {Day RT Total Net Cost (\$) + Day RT Start Up Cost (\$), 0}

**Where:**

Day RT Total Net Cost (\$) =

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

Day RT Start Up Cost (\$) =

$\sum \text{Hr RT Start Up Cost } (\$), \text{ for all hours in a day}$

# RT BPCG Example

- RT BPCG Exercise = \$ ?
- $\text{Max}\{? + ?, 0\}$
- Where Hr RT Start Up Cost = \$500

<u>HB 4 interval</u>	<u>\$ RTD Net Cost</u>	<u>HB 5 interval</u>	<u>\$ Value</u>
HB 04:35 = -50		HB 05:00 = 25	Summed \$ Value = \$150
HB 04:40 = 20		HB 05:05 = -20	
HB 04:45 = 30		HB 05:10 = -25	Max{ 150+ 500, 0}
HB 04:50 = 35		HB 05:15 = 30	
HB 04:55 = 30		HB 05:20 = 40	Max{ 650, 0}
		HB 05:25 = 45	Yes RT BPCG
		HB 05:30 = -10	

**\*\*\* Note\*\*\***

Negative \$ = Revenue greater than cost for MP

Positive \$ = Revenue less than cost for MP

# RT BPCG Example

**RT BPCG Example B (assume no initial DAM or RT schedule):**

**Max {Daily **RT Total Net Cost** + Day RT Start Up Cost, 0}**

**RT Total Net Cost = 1) RT Net Energy Cost – 2) RT Net Ancillary Service Revenue**

**1) RT Net Energy Cost = 1a) RT Energy Cost – 1b) Total BalMkt Energy Revenue**

\*\*\*RT Energy Cost is dependent on one of 3 possible scenarios; Gens output is below DAM Sched by NYISO direction, or Gen had no schedule for DAM or RT, or Gens DAM Schedule > or = their Minimum Generation MW\*\*\*

\*\*\*Total BalMkt Energy Revenue is based on (RT Basis Mw – DAM Sched MW) \* RT LBMP, essentially it covers only the revenue earned through RT output and does not double count what was already paid for in day ahead market\*\*\*

**2) RT Net AS Revenue = RT Reg + RT Reserves + RRA + RT VSS LOC**

\*\*\*RT Net AS Revenue represents the amount of money the supplier made by providing any RT Regulation/RT Reserves/RRA/RT VSS LOC\*\*\*

# RT BPCG Example

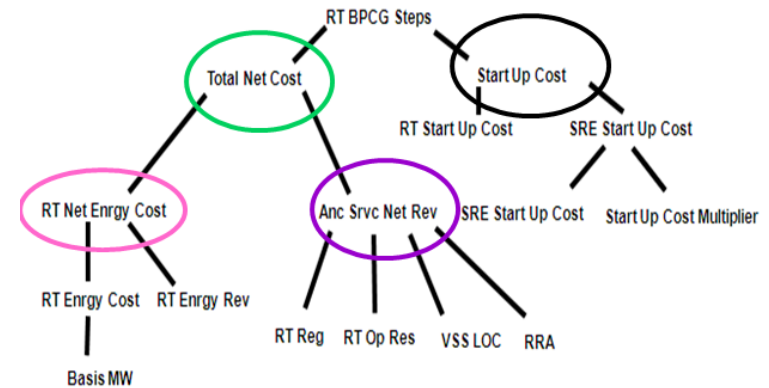
RT Energy Cost = \$6  
 0 to Min Gen = \$2.5  
 Min Gen to RT Basis MW = \$3.5  
 Total BalMkt Energy Revenue = \$3  
 RT Net AS Revenue = \$1

$$[(2.5 + 3.5) - 3] - 1 = \$2$$

Hr RT Start Up Cost = \$20

$$\text{Max}\{\$2 + \$20, 0\}$$

\$22 represents the net loss ( + = loss to supplier and = revenue to supplier) the supplier experienced for one given RTD interval of that operating day. After summing all intervals across all hours of the day, if supplier had an overall net loss for the whole day they receive the BPCG payment for the summed amount.



# RT BPCG Example 2

## ■ Settlement Algorithm

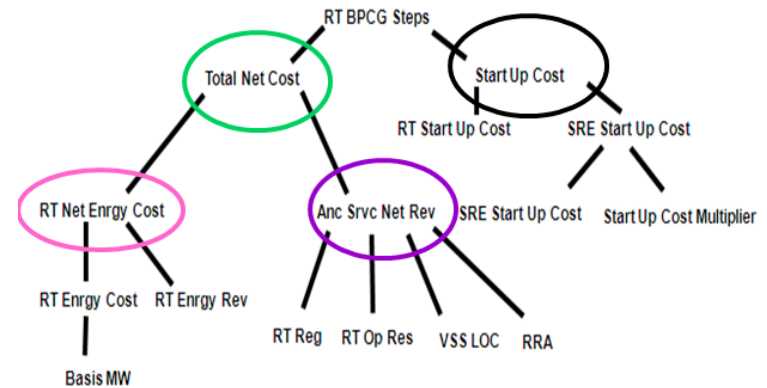
RT BPCG Stlmnt (\$) = **\$243.52**

Max {**-\$256.48** + **\$500**, 0}

Where:

RT Total Net Cost (\$) = **-\$256.48**

RT Start Up Cost (\$) = **\$500**



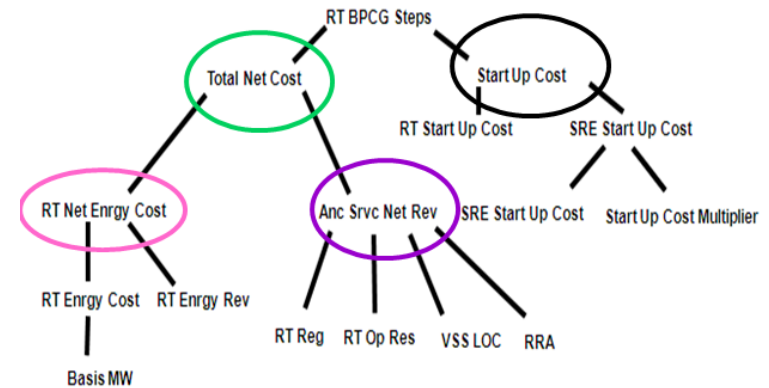
**\*\*\*Note for Training Purposes\*\*\***

***Example 2 looks at only one interval in one hour of an operating day***

# RT BPCG Example 2

## ■ RT Net Energy Cost

- -\$120.83

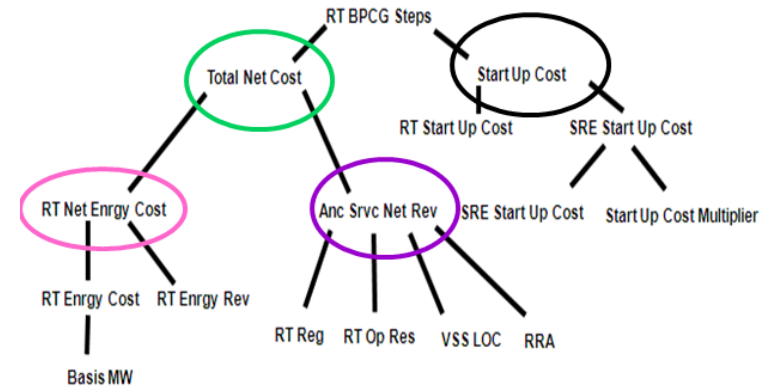


	RT Energy Cost (\$)		BalMkt Energy Revenue (\$)
Min Gen Cost @ 100 MW	\$1000	BPCG Basis MW	170
Gen Bid Curve (Basis MW-Min Gen MW)	MW: 10 30 50 70 : \$5 10 15 20	DAM Schedule	0
Incram Energy Cost	\$950	RT LBMP	\$20
Interval Seconds	300	Interval Seconds	300
Answer =	\$162.50	Answer =	\$283.33

# RT BPCG Example 2

## ■ RT NASR

- \$135.65



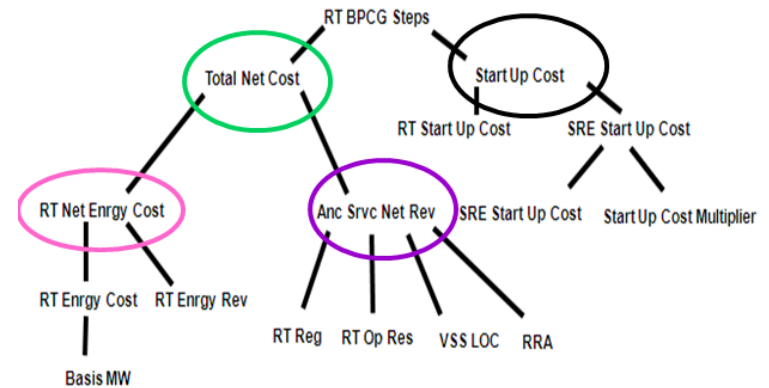
	RT Reg Capacity Rev (\$)	RT Reg Movement Rev (\$)	RT 10Min Avail Reserve Rev (\$)	RT 30Min Avail Reserve Rev (\$)	RT VSS LOC (\$)	RT RRA (\$)	
08:00:00	\$130	\$7.65	\$0	\$0	\$0	-\$2	
Total =							\$135.65



# RT BPCG Example 2

## ■ Day RT Start Up Cost

- \$500



	Hr RT Start Up Cost (\$)	Hr SRE Start Up Cost (\$)	
HB 08	\$0	\$500	
Total =			\$500

# RT BPCG

## *Supplemental Event Credit*

# RT BPCG

## *Supplemental Event Credit*

### ■ Settlement Eligibility

- Generators are eligible for Supplemental Event Credit Settlement (\$) if:
  - Generators RT Eligible Total Costs exceed Its Revenue
    - During Large Event Reserve or Max Gen Pick Up (**plus three following RTD intervals**)

# RT BPCG

## *Supplemental Event Credit*

### ■ Supplemental Event Eligibility

- Total Costs Include
  - » Energy
  - » Ancillary Services
- Revenue Includes
  - » Balancing Energy
  - » Spinning Reserve
  - » 30 Minute Spinning Reserve
  - » Regulation
  - » VSS LOC

# RT BPCG

## *Supplemental Event Credit*

### ■ Settlement Algorithm

- RTD RT Sup Event Credit (\$) =
  - RTD RT Total Net Cost (\$)

Where:

RTD RT Total Net Cost (\$) =

Max {RTD RT Net Energy Cost (\$) - RTD RT Net AS Rev (\$), 0}

\*\*\*Hourly Bill Code 253

\*\*\*Daily Bill Code 317

# RT BPCG

## ■ Summary

- Intended to guarantee internal Power Suppliers that a generator will not incur a net loss, if committed above that committed in DAM Dependent on Supplier Eligibility:
  - Generator Committed in RT for Reliability (OOM)
  - Generator Committed in RT for Economics
  - Generator Committed as a result of SRE
- Net Loss Determined at Daily Level

# RT BPCG

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

# RT BPCG

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



# Supplemental Supplier Payments

- **Objectives Per Settlement Name:**
  - Day Ahead Bid Production Cost Guarantee
  - Economic Operating Point (EOP)
  - Real Time Bid Production Cost Guarantee
  - **LRR I-R3 & I-R5 Restoration Payment**
  - Day Ahead Margin Assurance

# Supplemental Supplier Payments

- **Local Reliability Rules I-R3 & I-R5: Margin Restoration (MOB) Payment Description**
  - Intended to recover costs for units responding to local reliability rule I-R3 or I-R5, regarding the loss of generator gas supply.
  - Under this rule, units are subsequently required to burn alternate fuel at designated minimum levels; based on forecast load levels in Load Zones J or K.

# LRR I-R3 & I-R5 Restoration

## ■ Settlement Eligibility

- Generators are eligible for Margin Restoration (MOB) Payment Settlement (\$) if:
  - Generator is registered with NYISO for cost recovery
    - As described in NYISO procedures
  - LRR I-R3 or I-R5 is invoked
    - Known as Eligibility Period

# LRR I-R3 & I-R5 Restoration

## ■ Settlement Determinants (Key)

- Interval Start Day (Eastern)
- Gen Start Time
- Gen End Time
- Gen MOB Duration Time
- Actual Generated Energy (MWh)
- Gen Fuel Consumption
- Actual Cost (\$)
- Avoided Cost (\$)

# LRR I-R3 & I-R5 Restoration

- **Settlement Intermediates**
  - Margin Restoration MOB Credit (\$)
  
- **Settlement Results**
  - Day Marg Restor MOB Stlmnt (\$)

# LRR I-R3 & I-R5 Restoration

## ■ Settlement Algorithm

**Day Marg Restor MOB Stlmnt (\$)** =  
 $\text{Max}\{ (\text{Actual Cost \$} - \text{Avoided Cost \$}), 0 \}$

\*\*\*Note\*\*\*

*Variable operating costs will include commodity cost, associated taxes, & emission allowance costs of the required alternate fuel burned during eligibility period*

# LRR I-R3 & I-R5 Restoration

## ■ Summary

- A payment to suppliers, to recover costs for responding to local reliability rule I-R3 or I-R5, regarding the loss of generator gas supply.

# LRR I-R3 & I-R5 Restoration

- **Settlement Reference Material**
  - OATT Rate Schedule 1
  - Accounting and Billing Manual
    - Section 4.1.8
  - Advisory Billing File
    - Power Supplier
      - Margin Restoration (MOB) Payment \$
  - Daily Bill Code 328



# Supplemental Supplier Payments

- **Objectives Per Settlement Name:**
  - Day Ahead Bid Production Cost Guarantee
  - Economic Operating Point (EOP)
  - Real Time Bid Production Cost Guarantee
  - LRR I-R3 & I-R5 Restoration Payment
  - **Day Ahead Margin Assurance**

# Supplemental Supplier Payments

## ■ Day-Ahead Margin Assurance Payment (DAMAP)

### Description

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

# Day Ahead Margin Assurance

## ■ Settlement Eligibility

- Generators are Eligible for RTD DAM Margin Assurance (\$) & RTD DAM Margin LRR (\$) if:
  - Generator is Scheduled OOM by NYISO
    - Committed for ISO Reliability
    - OOM for TO Reliability
    - Committed for Reserves
    - OOM for Local Reliability (in the case of DAMAP LRR)

Or...

- Generator is Online & Dispatched by RTD or Available to RTC
  - ISO Committed Flexible **or...**
  - Self Committed Flexible

**\*\*\*Excluding Wind Units\*\*\***

# Day Ahead Margin Assurance

## ■ Settlement Eligibility

- Generators are Ineligible for RTD DAM Margin Assurance (\$) & RTD DAM Margin Assurance LRR (\$) if:
  - Generator's DAM Schedule was not Accepted  
Or...
  - Generator's RTD Gen Adjusted Energy (MW)  $\leq$  RTD PLU  
Or...
  - Generator's Bid Increased Bid in Real Time  
Or...
  - Generator's Self Committed MW  $>$  DAM Energy Schedule

# Day Ahead Margin Assurance

- Hr DAM MargAsrc Stlmnt (\$) =
- $\text{Max}(0, \sum \text{RTD DAM MargAsrc: Total } \$)$

- For all RTD intervals in given hour
- Where

$$\begin{aligned} \text{RTD DAM MargAsrc :Total } \$ = & \\ & (\text{RTD DAM MargAsrc Energy } (\$/\text{Hr}) + \\ & \text{RTD DAM MargAsrc Regulation } (\$/\text{Hr}) + \\ & \text{RTD DAM MargAsrc Reserves } (\$/\text{Hr})) * \\ & \text{RTD Interval Secs} / 3600 \end{aligned}$$

# Day Ahead Margin Assurance

## ■ Settlement Intermediates

- RTD DAM MargAsrc: Reg (\$)
- RTD DAM MargAsrc: Spin Res (\$)
- RTD DAM MargAsrc: 10NSync Res(\$)
- RTD DAM MargAsrc: 30Min Res (\$)
- RTD DAM MargAsrc: Total (\$)
- RTD DAM MargAsrc LRR: Total (\$)

## ■ Settlement Results

- Hr DAM MargAsrc Stlmnt (\$)
- Hr DAM MargAsrc LRR 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)

**Hr DAM MargAsrc LRR Stlmnt (\$)** =

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

**Where:**

RTD DAM MargAsrc: Total (\$) & RTD DAM MargAsrc LRR: Total (\$) =

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

# Day Ahead Margin Assurance

## Energy \$ Component

### ■ Settlement Determinants

- Hr RT Gen Bid: Unit Op Desc
- RTD PLU (MW)
- RTD EOP: Gen (MW)
- Hr DAM Sched Gen (MW)
- RTD Base Point (MW)
- RTD Gen Upper Op Limit (MW)
- RTD Gen Adjusted Energy (MW)
- RTD Interval Seconds



# Day Ahead Margin Assurance

## Energy \$ Component

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

# Day Ahead Margin Assurance

## Energy \$ Component

### ■ Settlement Intermediates

- RTD RT Total Price: Gen (\$/MWh)
  - RTD DAM MargAsrc Bid Cost (\$)
  - RTD DAM Total Reduction (MW)
  - RTD DAM Sched Gen Pot Reduct (MW)
  - RTD DAM Total Pot Reduct (MW)
  - RTD DAM Sched Gen Act Reduct (MW)
- \*\*Used to Adjust DAM Schedule for DAMAP\*\***

# Day Ahead Margin Assurance

## Energy \$ Component

### ■ Settlement Intermediates

- RTD Adj DAM Sched Gen (MW)
- RTD DAM MargAsrc Lower Limit (MW)
- RTD DAM MargAsrc Upper Limit (MW)

### ■ Settlement Results

- RTD DAM MargAsrc: Energy (\$/hr)

# Day Ahead Margin Assurance

## ■ Settlement Algorithm

**Where:**

Scenario 1

RTD DAM MargAsrc: Energy (\$/hr) =

{(RTD Adj DAM Sched Gen (MW) – RTD DAM MargAsrc Lower Limit (MW))

RTD RT Total Price: Gen (\$/MW)} – RTD DAM MargAsrc Bid Cost (\$)

*If* RTD Base Point (MW) < RTD Adj DAM Sched Gen (MW)

*RTD DAM MargAsrc Bid Cost (\$) is  $\sum$  Gen DAM Bid from RTD DAM MargAsrc Lower Limit (MW) to RTD Adj DAM Sched Gen (MW)*

*RTD DAM MargAsrc Lower Limit (MW) formula is in Billing and Accounting Manual*

# Day Ahead Margin Assurance

## ■ Settlement Algorithm

**Where:**

Scenario 2

RTD DAM MargAsrc: Energy (\$/hr) =

Min {[RTD Adj DAM Sched Gen (MW) – RTD DAM MargAsrc Upper Limit (MW)] \* }

RTD RT Total Price: Gen (\$/MW) + RTD DAM MargAsrc Bid Cost (\$), 0} **if**

RTD Base Point (MW) ≥ RTD Adj DAM Sched Gen (MW)

*RTD DAM MargAsrc Bid Cost (\$) is  $\sum$  Gen RT Bid for each dispatch segment from RTD Adj DAM Sched Gen (MW) to RTD DAM MargAsrc Upper Limit (MW)*

*RTD DAM MargAsrc Upper Limit (MW) formula is in Accounting and Billing Manual*

# Day Ahead Margin Assurance

## Ancillary Service \$ Component

### ■ 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)
- Hr DAM Sched Reg Capacity (MW)
- RTD RT Sched Reg Capacity (MW)
- RTD RT Movement (MW)

# Day Ahead Margin Assurance

## Ancillary Service \$ Component

### ■ Settlement Determinants

- RTD RT Spin Price (\$/MWh)
- RTD RT 10NSync Price (\$/MWh)
- RTD RT 30Min Price (\$/MWh)
- RTD RT Reg Capacity Price (\$/MWh)
- RTD RT Reg Movement Price (\$/MW)
- Hr DAM AS Bid: Reg Capacity Price (\$/MWh)
- Hr RT AS Bid: Reg Capacity Price (\$/MWh)
- RT Reg Movement Bid Price (\$/MW)
- Hr DAM AS Bid: Spin Price (\$/MWh)
- Hr DAM AS Bid: 10NSync Price (\$/MWh)

# Day Ahead Margin Assurance

## Ancillary Service \$ Component

- **Settlement Determinants**
  - Hr DAM AS Bid: 30Min Price (\$/MWh)
  - RTD Interval Seconds



# Day Ahead Margin Assurance

## Ancillary Service \$ Component

### ■ Settlement Intermediates

- RTD DAM Sched Reg Pot Reduct (MW)
- RTD DAM Spin Pot Reduct (MW)
- RTD DAM Sched 10NSync Pot Reduct (MW)
- RTD DAM Sched 30Min Pot Reduct (MW)
- RTD DAM Sched Reg Act Reduct (MW)
- RTD DAM Spin Act Reduct (MW)
- RTD DAM Sched 10NSync Act Reduct (MW)
- Used to Adjust DAM Schedule for DAMAP\*\*

# Day Ahead Margin Assurance

## Ancillary Service \$ Component

- **Settlement Intermediates**
  - RTD Adj DAM Sched Spin Avail (MW)
  - RTD Adj DAM Sched 10NSync Avail (MW)
  - RTD Adj DAM Sched 30Min Avail (MW)
  - RTD Adj DAM Sched Reg Avail (MW)

# Day Ahead Margin Assurance

## Ancillary Service \$ Component

### ■ Settlement Results

- RTD DAM MargAsrc: Reg (\$/hr)
  - RTD DAM MargAsrc: Reg Capacity (\$/hr)
  - RTD DAM MargAsrc: Reg Movement (\$/hr)
- RTD DAM MargAsrc: Spin Res (\$/hr)
- RTD DAM MargAsrc: 10NSync (\$/hr)
- RTD DAM MargAsrc: 30Min Res (\$/hr)

# Day Ahead Margin Assurance

## ■ Settlement Algorithm

Where:

RTD DAM MargAsrc: Reg (\$/hr)

**RTD DAM MargAsrc: Reg Capacity (\$/hr)** + **RTD DAM MargAsrc: Reg Movement (\$)** =

### Scenario 1

$\{(RTD \text{ Adj DAM Sched Reg Cap (MW)} - RTD \text{ RT Sched Reg Cap (MW)}) * (RTD \text{ RT Reg Cap Price (\$/MWh)} - Hr \text{ DAM AS Bid: Reg Cap Price (\$/MWh)})\} + \{(-1 * RTD \text{ RT Movement MWs}) * \text{Max}(0, RT \text{ Reg Movement Market Price (\$/MW)} - RT \text{ Reg Movement Bid Price (\$/MW)})\}$

*if*

$RTD \text{ RT Sched Reg Cap (MW)} < Hr \text{ DAM Sched Reg Cap (MW)}$

### Scenario 2

$\{(RTD \text{ Adj DAM Sched Reg Cap (MW)} - RTD \text{ RT Sched Reg Cap (MW)}) * \text{Max}(0, RTD \text{ RT Reg Cap Price (\$/MW)} - Hr \text{ RT AS Bid: Reg Cap Price (\$/MW)})\} + \{(-1 * RTD \text{ RT Movement MWs}) * \text{Max}(0, RT \text{ Reg Movement Market Price (\$/MW)} - RT \text{ Reg Movement Bid Price (\$/MW)})\}$

*if*

$RTD \text{ RT Sched Reg Cap (MW)} \geq Hr \text{ DAM Sched Reg Cap (MW)}$

# Day Ahead Margin Assurance

## ■ Settlement Algorithm

### Where:

#### Scenario 1

RTD DAM MargAsrc: Spin Res (\$/hr) =  
{RTD Adj DAM Sched Spin Avail (MW) – RTD RT Sched Spin Avail (MW)} \* {RTD RT Spin Price (\$/MWh) – Hr DAM AS Bid: Spin Price (\$/MWh)} **if**  
RTD RT Sched Spin Avail (MW) < Hr DAM Sched Spin Avail (MW)

#### Scenario 2

RTD DAM MargAsrc: Spin Res (\$/hr) =  
{RTD Adj DAM Sched Spin Avail (MW) – RTD RT Sched Spin Avail (MW)} \*  
RTD RT Spin Price (\$/MWh) **if**  
RTD RT Sched Spin Avail (MW) ≥ Hr DAM Sched Spin Avail (MW)

# Day Ahead Margin Assurance

## ■ Settlement Algorithm

**Where:**

### Scenario 1

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

### Scenario 2

RTD DAM MargAsrc: 10NSync Res (\$/hr) =  
{RTD Adj DAM Sched 10NSync Avail (MW) – RTD RT Sched 10NSync Avail (MW)} \*  
RTD RT 10NSync Price (\$/MWh) **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) =  
{RTD Adj DAM Sched 30Min Avail (MW) – RTD RT Sched 30Min Avail (MW)} \* {RTD RT  
30Min Price(\$/MWh) – Hr Calc DAM AS Bid: 30Min Price (\$/MWh)} **if**  
RTD RT Sched 30Min Avail (MW) < Hr DAM Sched 30Min Avail (MW)

### Scenario 2

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

# Day Ahead Margin Assurance

## ■ Example

RTD Base Point (MW) < RTD Adj DAM Sched Gen (MW)

RT Adj DAM Sched MWs EOP MWs	RTD Base Point MWs	RTD Gen Adj Energy MWs	DAM MargAsrc Lower MWs	RT DAM MargAsrc Bid Cost \$	RT LBMP \$
10	6	5	6	160	50

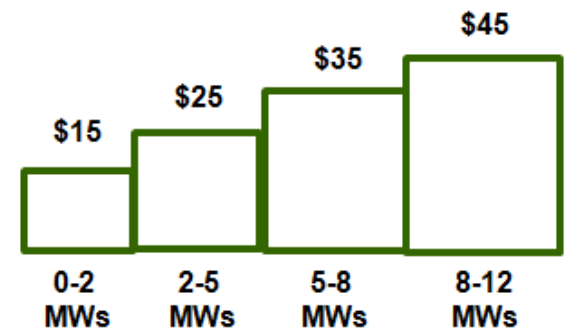
Energy \$/Hr Component =  $\{(10-6) * 50\} - 160$

4 \* 5

**\$40**

**Bid Cost \$ = (2 MWs @ \$35) + (2 MWs @ \$45)**

**\$160**





# Day Ahead Margin Assurance

## ■ Example

RTD Base Point (MW) < RTD Adj DAM Sched Gen (MW)

RT Adj DAM Sched Reg Cap MWs	RTD RT Sched Reg Cap MWs	RTD RT Reg Cap Price \$	Hr DAM AS Reg Cap Bid Price \$	RTD RT Movement MWs	RT Reg Movement Price \$	RT Reg Movement Bid Price \$
3	0	25	15	0	0.40	0.10

$$\text{Regulation \$/Hr Component} = ((3-0) * (25-15)) + 0$$

$$(3 * 10) + 0$$

**\$30**

# Day Ahead Margin Assurance

## ■ Example

RTD Base Point (MW) < RTD Adj DAM Sched Gen (MW)

RT Adj DAM Sched Spin MWs	RTD RT Sched Spin MWs	RTD RT Spin Price \$	Hr DAM AS Bid Spin Price \$
4	1	8	5

$$\text{Reserve \$/Hr Component} = \underset{3}{(4-1)} * \underset{3}{(8-5)}$$

**\$9**

# Summary Example:

- Hr DAM MargAsrc Stlmnt (\$) =
- **Max(0,  $\sum$  RTD DAM MargAsrc: Total \$)**
  - For all RTD intervals in given hour
    - Add Three Primary Components to DAMAP
      - » RTD DAM MargAsrc Energy \$/hr
      - » RTD DAM MargAsrc Regulation \$/hr
      - » RTD DAM MargAsrc Reserve \$/hr
  - Example
    - RTD DAM MargAsrc Total \$ = RTD DAM MargAsrc \$/hr \* (RTD Interval Secs/3600) = \$79/12 = \$6.58 for that RTD interval
    - We sum all the RTD intervals for the hour and if greater than 0 , that is the DAMAP for the hour

# Day Ahead Margin Assurance

## ■ Summary

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

# Day Ahead Margin Assurance

## ■ Settlement Reference Material

- MST Attachment J
- Accounting and Billing Manual Section 4
  - Appendix H

# Day Ahead Margin Assurance

## ■ Settlement Reference Material

- Advisory Billing File
  - Power Supplier
    - LRR DAM Contract Balancing \$
    - 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