Behind-the-Meter Net Generation (BTM:NG) Resource Participation Model

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Presentation Outline

- Introduction to BTM:NG Resource Participation Model
- Energy Market and Ancillary Services Participation
- Energy Market Mitigation Measures
- Installed Capacity Market Participation
- Capacity Market Mitigation Measures
- Additional Documentation Resources

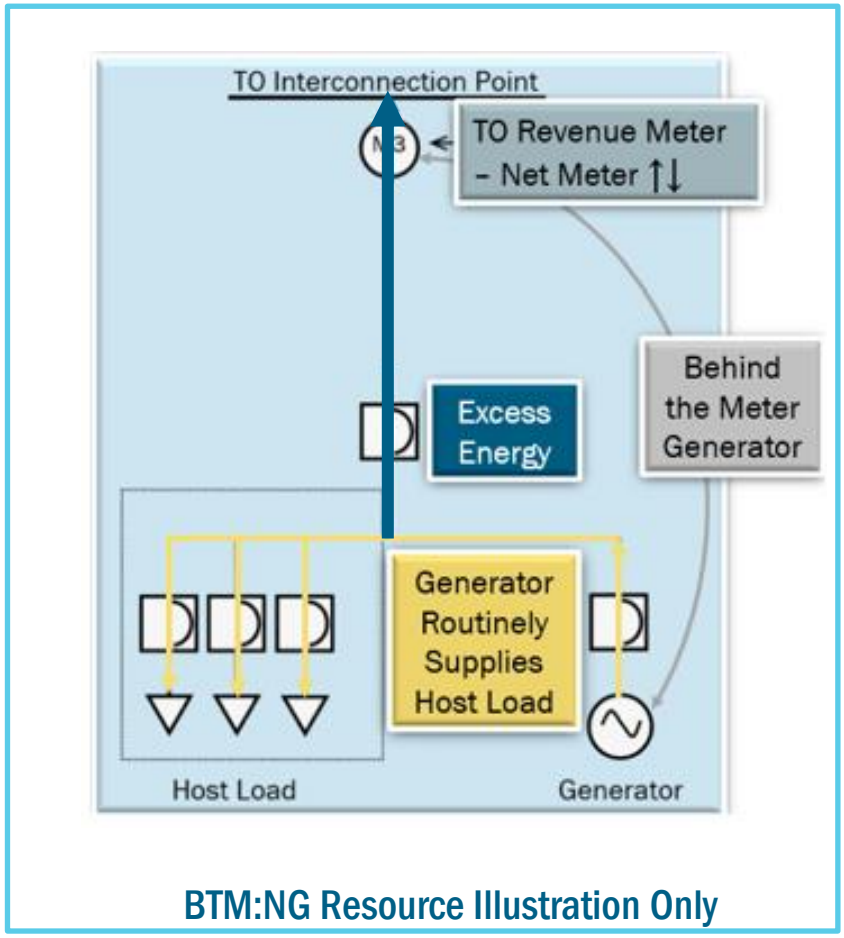
Introduction to BTM:NG Resource Participation Model

Topics

- BTM:NG Resource Defined
- Minimum Participation Requirements
- Resource Facility Configurations
- Outage Scheduling Requirements
- Impacted Markets and Services

BTM:NG Resource Defined

- A BTM:NG Resource is a facility, consisting of a Generator and an associated Load that has:
  - On-site generation that routinely serves its Host Load, *and*
  - Excess (or "net") generation after serving its Host Load that it offers in the NYISO's markets



BTM:NG Resource Illustration Only

Minimum Participation Requirements

- The Generator serving the BTM:NG Resource must have a nameplate rating of at least 2 MW and an interconnection allowing an export ("net" injection to the grid) of at least 1 MW
  - Multiple injection points at lower voltages may be acceptable provided they aggregate to a single injection into the NYS Transmission System or TO distribution system, at a single PTID
- The facility must have an Average Coincident Host Load of at least 1 MW
  - Host Load includes all electrically connected loads within a defined electrical boundary that are routinely served by the on-site generation (except, in certain configurations, for station power)

**Note: The load does not participate in the wholesale markets; it is self-served by the facility.*

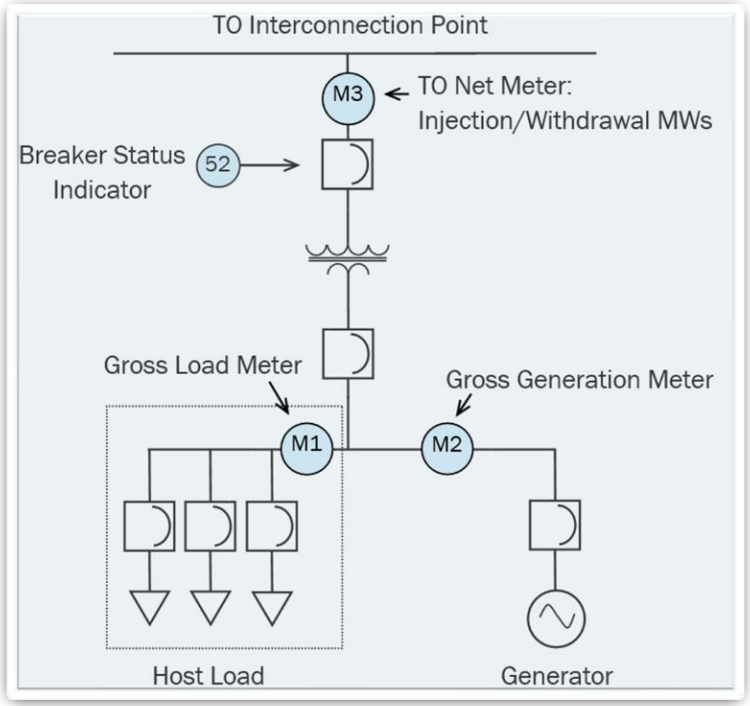
Minimum Participation Requirements – Cont'd

- Revenue grade TO "net" meter at each interconnection point to the NYS Transmission or TO distribution system
  - Depending on configuration, the TO "net" meter is required and either a gross load meter or gross generation meter (or both) will be required
  - All meters and metering instruments that are used to facilitate participation as a BTM:NG Resource must have real-time telemetry and be accepted by the Metering Authority
- Be able to follow dispatch instructions from NYISO via the connecting TO
- Meet Federal and State requirements to operate under non-emergency conditions

Refer to the Revenue Metering Requirements Manual, Section 3.2

BTM:NG Revenue Metering Requirements

- Meters used must have real-time telemetry and be accepted by the Metering Authority (MA)



BTM:NG Resource Illustration Only

Refer to the Revenue Metering Requirements Manual for more details

Minimum Participation Requirements – Cont'd

- Station Power
  - BTM:NG Resources subject to existing Station Power registration requirements
  - Station Power withdrawals reported to NYISO as load on a load bus
  - BTM:NG Resources required to identify metering configuration used to measure station service
  - Meter Authority must agree to configuration to account for and report station service load to NYISO

BTM:NG Resource Facility Configurations

- Participation at a facility is either :
  - As a single generator serving a Host Load
  - As a set of multiple Generators that are a single aggregated unit serving a Host Load
    - Comprised of more than one generating unit and dispatched as a single aggregated unit, under a single PTID
  - NYISO will review and approve each facility seeking to participate as a BTM:NG Resource

Outage Scheduling Requirements

- BTM:NG Resources are required to follow the same outage scheduling process as all other Generators – examples
  - All generating resources are required to inform the NYISO of their annual maintenance plans
  - Two day minimum notification for scheduled outages and re-schedules
  - NYISO/TO authorization to remove generator from service
  - Forced outages or de-rates should be reported immediately
  - Increased Host Load must be reflected in a unit de-rate if the increase prevents the BTM:NG Resource from meeting its schedule

* Refer to the Outage Scheduling Manual for details

Resources Not Eligible to Participate as BTM:NG Resource

- Intermittent Power Resources
- Facilities whose Host Load consists of Station Power only
- A Resource that has made an election to participate as a Generator or demand response resource pursuant to Section 5.12.1.12 of MST
  - May seek to re-qualify as a BTM:NG Resource annually by written notice sent to NYISO prior to August 1st
- Resources cannot simultaneously participate in NYISO administered Demand Response or Utility generation buy-back programs
- Resources participating in an Aggregation (DER or single Resource type)
- Energy Storage Resources

Impacted Markets and Services

Energy Market

BTM:NG Resources can participate in the Day-Ahead and Real-Time Energy Markets

Ancillary Services

BTM:NG Resources can qualify to participate in Ancillary Services and provide:

- Cost Based: Voltage Support Service
- Market Based: Regulation & Frequency Control and/or Operating Reserves

Capacity Market

BTM:NG Resources can qualify to provide capacity and participate in the Installed Capacity Market

Energy Market and Ancillary Services Participation

Participation in Energy & Ancillary Services

- Participation Requirements
- Registration Parameters
- Bid Parameters
- Scheduling
- Financial Settlements

BTM:NG Resource Participation Requirements

- A BTM:NG Resource participates as a Generator in the NYISO's wholesale markets
  - Existing rules and penalties for Generators apply, except where there are specific rules for BTM:NG Resources
  - Resources must bid Self-Committed (Fixed or Flexible)
  - BTM:NG Resources will not be able to unilaterally change Unit Commitment data once it is initially entered by the MP and activated as part of the registration process
  - *BTM:NG Resources do not bid Minimum Generation MW or Cost*
  - *BTM:NG Resources do not bid a Start-up Cost*
  - Treated as a dispatch-only unit during the economic evaluation

BTM:NG Resource Registration Parameters

- MP Administrators will be required to provide the following parameters:
  - Min run time, min down time, and max stops per day

Parameter	Definition	Unit of Measure
Physical Upper Operating Limit (UOL)	Physical maximum MW level rating of the BTM:NG Resource	MW
Physical Lower Operating Limit (LOL)	Physical minimum MW level rating of the BTM:NG Resource	MW
Response Rate	Represents how quickly the BTM:NG can respond to dispatch instructions from the NYISO to inject onto or withdraw from the grid	MW/ min.

BTM:NG Resource Bid Parameters

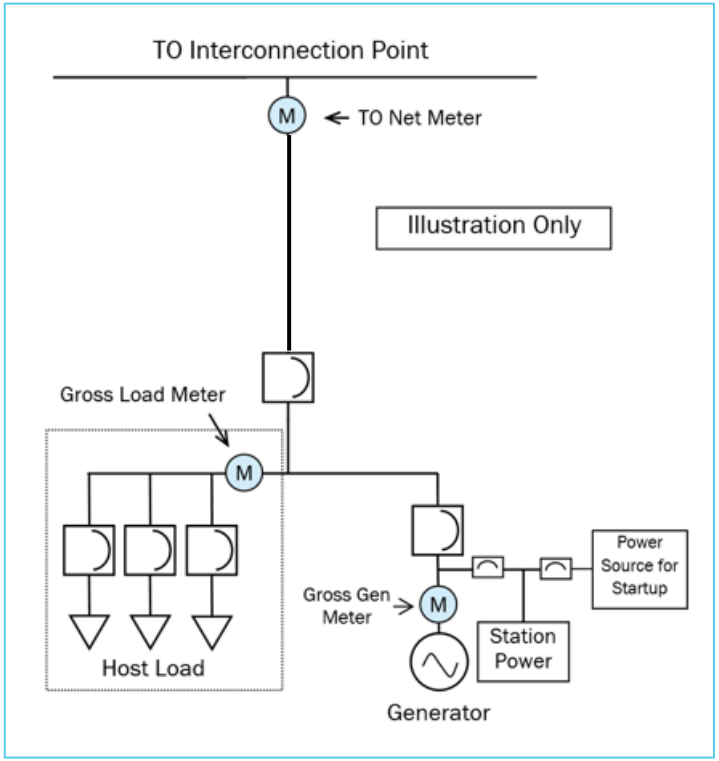
Parameter	Definition	Unit of Measure
Normal Upper Operating Limit (UOL_N)	Maximum level at which the BTM:NG Resource is willing to operate	MW
Emergency Upper Operating Limit (UOL_E)	Maximum level at which the BTM:NG Resource is willing to operate, at the request of the ISO during extraordinary conditions. It needs to be equal to or greater than the Normal UOL	MW
Lower Operating Limit (LOL)	Minimum MW level at which the BTM:NG Resource is willing to operate	MW
Outage Type	Reporting mechanism for the BTM:NG Resource outage that identifies type of outage experienced, if applicable	Normal (N) Planned Outage (P) Forced Outage (F)

BTM:NG Resource Bid Parameters – Cont'd

Parameter	Definition	Unit of Measure
Incremental Bid Curve	Series of monotonically increasing steps that indicate the quantities of Energy for a given price that a BTM:NG Resource is willing to supply to the ISO	$/MW
Market Choice	Identifies which market, Day Ahead or Real Time, the bid parameters apply to	DAM RT
Forecasted Host Load	Expectation of the load served by the BTM:NG Resource for the bidding increment (e.g., hour)	MWh
Unit Operating Modes	Parameters that indicate whether BTM:NG Resource's output will be a fixed value	Self-Committed Fixed Self-Committed Flexible
Opportunity Costs	Economic parameter to be utilized by NYISO's Market Monitoring and Mitigation Analysis (MMA) team in Reference Levels	$/MW

BTM:NG Resource Bid Parameters – Cont'd

- Forecasted Host Load:
  - Host Load MW value includes the facility's Station Power if the BTM:NG Resource's Station Power is not separately metered
  - In this illustration drawing, the Station Power is not separately metered
    - The Station Power to be included in the Host Load
  - The Gross Gen Meter would include the energy consumed as Station Power

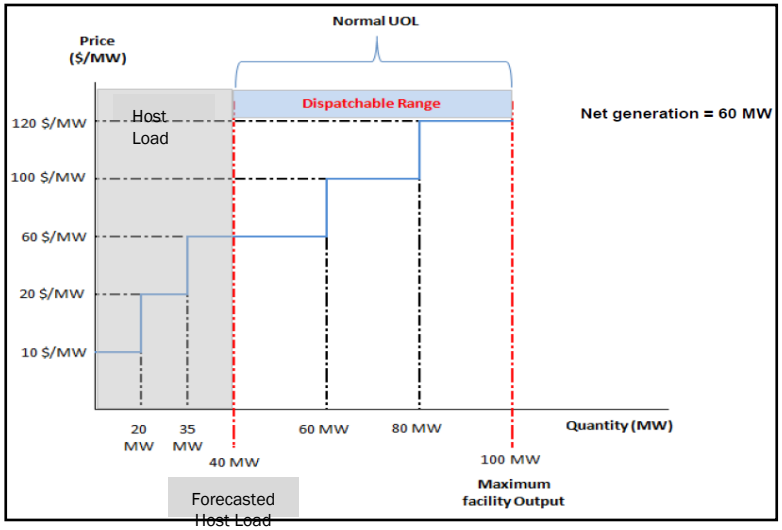


BTM:NG Resource Bid Parameters – Cont'd

- Injection Limit
  - The maximum injection of a BTM:NG Resource, in MW, into the NYS Transmission System or distribution system at the BTM:NG Resource's Point of Injection. The Injection Limit for a BTM:NG Resource must be at least 1 MW
- UOL_N – Normal Upper Operating Limit for BTM:NG Resources
  - The limit a BTM:NG Resource indicates it expects to inject into the grid after serving its Host Load, subject to its Injection Limit
- UOL_E – Emergency Upper Operating Limit for BTM:NG Resources
  - The maximum injection of a BTM:NG Resource is subject to its Injection Limit
    - The UOL_E entered by the BTM:NG Resource shall be the lower of the injection limit or the seasonal operating limits in the MIS
    - BTM:NG Resource's UOL_E can include injections achievable via Load reductions at the Host Load

Incremental Cost Curves - Example

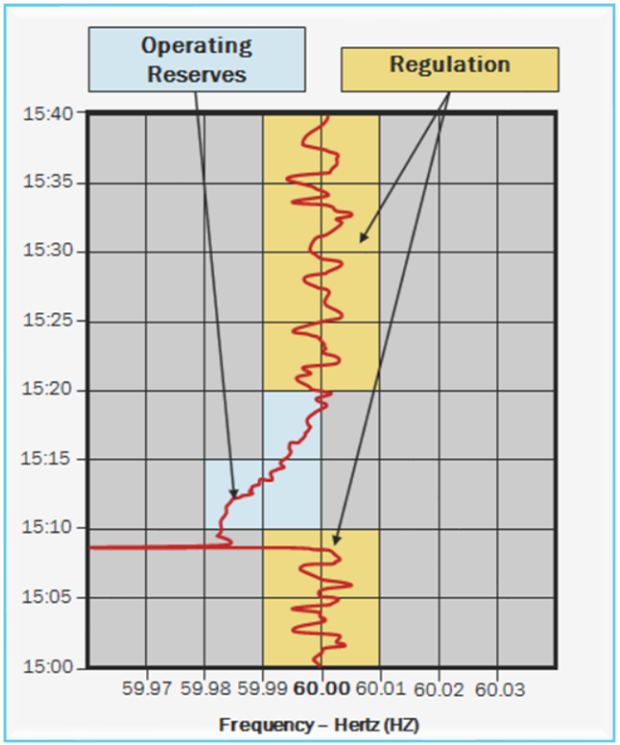
- Incremental cost curves for the entire range of the BTM:NG Resource's output, including the output needed to serve its Host Load, are required as part of the energy offer
- The portion of the cost curve that represents the MWs available for dispatch are those above the Host Load up to the maximum output
- Only the segments of the BTM:NG Resource's energy bid that exceed the Resource's Host Load are evaluated



BTM:NG Resource Energy Offer	MW
UOL_E	100
Host Load	40
UOL_N Dispatch MW (from 41-100)	60

Participation in Ancillary Services - Regulation

- Regulation
  - Must meet the eligibility requirements including metering and performance testing
  - Only Resources that bid as Self-Committed Flexible can provide Regulation Services
  - A BTM:NG Resource with a single generator serving a Host Load can offer Regulation Service
    - Entered value based on the MWs the unit can provide above the Host Load
  - An aggregated unit serving a Host Load cannot offer Regulation Service

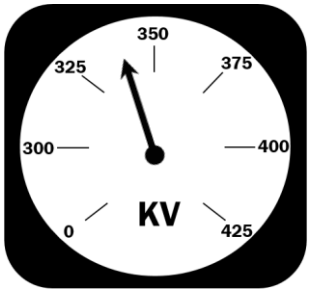


Participation in Ancillary Services – Operating Reserves

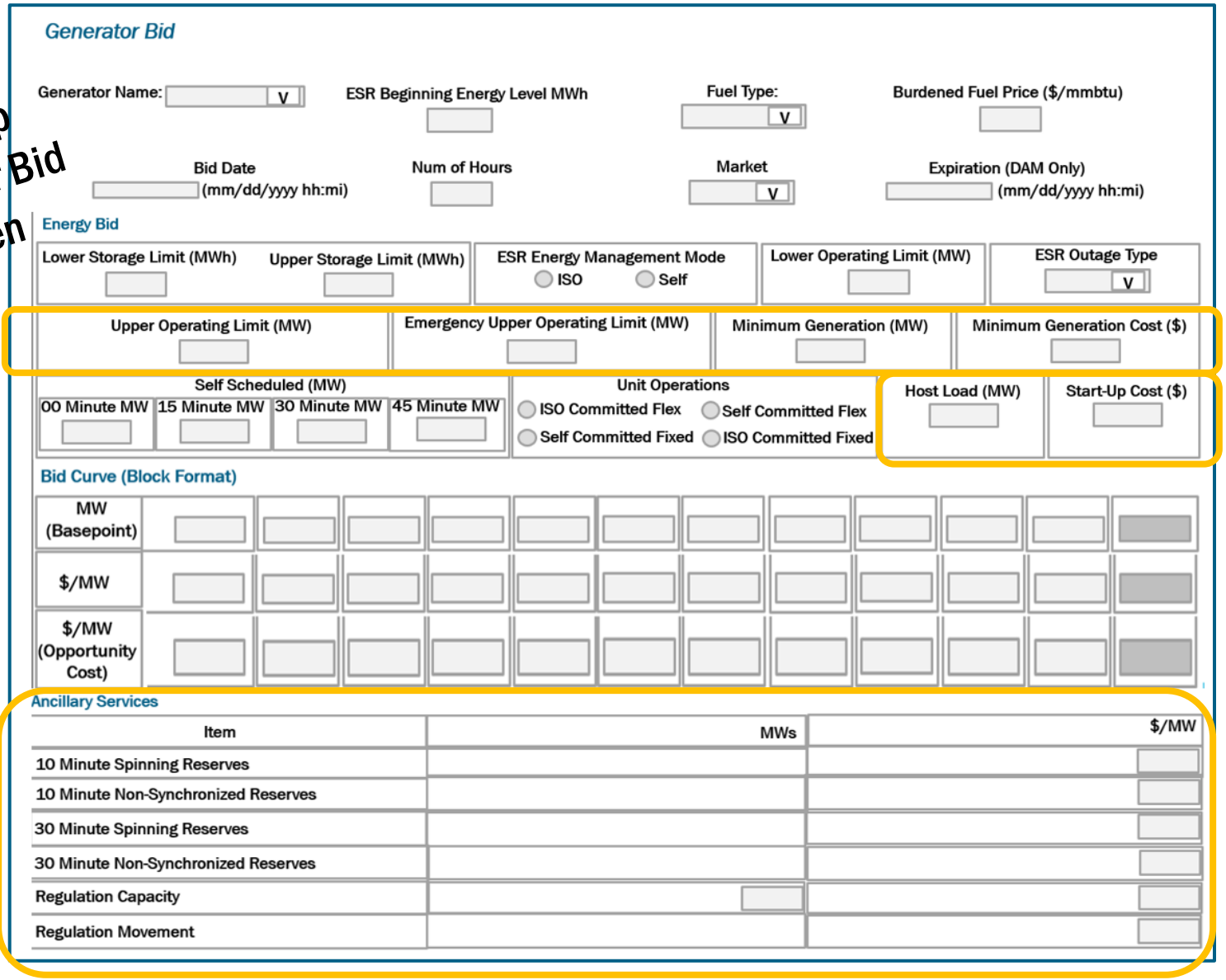
- Operating Reserves
  - Must meet the eligibility requirements including metering and performance testing
  - Only Resources that bid as Self-Committed Flexible can provide Reserve Services
  - Single generator serving a Host Load
    - Can only provide 10-min Spinning or 30-min Synchronized Operating Reserves
  - An aggregated unit serving a Host Load
    - Can only provide 10-min or 30-min Non-Synchronized Operating Reserves

Participation in Ancillary Services – Voltage Support Service (VSS)

- Voltage Support Service (VSS)
  - Must meet the eligibility requirements including metering and performance testing
  - BTM:NG Resources may provide VSS:
    - Do not have to participate in the ICAP market to provide VSS
    - Must meet the supplier qualification requirements described in the Ancillary Services manual including;
      - Functioning Automatic Voltage Regulator
      - Capable of Producing and Absorbing Reactive Power
      - Perform Reactive Capability testing
      - Maintain specific voltage levels



Mock-Up Generator Bid Screen



Resource Scheduling – DA & RT Markets

BTM:NG Resource Scheduling in DA & RT Markets

- BTM:NG Resource bids considered along with all other supply type DAM offers via SCUC evaluation
- Real-Time Dispatch feasible operating ranges will be calculated for BTM:NG Resources considering the following:
  - RT Market software will use all other physical and economic characteristics provided to make commitment and dispatch decisions

** Units may only bid as ISO-Committed Fixed if qualified by the NYISO

Scheduling of Ancillary Services

- Only those eligible and qualified to provide~~,~~ Ancillary Services will be scheduled following same principles as traditional Generators
  - Eligible to provide Regulation and Reserves
  - Eligible to provide Voltage Support Service (VSS)

Energy & Ancillary Services Financial Settlements

BTM:NG Resource Energy Market Settlements

Settlement	Purpose	Calc. Interval
Day-Ahead Energy Settlement	Assessment to BTM:NG Resources with accepted Day-Ahead schedules	Hourly
Balancing Market Settlement	Accounts for energy variations in a BTM:NG Resource's Real-Time Dispatch from its Day-Ahead Schedule	Nominal 5 Minute
Real-Time Bid Production Cost Guarantee	Intended to guarantee BTM:NG Resources that a net loss will not be incurred based on their accepted or mitigated real-time Bids if committed above that initially committed in the Day-Ahead	Daily
Day-Ahead Margin Assurance Payment	Payment made to BTM:NG Resources when required to purchase or sell energy and/or ancillary services in the Balancing Market as a result of being dispatched below its Day-Ahead Schedule. Only applies when BTM:NG is OOM for reliability	Hourly

BTM:MG Resource Ancillary Services Settlements: *Cost Based*

Settlement	Purpose	Calc. Interval
Rate Schedule 1	Intended to recover a portion of NYISO's operating costs and FERC fees	Hourly
Voltage Support Service (VSS)	Intended to compensate BTM:NG Resources that offer reactive capacity as Voltage Support Service	Hourly
Voltage Support Lost Opportunity Cost	Intended to provide BTM:NG Resources payment to offset any lost revenue in the Energy Markets, as a result of being dispatched out of merit in real-time to provide Voltage Support Service	Hourly

BTM:NG Resources Ancillary Services Settlements: *Market Based*

Settlement	Purpose	Calc. Interval
Day-Ahead Regulation Capacity	Intended to compensate BTM:NG Resources offering injection capacity as Regulation Service in Day-Ahead	Hourly
Balancing Regulation Capacity	Intended to compensate BTM:NG Resources offering injection capacity as Regulation Service in the Real-Time	Nominal 5 Minute
Real-Time Regulation Movement	Intended to compensate Regulation-Scheduled BTM:NG Resources responding to NYISO's six second dispatch, correcting for Area Control Error	Nominal 5 Minute
Regulation Performance Charge	Intended to charge Regulation Response Service BTM:NG Resources not responding or responding poorly to NYISO's six second dispatch, correcting for Area Control Error	Nominal 5 Minute
Regulation Revenue Adjustment	Intended to properly compensate BTM:NG Resources for balancing energy if also providing Regulation Capacity Service in real-time	Nominal 5 Minute

BTM:NG Resources Ancillary Services Settlements: *Market Based* (cont'd)

Settlement	Purpose	Calc. Interval
Persistent Under Generation Penalty	Intended to penalize BTM:NG Resources that are not providing Regulation Service causing regulation burden due to under-injecting below its RTD Basepoint (MW) outside of acceptable tolerance levels	Nominal 5 Minute
Day-Ahead Operating Reserves Availability	Intended to compensate BTM:NG Resources offering injection capacity as Operating Reserve Service in day-ahead	Hourly
Balancing Operating Reserves Availability	Intended to compensate BTM:NG Resources offering injection capacity as Operating Reserve Service in real-time	Nominal 5 Minute

Additional Resources

- MST & OATT
- Technical Bulletin 117
- Market Participant User's Guide
- Ancillary Services Manual
- Accounting and Billing Manual
- Day-Ahead Scheduling Manual
- Transmission and Dispatch Manual

Energy Market Mitigation Measures

BTM:NG Resources – Energy Market Mitigation Measures

- BTM:NG Resource incremental energy bids are subject to the same energy market mitigation measures as other wholesale Generators
- Forecasted Host Load values submitted in BTM:NG Resource bids are subject to review and verification by NYISO's Market Mitigation and Analysis department (MMA)
  - The NYISO will only evaluate those bids that exceed the BTM:NG Resource's Host Load

Additional Resources

- Market Services Tariff, Section 23 -ISO Market Power Mitigation Measures
- Reference Levels Manual
- Reference Level Software User's Guide

Capacity Market Participation

Participation in NYISO's Installed Capacity (ICAP) Market

- Capacity Market Eligibility and Participation Rules
- Net Installed Capacity (ICAP)
- Net Unforced Capacity (UCAP)
- Obligations and Other Capacity Market Rules
- Financial Settlements
- Capacity Market Mitigation

Capacity Market (ICAP) Eligibility and Participation Rules

BTM:NG Resource – Capacity Market Participation

- A BTM:NG Resource may participate as an ICAP Supplier in the NYISO Capacity market
  - Except where noted in the Tariffs, existing ICAP rules and penalties for Generators apply
  - May offer the available net generation into ICAP Auctions after serving its Host Load
  - Must have Capacity Resource Interconnection Service (CRIS)

BTM:NG Resources – Net ICAP

BTM:NG Resource – Net ICAP

- Net-ICAP is the amount of Installed Capacity a BTM:NG Resource has demonstrated it is capable of supplying to the wholesale market

Net ICAP = Adj. $DMGC_m$ - Adjusted Host Load (AHL)

Refer to ICAP Manual, Section 4.15

BTM:NG – Net ICAP Component

- Adjusted Dependable Maximum Gross Capability (DMGC)
  - Maximum capability of the BTM:NG Resource's Generator(s) in a given month (calculated seasonally); measured as the least of:
    - a DMGC Test;
    - the resource's Adjusted Host Load plus its Injection Limit; or
    - the resource's Adjusted Host Load plus its MW amount of CRIS
  - Although DMGC is a 'monthly" value in the ICAP AMS, the Resource only needs to test twice a year, and the value is the same for each month of the applicable Capability Period (Summer or Winter)
  - The duration of the DMGC test is dependent on the class of generator associated with the BTM:NG Resource

$$\text{Net ICAP} = \text{Adj. DMGC}_m - \text{Adjusted Host Load (AHL)}$$

$$\text{Adj. DMGC}_m = \text{Min}\left(\text{DMGC}_m, \text{AHL}_m + \text{Injection Limit}, \text{AHL}_m + \text{CRIS}_{CP}\right)$$

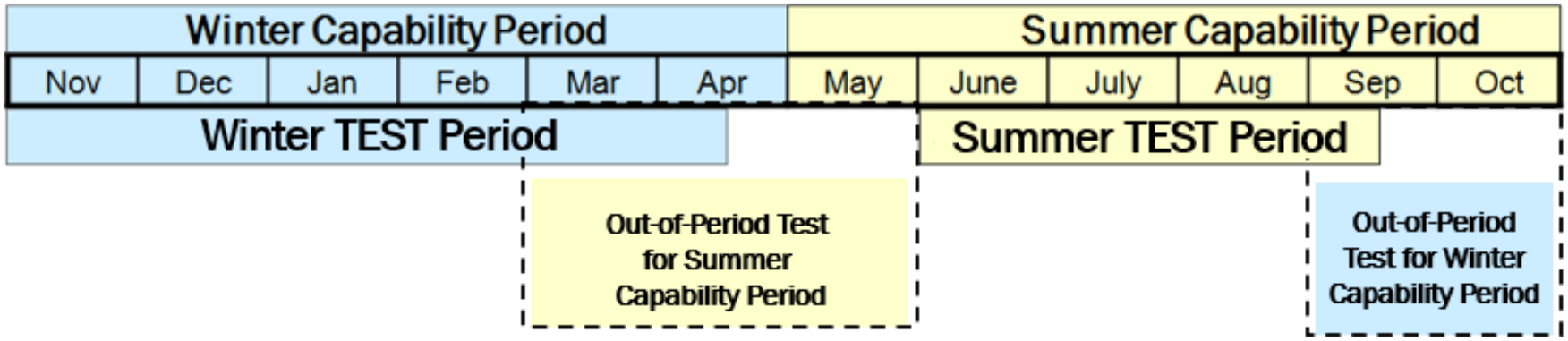
Refer to ICAP Manual, Section 4.15

DMGC or DMNC Test Data

- DMGC or DMNC Test Data
  - Suppliers offering to supply Unforced Capacity must submit DMNC/DMGC test data or data from actual operation for each Generator comprising the BTM:NG Resource
  - NYISO's Market Monitoring Unit will verify the DMNC and DMGC test data received from Suppliers
  - Internal combustion, combustion units and combined cycle units must be temperature adjusted
  - All generating Resources must test using usual and customary industry practices
    - No extraordinary means to achieve results
  - Installed Capacity Suppliers must submit results from a DMNC/DMGC test or data from actual operation ("DMNC/DMGC Demonstration") from within the DMNC Test Periods ("in-period")
- If a BTM:NG Resource elects to perform a DMNC Test
  - The station service Load measured during such DMNC Test shall not be included in the Resource's Host Load
- The DMNC value for the Capability Period shall be used in lieu of a DMGC value in the calculation of the resource's Adjusted DMGC

Refer to Services Tariff section 5.12.6.1.1 and section 4.2 of the ICAP Manual)

Capability Periods and Test Periods Available



- Summer Capability Test Period: June 1 – September 15
- Winter Capability Test Period: November 1 – April 15
- Out of Period Testing may be permitted under certain conditions
  - For OOP, to begin next Capability Period
    - Summer: Test data from after 3/1 and prior to 6/1
    - Winter: Test data from after 9/1 and prior to 11/1
  - The OOP test must be verified with equal or greater test result within the next Test Period or penalties may apply

BTM:NG – Net ICAP Component

- Class Year Deliverability Study
  - All resources that want to sell ICAP in the NYISO's capacity market are required to obtain CRIS

Net ICAP = Adj. $DMGC_m$ - Adjusted Host Load (AHL)

Adj. $DMGC_m$ = Min ($DMGC_m$, AHL_m + Injection Limit, AHL_m + $CRIS_{CP}$)

Refer to ICAP Manual, Section 4.15

BTM:NG Resource - CRIS Rights

- A BTM:NG Resource obtaining CRIS through a Class Year (CY) Deliverability Study may request CRIS up to an established Net-ICAP value or an Estimated Net-ICAP value (Initial CRIS*)
  - When appropriate meter data is available for both the Load and the Generator of the BTM:NG Resource, the Initial CRIS that can be requested is limited to demonstrated Net-ICAP
  - When appropriate meter data is not available for either the Load or the Generator of the BTM:NG Resource, the Initial CRIS that can be requested is limited to Estimated Net-ICAP
  - All requests for CRIS must be in tenths of a MW (1 MW minimum)

*For determining **Initial CRIS**, Net-ICAP *excludes* the AHL + CRIS component of the Adj. $DMGC_m$ calculation

Refer to OATT Section 25.9.3 (Attachment S)

Net ICAP Component - Example

- **Adj. $DMGC_m$**

  DMGC (MW) = 100

  AHL (MW) = 40

  Injection Limit = 95

  CRIS (MW) = 98

Adj. $DMGC_m$ = Min ($DMGC_m$, AHL_m + Injection Limit, AHL_m + $CRIS_{CP}$)

Adj. DMGC = Min (100, (40 + 95), (40 + 98))

Adj. DMGC = 100

Net ICAP = Adj. $DMGC_m$ - Adjusted Host Load (AHL)

BTM:NG – Net ICAP Component

- Adjusted Host Load
  - Calculated annually using the Average Coincident Host Load (ACHL) and applying the Installed Reserve Margin (IRM)
    - ACHL is the peak proxy load value adjusted by the weather normalization factor and regional Load growth factor
    - IRM is an annual value that represents the amount of capacity that is needed to ensure resource adequacy of the bulk electric system (20.0% for the 2023-2024 Capability Year)

Refer to ICAP Manual, Section 4.15

BTM:NG – Net ICAP Component

- Average Coincident Host Load (ACHL)
  - Peak Proxy Load Value
  - Weather Normalization Factor (WNF)
  - Regional Load Growth Factor (RLGF)
- ACHL must be at least 1 MW to participate as a BTM:NG Resource
- A BTM:NG Resource's ACHL and the related load data will reside in Demand Response Information System (DRIS)

AHL = ACHL * (1 + IRM)

ACHL = Peak Proxy Load Value x (1+WNF) x (1+RLGF)

Refer to ICAP Manual, Section 4.15.1

Average Coincident Host Load

- Peak Proxy Load Value
  - Average of the top twenty (20) metered hourly Loads for a BTM:NG Resource that occur in the top-40 NYCA peak Load hours of the prior Summer Capability Period and the Winter Capability Period immediately before that

ACHL = Peak Proxy Load Value x (1+WNF) x (1+RLGF)

Refer to ICAP Manual, Section 4.15.1

Average Coincident Host Load

- Weather Normalization Factor (WNF):
  - WNF is the ratio of the weather normalized load to the actual load in the current capability year
  - The NYISO will import into DRIS the applicable WNF for each Capability Year

ACHL = Peak Proxy Load Value x (1+WNF) x (1+RLGF)

Refer to ICAP Manual, Section 4.15.1

Average Coincident Host Load

- Regional Load Growth Factor (RLGF):
  - RLGF is the ratio of its projected load during the hour and on the date of the NYCA peak for the next Capability Year to the weather-normalized actual load during the hour and on the date of the NYCA peak in the current Capability Year
  - Provided by each Transmission Owner and Municipal Electric System that reflects the percent change in expected Load

ACHL = Peak Proxy Load Value x (1+WNF) x (1+RLGF)

Refer to ICAP Manual, Section 4.15.1.1

Net ICAP Component - Example

- **ACHL**

  Peak Proxy Load (MW) = 32
  WNF = 5.8%
  RLGF = 0.6%
  CRIS (MW) = 98

  ACHL = Peak Proxy Load Value x (1+WNF) x (1+RLGF)

  ACHL = 32 * (1+ 0.058) * (1+ 0.006)
  ACHL = 34.05

- **AHL**

  IRM = 17.5%

  AHL = ACHL * (1 + IRM)

  AHL (MW) = 34.05 * (1+ 0.175)
  AHL (MW) = 40

Net ICAP = Adj. $DMNC_m$ - Adjusted Host Load (AHL)

Net ICAP Component - Example

- Net ICAP

Adj. $DMNC_m$ = 100

AHL (MW) = 40

Net ICAP = Adj. $DMNC_m$ - Adjusted Host Load (AHL)

Net ICAP (MW) = 100 - 40

Net ICAP (MW) = 60

BTM:NG Resources – Net-UCAP

BTM:NG Resources – Net-UCAP Component

- Net-UCAP is the amount of unforced capacity a BTM:NG Resource can sell in the NYISO's Capacity market
  - Net U-CAP of a BTM:NG Resource is calculated by applying derating factors to the Generator serving the BTM:NG Resource and to its Load
    - Gen UCAP
    - Load UCAP
  - Net-UCAP is capped at the Resource's Net-ICAP value

Net UCAP = Max (Min ([Gen UCAP] – [Load UCAP], Net-ICAP), 0)

BTM:NG Resource – Net UCAP Component

- Adjusted DMGC is then adjusted by the generator's Derating Factor*

Net UCAP = Max (Min ([Gen UCAP] – [Load UCAP], Net-ICAP), 0)

Gen UCAP = Adj. $DMNC_m$ * (1 – Derating Factor) * CAF_m

*In the ICAP Manual EFORd is used instead of derating factor, but most resources including BTM:NG Resources use a derating factor

BTM:NG Resource – Net UCAP Component

- Derating Factor
  - Equivalent Demand Forced Outage Rate
  - Calculated from Generating Availability Data System (GADS)
    - Year-to-Date Data Submitted to NYISO Monthly
    - Forced Outages and Forced Derates
      - Dispatched and unable to respond
      - Unplanned event

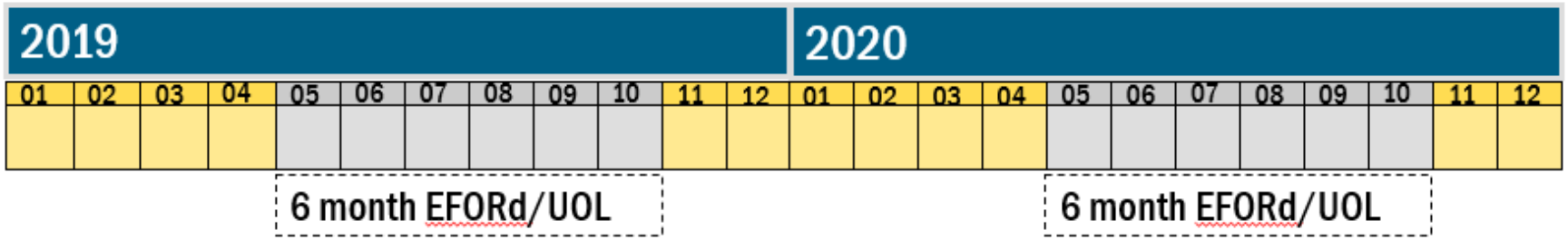
BTM:NG Resource – Net UCAP Component

- Capacity Accreditation Factor
  - Reflect the marginal reliability contribution of the ICAP Suppliers within each Capacity Accreditation Resource Class (CARC)
    - Each ICAP Supplier will be assigned to a CARC and receive the applicable CAF for its assigned CARC and capacity region
    - An ICAP Supplier's assigned CAF will be used in calculating its Adjusted ICAP and, in turn the UCAP the BTM:NG Resource is qualified to offer to supply to the NYCA

BTM:NG – Net UCAP Component

- Summer UCAP Calculation

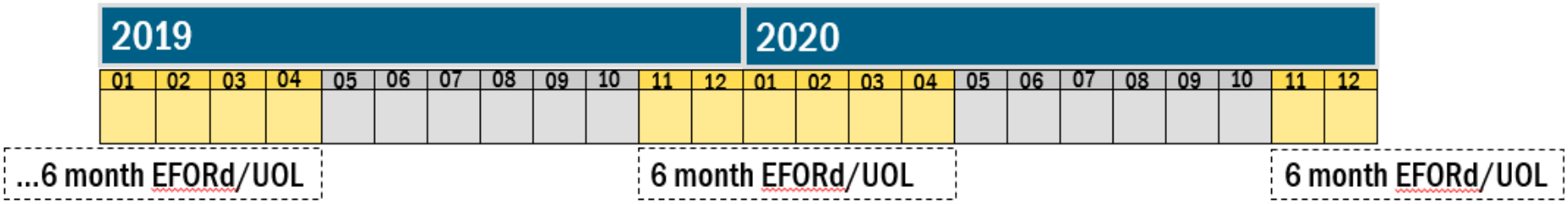
NYISO will use an average of two 6-month EFORd/UOL calculations to establish a Summer ICAP to UCAP derating factor (Avg EFORd, $AEFORd_{summer}$)



BTM:NG – Net UCAP Component

- Winter UCAP Calculation

NYISO will use an average of two 6-month EFORd/UOL calculations to establish a Winter ICAP to UCAP derating factor (Avg EFORd, $AEFORd_{winter}$)



BTM:NG Resource – Net UCAP Component

- The Load of the BTM:NG Resource is adjusted by the NYCA Translation Factor (TF) for the applicable Capability Period
  - The NYCA TF will be the season initial NYCA TF
- The Translation Factor applied to the BTM:NG Resource's Load is consistent with the calculation that translates LSE Load from ICAP to UCAP
- Increased load that affects the BTM:NG Resource's ability to meet its schedule will not contribute to the Generator derating factor

Net UCAP = Max (Min ([Gen UCAP] – [Load UCAP], Net-ICAP), 0)

Load UCAP = AHL_m * (1 – $NYCA\ TF_{CP}$)

Net-UCAP Component - Example

- **Determining Gen UCAP**

  Adjusted DMNC (MW) = 100
  Derating Factor = 1.72%
  CAF = 1

  $$\text{Gen UCAP} = \text{Adj. DMNC}_m * (1 - \text{Derating Factor}) * \text{CAF}_m$$

  Gen UCAP = 100 * (1- 0.0172) * 1
  Gen UCAP = 98.3

- **Load UCAP**
  - AHL= 40
  - NYCA Translation Factor= 9.2%

  $$\text{Load UCAP} = \text{AHL}_m * (1 - \text{NYCA TF}_{CP})$$

  Load UCAP = 40 * (1- 0.092)
  Load UCAP = 36.3

Net UCAP = Max (Min ([Gen UCAP] – [Load UCAP], Net-ICAP), 0)

Net-UCAP Component - Example

- **Net-UCAP**

  Net-ICAP (MW) = 60

  Net-UCAP (MW) = 98.3

  Load UCAP (MW) = 36.3

Net UCAP = Max (Min ([Gen UCAP] – [Load UCAP], Net-ICAP), 0)

Net-UCAP = Max (Min (98.3 – 36.3), 100, 0)

Gen UCAP = 62

Obligations and Other Capacity Market Rules

BTM:NG Resources - Outage Scheduling

- BTM:NG Resources are required to follow the same outage scheduling process as all other Generators
  - Increased Host Load must be reflected in a unit derate if the increase prevents the BTM:NG Resource from meeting its DAM schedule
  - Note that derates due to generator outages, but not Load variability, have the potential for affecting future capacity payments

BTM:NG Resources - Reporting GADS Data

- The required GADS data will be reported by the BTM:NG Resources similar to a generator via the GADS Portal
- BTM:NG Resources with an aggregation of units will report GADS data and NYISO will calculate a “fleet” Derating Factor for the facility
- Host Load data will not be reported into GADS

Refer to the Outage Scheduling Manual

BTM:NG Resources - Selling Capacity as an ICAP Supplier

- Selling capacity as an ICAP supplier
  - NYISO Auctions
    - Capability Period or Strip Auction
    - Monthly Auction
    - Spot Market Auction
  - Bilateral transactions
  - In accordance to current rules, similar to all other generators

BTM:NG Resources - Certification

- BTM:NG Resources that have sold capacity as a supplier in NYISO auctions, or have sold capacity in Bilateral Transactions must follow all current Certification rules and obligations for an ICAP Supplier
- Exact timelines and deadlines for Certification obligations identified in the ICAP Event Calendar

BTM:NG Resources – Day-Ahead Market Obligations

- BTM:NG Resources that have sold UCAP, must do one or more of the following:
  - Bid [Offer] Energy in the DAM
  - Schedule a Bilateral Transaction

  AND/OR
  - Notify the NYISO of any outage

BTM:NG Resources - Determining ICE of the UCAP Supplied

- The total amount of Energy that an BTM:NG Resource supplier "bids, schedules or declares unavailable on a given day must equal or exceed the Installed Capacity Equivalent (ICE) amount of UCAP sold
  - ICE value is a generator's capacity sold adjusted for availability

$$\text{Installed Capacity Equivalent (ICE)} = \frac{\text{UCAP Sold}}{(1 - \text{Derating Factor}) * \text{Capacity Accreditation Factor}}$$

BTM:NG Resources – Potential Sanctions and Penalties

- BTM:NG Resources will be subject to penalties/shortfall charges for:
  - Reporting GADS data NYISO
  - Over sale of capacity
  - Failure to Bid/Schedule/Notify

Refer to MST, Attachment H, Section 23.4.5

Capacity Market Financial Settlements

BTM:NG Resources – Capacity Settlements

- Capacity Payments based on MWs awarded in an auction and the applicable auction clearing price ($/kW-month)
  - Convert MWs to kW by multiplying by 1000
  - Then multiply by auction clearing price
  - This monthly capacity payment is then allocated to the weekly invoice accordingly

Capacity Market Mitigation Measures

BTM:NG Resources - Supply Side Mitigation

- BTM:NG Resources are subject to the NYISO's existing Supply-Side mitigation rules
  - The existing Pivotal Supplier price cap and must-offer rules apply to BTM:NG Resources that are part of a portfolio that constitutes Mitigated UCAP
  - The rules to prevent withholding by ICAP Suppliers apply to BTM:NG Resources

Refer to MST, Attachment H, Section 23.4.5

BTM:NG Resources – Buyer Side Mitigation

- BTM:NG Resource's are also subject to the NYISO's Buyer-Side Mitigation (BSM) rules
  - The BSM rules are intended to prevent ICAP Suppliers from artificially suppressing capacity prices through uneconomic entry
  - Tests to determine whether a unit is exempt or subject to an Offer Floor are performed during the Class Year process
    - BTM:NG Resources that received CRIS through the Transition Rule are not subject to the BSM tests
    - BTM:NG that meet requirements may request a Competitive Entry Exemption
  - Units that are mitigated cannot offer above the Offer Floor until MW clear for any 12 (not necessarily consecutive) months

Additional Documentation Resources

Additional Resources

- Market Services Tariff (MST)
- Open Access Transmission tariff (OATT)
- Installed Capacity Manual
- Ancillary Services Manual
- Demand Response Information System User's Guide
- Market Participant User's Guide
- Revenue Metering Requirements Manual
- Outage Scheduling Manual
- Attachment J, Unforced Capacity for Installed Capacity Suppliers, ICAP Manual
- Attachment K, Reportable Operating Data, ICAP Manual
- Installed Capacity Automated Market System (AMS) User's Guide
- MST Attachment H, Section 23.4.5 Installed Capacity Market Mitigation Measures
- Market Training Course Materials, Intermediate ICAP Course – MT 305

Questions?

For any future assistance, please contact NYISO Stakeholder Services at stakeholder_services@nyiso.com or by phone at (518) 356-6060