

BTM:NG Initiative: Net ICAP, CRIS Levels, Derating Factors, Mitigation Measures



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ICAPWG
July 23, 2015
NYISO, Rensselaer, NY

Topics:

- ◆ **Behind-the-Meter Net Generator (BTM:NG) Project Scope and Benefits**
- ◆ **Net ICAP Calculation**
- ◆ **Applicable CRIS Levels for BTM:NG Resources**
- ◆ **Derating Factors for BTM:NG Resources**
- ◆ **Mitigation Measures for BTM:NG Resources**
- ◆ **Next Steps**

BTM:NG Project Scope/Benefits

- ◆ **Developing market design rules for BTM:NG Resources**
 - *This proposal applies to facilities with generators that have surplus (“net”) energy and/or capacity available after serving the facility’s host load*
 - *It is the NYISO’s intent to subject BTM:NG resources to the ICAP eligibility requirements that apply to generators participating in the energy and/or capacity markets (e.g., complying with DAM bidding, scheduling and outage reporting requirements) to the extent practicable*
- ◆ **Access to this additional supply may:**
 - *Improve grid reliability and operational flexibility*
 - *Provide more clarity and certainty for future resource investment within New York State*
 - *Improve awareness of resources not currently participating in the NYISO wholesale markets*

Net ICAP Calculation

Net ICAP Calculation

- **Current rule for establishing the ICAP of Conventional Generators:**
 - *ICAP is the lesser of the current season DMNC and the current CRIS cap*
- **Proposal for establishing a Net ICAP for BTM:NG Resources**
 - *Net ICAP will be the lesser of:*
 - The injection capability for the facility;
 - The BTM:NG's CRIS; and
 - The BTM:NG's DMGC less (BTM:NG Average Coincident Host Load (1+IRM))
 - DMGC (Dependable Maximum Gross Capability) is a variation of the current DMNC that will be specific to BTM:NG resources
 - BTM:NG Average Coincident Host Load is the proposed methodology to estimate the maximum load that will be supplied by the generator serving the behind-the meter resource

Including the IRM in the Calculation of Net ICAP for BTM:NG Resources

- ◆ **In calculating the amount of capacity a BTM:NG resource can sell in the wholesale market, the NYISO's proposal nets out the facility's host load (the BTM:NG Average Coincident Host Load) to account for the capacity it provides to its own load**
- ◆ **The market should not be purchasing capacity that is not available because it is being provided bilaterally to a single identified load (outside of the NYISO's capacity market)**

Including the IRM in the Calculation of Net ICAP for BTM:NG Resources, cont'd

- ◆ **The LSE serving a BTM:NG resource's Load will not have any obligation to purchase capacity for that facility**
 - *If an LSE is required to supply any of the BTM:NG resource's Load on the peak day (e.g., due to an outage or derate of the BTM:NG generator), that Load will be removed from the NYCA peak Load when the NYISO calculates each LSE's Unforced Capacity Obligation*
 - *Thus no LSE will be procuring capacity to cover any Unforced Capacity Obligation occasioned by the BTM:NG resource's Load*

Including the IRM in the Calculation of Net ICAP for BTM:NG Resources, cont'd

- ◆ **Netting out the facility's host load to calculate the capacity a BTM:NG resource has available for sale only partially meets the capacity obligation of the host load**
 - *It does not procure the reserve margin for that host load*
 - *Its full capacity obligation is derived from the product of a load's coincident usage and the IRM (see Services Tariff Section 5.11.1)*

Including the IRM in the Calculation of Net ICAP for BTM:NG Resources, cont'd

- ◆ The capacity a BTM:NG resource has available to sell the market will be net of the BTM:NG resource's Average Coincident Host Load * (1+ the IRM)
 - *Each BTM:NG resource will therefore supply the reserve margin for the Load it directly serves*

Including the IRM in the Calculation of Net ICAP for BTM:NG Resources, cont'd

- ◆ Including the applicable reserve margin in the calculation of the capacity a BTM:NG resource has available to the market prevents the resource from selling capacity otherwise necessary to serve its Load's reserve margin
 - *The market should not be purchasing capacity that is not available because it is being provided bilaterally to a single identified Load*
 - *Therefore, the Net ICAP calculation reasonably includes both the BTM:NG Average Coincident Host Load and the IRM of the BTM:NG Average Coincident Host Load*

Treatment of BTM:NG Load in the NYISO Load Forecast

- ◆ The NYISO recognizes that the Load of the BTM:NG resource may be supplied from the distribution system from time to time (e.g., when the BTM:NG resource is not available due to maintenance or outage, or when the Load exceeds the capability or availability of the BTM:NG resource)
- ◆ If the Load of the BTM:NG resource is served by the distribution system during the peak hour used to determine the NYISO ICAP Load Forecast, that Load will be subtracted from the NYCA/Locality peak Load
 - *Adjustments currently made to the NYCA/Locality peak to add back Load reductions for demand response, public appeals, and/or operation of backup generators during the NYCA/Locality peak hour to account for actual Load that needs to be planned for in the next Capability Year (Section 2.2 of the Load Forecasting Manual)*
 - *To prevent double-counting when the Load of a BTM:NG resource is served by the distribution system during the NYCA/Locality peak hour, an adjustment will be made to the Load forecast to remove that Load from the Load forecast because the BTM:NG resource is responsible for meeting the capacity requirement of its host Load.*
 - Planning studies, such as the IRM/LCR, will account for Load growth and Load forecast uncertainty for the Load served by a BTM:NG resource

Applicable CRIS Levels for BTM:NG Resources

Applicable CRIS Levels for Existing Generators That Qualify for Grandfathered CRIS

- ◆ **Current Grandfathering (GF) Rule:**
 - *For qualifying existing generators, current GF CRIS provisions set, and then reset, the CRIS level based on the highest DMNC for the first five Summer Capability Periods for which the generator submits a DMNC*

Applicable CRIS Levels for Grandfathered or Transitioned BTM:NG Resources

- ◆ An initial CRIS value for a BTM:NG resource eligible for CRIS either through the grandfathering rule or the proposed transition rule will be based on its Net ICAP. In this calculation its Net ICAP is the lesser of (1) the net injection capability for the facility, or (2) the generator's DMGC, less its BTM:NG Average Coincident Host Load $*(1+IRM)$
- ◆ A Summer CRIS level for this BTM:NG resource will then be set and reset annually based on the highest Net ICAP established in each of the five consecutive Summer Capability Periods following the setting of the initial CRIS value
- ◆ After being set and reset for years 2 through 6, a final Summer CRIS level will be assigned as the highest of the five annual Summer CRIS levels
 - *This methodology recognizes the load variability associated with these resources*
- ◆ The Winter CRIS value will equal the resource's Summer CRIS value

Applicable CRIS Levels for New Resources

- ◆ **Current rule for conventional generation in CY Deliverability Studies:**
 - *A proposed conventional generator may request CRIS up to its nameplate capability*

Applicable CRIS Levels for New BTM:NG Resources

- ◆ To participate in a CY Deliverability Study, new BTM:NG resources must provide:
 - *Either actual nameplate rating or, if a new generator, expected nameplate MW of the BTM:NG resource; and*
 - *Either historical Load data or, if new Load, the facility's expected Summer peak Load to be supplied by the BTM:NG resource*
- ◆ A proposed BTM:NG resource may request CRIS up to the difference between the proposed or existing nameplate MW of the generator serving the BTM:NG resource and the estimated or historical Load to be served by the BTM:NG resource adjusted for applicable IRM at the time of the CY Deliverability Study
- ◆ The CRIS value awarded through the CY Deliverability Study will be the deliverable MW (up to the amount of CRIS requested) or the full MW value of requested CRIS, if the facility owner accepts its Project Cost Allocation for any required System Deliverability Upgrades

Applicable CRIS Levels for New BTM:NG Resources, cont'd

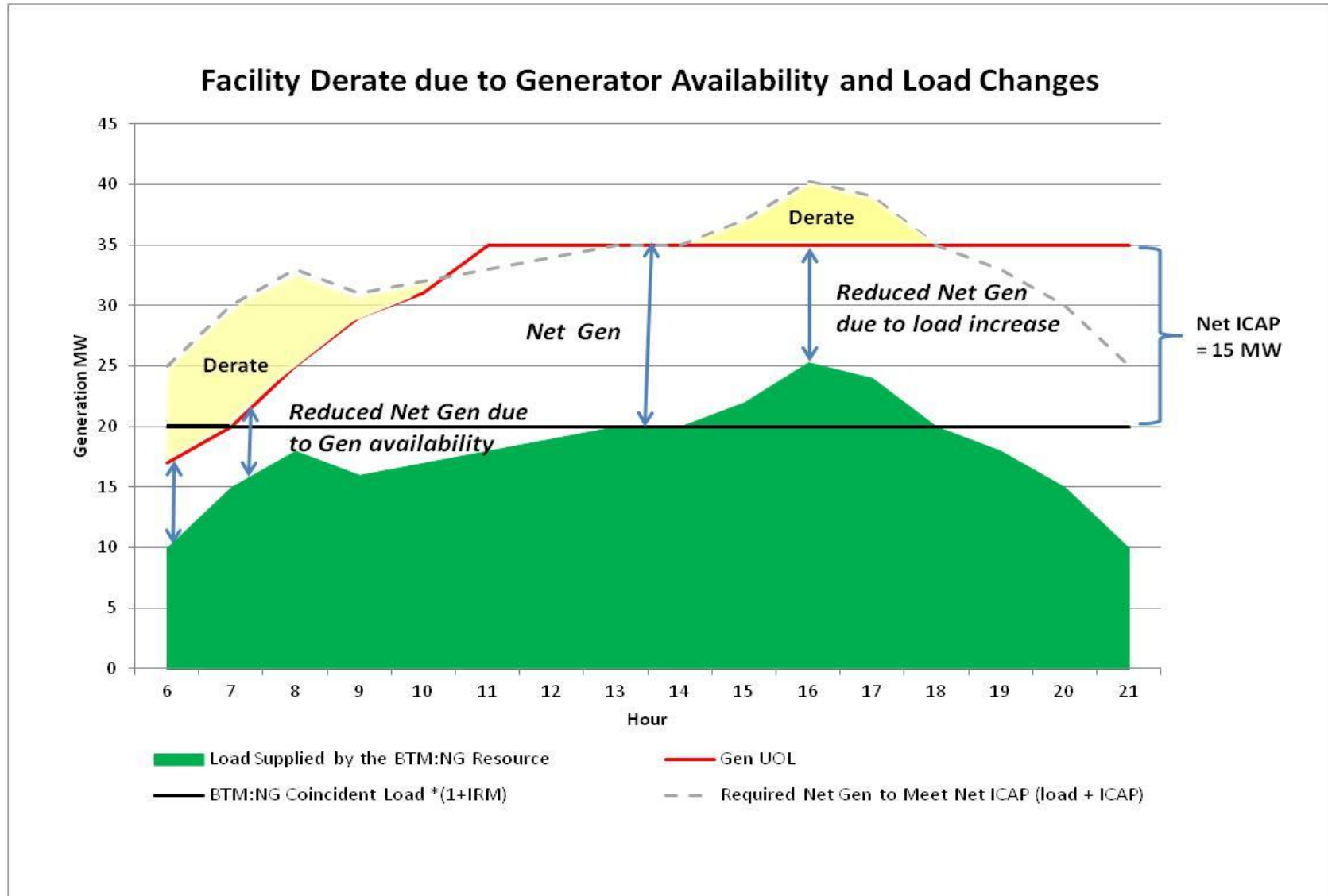
- ◆ A Summer CRIS level for a new BTM:NG resource will be set and then reset annually based on the highest Net ICAP established in each of the five consecutive Summer Capability Periods following commercial operation
 - *The CRIS determined to be deliverable for a BTM:NG resource will act as a cap on these annual Summer CRIS levels*
- ◆ After being set and reset for years 1 through 5, a final Summer CRIS level will be assigned as the highest of the five annual Summer CRIS levels
 - *This methodology for determining the applicable CRIS level for BTM:NG resources recognizes the Load variability associated with these resources*
- ◆ The Winter CRIS value will equal the Summer CRIS value

BTM:NG Resource Derating Factors

Derate Types for BTM:NG Resources

- ◆ **Generator derate**
 - *All applicable GADS-reportable events*
- ◆ **Derates due to variations in Load**
 - *A resource will also report a derate when a change in the Load served by the BTM:NG resource prevents the BTM:NG resource from meeting its obligation as a capacity supplier*

Example: BTM:NG Resource Derates



Description of BTM:NG Resource Derate Scenario Chart

◆ BTM:NG Resource:

- *Gen UOL = 35 MW*
 - Gross generation MW bid in the Day-Ahead Market
 - Derate must be reported if Gen UOL is less than ICAP equivalent of UCAP sold
- *BTM:NG Average Coincident Host Load*(1+IRM) = 20 MW*
- *ICAP obligation = 15 MW*
- *Dotted line = Generation output required to meet its 15 MW ICAP obligation*

Description of BTM:NG Resource Derate Scenario Chart, cont'd

- ◆ When the generator is not able to meet its ICAP obligation, the BTM:NG resource will take a derate:
 - *Reduced availability may reflect either generator availability and/or host load variability of the BTM:NG resource*
 - *Examples of generator availability are shown on the left side of the chart, where the generator is not operating at a level that allows it to meet its ICAP obligation*
 - For example: In hour 6, with total generator output of 17 MW and a load of 10 MW, the BTM:NG resource is only capable of providing 7 MW of its 15 MW ICAP obligation, due to reduced generator availability. The BTM:NG resource will take a derate for remaining 8 MW

Description of BTM:NG Resource Derate Scenario Chart, cont'd

- ◆ **When an increase in the load prevents a BTM:NG resource from meeting its ICAP obligation, as shown on the right side of the chart, the BTM:NG resource will receive a derate**
 - **For example: In hour 16, with total generator output at its UOL and a load of 25 MW, the BTM:NG resource can only provide 10 MW of its 15 MW ICAP obligation, due to increased load. The BTM:NG resource will receive a derate of 5 MW**

Derating Factors for BTM:NG Resources

- ◆ **Three derating factors will be applicable to BTM:NG resources:**
 - *IRM/LCR Study EFORd*
 - *CY Deliverability Study Derating Factor*
 - *ICAP Market Derating Factor*

IRM/LCR Study EFORd

- ◆ The purpose of the Equivalent Demand Forced Outage Rate (EFORd) in the NYISO's planning studies is to evaluate the availability of generators
- ◆ Currently, the EFORd is calculated using an EFORd applied to the CRIS adjusted DMNC values for conventional generators. The EFORd is based on five years of historic GADS data, including the outages beyond the generator's control
- ◆ In the IRM/LCR Studies, the generation and load of BTM:NG resources will be modeled separately
 - *The generator portion of the BTM:NG resource will be evaluated for availability, as are other generators*
 - *The gross load of the BTM:NG resource, as determined by the BTM:NG Average Coincident Host Load calculation, will be added to the load forecast for the IRM/LCR studies so it will be evaluated for growth and Load Forecast Uncertainty*

IRM/LCR Study EFORd, cont'd

- ◆ **The NYISO proposes to evaluate the availability of the generator portion of the BTM:NG resource by applying an EFORd to the lower of (i) its DMGC and (ii) the BTM:NG resource's CRIS plus the BTM:NG resource's Average Coincident Host Load being modeled in the IRM/LCR study**
 - *The EFORd will be calculated as it is calculated for conventional generators (i.e. using GADS data)*
 - *GADS data will not include any impact from the variability of the host load*

IRM/LCR Study EFORd, cont'd

- ◆ Resources new to the market that have not previously reported GADS will be assigned a NERC GADS class-average EFORd by technology type, as is currently applicable for conventional generators
 - *In the absence of the NERC class-average, the NYISO will use a zonal ICAP to UCAP translation factor (an average EFORd of all resources in a given zone)*
- ◆ When a BTM:NG resource has multiple generator types behind the meter, the NYISO will use a blended NERC class-average EFORd for new units, or GADS data, if available, weighted by nameplate (see next slide)

IRM/LCR Study EFORd, cont'd

Example for Blended NERC class-average EFORd:

Gen Type 1

IRM/LCR Study EFORd	MW
Gen 1 Nameplate	10
Gen 1 NERC class-average EFORd	61%
Gen 1 portion of Blended EFORd (by nameplate) = $(10/18) * 61%$	34%

Gen Type 2

IRM/LCR Study EFORd	MW	Total MW
Gen 2 Nameplate	8	18
Gen 2 NERC class-average EFORd	50%	
Gen 2 portion of Blended EFORd (by nameplate) = $(8/18) * 50%$	22%	56%

Gen Blended EFORd = 56%

Class Year Deliverability Study Derating Factor

- ◆ **Derating factors are applied to all CRIS values (actual or requested values as applicable) for Deliverability Studies. The derating factor applied to all non-intermittent resources is the weighted average of the individual generators' derating factors, for each capacity zone, from the most current IRM study report**
 - *The initial derate factor applied to a BTM:NG resource will be the most recent Summer ICAP to UCAP translation factor for the capacity region in which it is located*
 - *Going forward, the derating factor applied to BTM:NG resource will be calculated based on the historical performance of BTM:NG resources*

ICAP Market Derating Factor

- ◆ **Current Rule:** The amount of UCAP that can be sold in the Capacity Market is calculated using a derating factor
 - $UCAP = ICAP * (1 - \text{derating factor})$
- ◆ **Proposed Rule for BTM:NG resources:** The amount of UCAP that a BTM:NG resource can sell in the Capacity Market is also calculated using a derating factor:
 - $BTM:NG UCAP = Net ICAP * (1 - \text{Market Derating Factor})$

ICAP Market Derating Factor, cont'd

- ◆ The market derating factor will be based on the availability of the BTM:NG resource's Net ICAP
 - *The market derating factor will reflect both generator derates and load variability of the BTM:NG resource*
 - *Net ICAP = min [injection capability, CRIS, (DMGC – BTM:NG Average Coincident Host Load*(1+IRM))]*
- ◆ For new BTM:NG resources, a NYISO BTM:NG class-average derating factor will be used for missing Net ICAP availability data
 - *Similar to generators receiving NERC class-average*
 - *In the absence of a NYISO BTM:NG class-average derating factor, the NYISO will use a zonal ICAP to UCAP translation factor*

Mitigation Measures for BTM:NG Resources

BTM:NG Supply-side Mitigation

- ◆ **The NYISO intends to maintain the principles of its current mitigation rules and apply those same rules, to the extent practicable, to BTM:NG resources**
- ◆ **The purpose of Supply-Side Mitigation is to prevent physical or economic withholding by existing ICAP Suppliers that may have an incentive to raise prices**

BTM:NG Supply-side Mitigation, cont'd

◆ Pivotal Supplier Measures

- *Spot offer price cap and Must Offer requirement for Mitigated UCAP*

- BTM:NG resources will be subject to rules that apply to ICAP Suppliers
- Need to ensure rules do not force offers of MWs that do not exist

◆ Physical Withholding

- *Audit and review of (i) proposals or decisions to retire, remove, or de-rate capacity (ii) reclassifications to ICAP Ineligible Forced Outages unless the unit had a Catastrophic Failure*

- BTM:NG resources will be subject to rules that apply to ICAP Suppliers

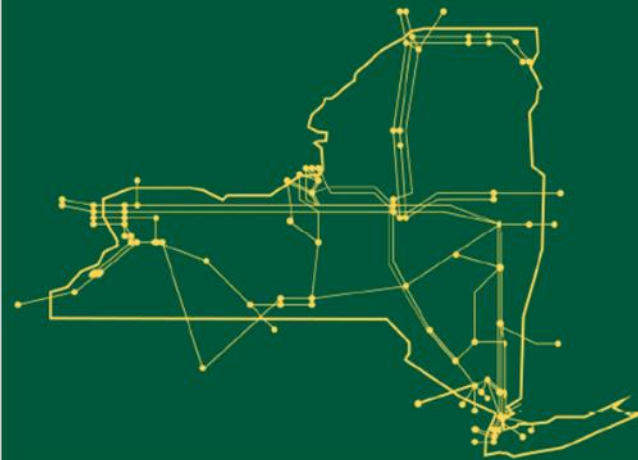
BTM:NG Buyer-side Mitigation

- ◆ The purpose of Buyer-Side Mitigation (BSM) is to prevent ICAP Suppliers from artificially suppressing capacity prices due to uneconomic investment
 - *BSM will not apply to BTM:NG resources that acquire CRIS without going through a CY Deliverability Study*
 - *Mitigation Exemption Tests shall be applied to BTM:NG resources that request CRIS through a CY Deliverability Study*
 - Some BTM:NG resources may qualify for the Competitive Entry Exemption
 - Rules to align Investment Costs and Net Energy and Ancillary Services Revenues (*i.e.*, to calculate Unit Net CONE)

Next Steps

- ◆ **July 31: Joint MIWG/ICAPWG Review of Market Design Concepts for the Integration of BTM:NG Resources**
- ◆ **August 12 BIC: Conceptual Approval of Market Design Concepts for the Integration of BTM:NG Resources**
- ◆ **September – November: Development of Tariff Language**

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