

Treatment of Behind-the-Meter Net Generation Resources in the 2018 IRM study

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Agenda

- **NYISO's proposed treatment of BTM:NG Resources**
- **Appendix**
 - Part 1 – How BTM:NG Resources affect the ICAP market
 - Part 2 – Modeling BTM:NG Resources in the 2018 IRM study
 - Examples

Background

Date	Material	Discussion points and links to materials
03-17-16	NYISO filed its BTM:NG tariff revisions ER16-1213	Filing letter - https://nyisoviewer.etariff.biz/ViewerDocLibrary//Filing/Filing1116/Attachments/2016_03_17_NYISO_BTMNG_Transmittal_Letter.pdf
05-17-16	FERC Order accepting BTM:NG tariff revisions	Order - https://nyisoviewer.etariff.biz/ViewerDocLibrary//FercOrders/20160517%20FERC%20Order%20ER16-1213-000_15301.pdf
04-28-17	NYISO ICAP Manual	Section 4 – description of ICAP and UCAP calculations for BTM:NG Resources http://www.nyiso.com/public/webdocs/markets_operations/documents/Manuals_and_Guides/Manuals/Operations/icap_mnl.pdf
12-08-16	Load Forecasting Task Force presentation	Proposed Load Forecasting Manual Changes for BTM:NG Resources http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg_1ftf/meeting_materials/2016-12-08/BTMNG%20Presentation%20to%20LFTF.pdf
11-29-16	Load Forecasting Manual	Note : the NYISO is considering additional BTM:NG Resource related changes to this manual http://www.nyiso.com/public/webdocs/markets_operations/documents/Manuals_and_Guides/Manuals/Under_Review/M-06_Load%20Forecasting_Redline_11-18-16.pdf

BTM:NG Resource capability

ICAP Market

- **Net-ICAP**
 - Adjusted Demonstrated Maximum Gross Capability (“DMGC”) less Adjusted Host Load
- **Net-UCAP**
 - Conversion from ICAP to UCAP, per the ICAP Manual

2018 IRM study

- **Capability**
 - Adjusted DMGC
- **NYISO will determine outages and maintenance consistent with treatment of wholesale generation resources in the IRM study**

Adjusted DMGC considers the Resource’s CRIS and Injection Limit

Load

ICAP Market

- ICAP Load Forecast excludes BTM:NG Resource Host Loads

2018 IRM study

- Load will include BTM:NG Resource Host Load
 - Examples are found on slides 19-21

Data postings

- The NYISO is working to determine which BTM:NG Resource data to publically post and where

Appendix

Part 1:

How BTM:NG Resources affect the ICAP market

ICAP Load Forecast

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Key modeling assumptions

- **BTM:NG Resources serve their Host Load, plus the defined reserve margin, before selling capacity**
- **Host Load (i.e. BTM:NG Resource's host load) does not affect Transmission District net metered load or load growth**
 - Per the tariff definition of a BTM:NG Resource, it must have excess generation capability after serving its Host Load and defined reserve margin

Determining the ICAP Load Forecast

- 1. Zero out BTM:NG Resources Host Load served by the Transmission District**
 - Transmission District metered load will not reflect net load from the Host Load
 - Net Host Load = $\min(0, \text{net injection})$
- 2. Follow existing load forecasting procedures**
 - See the “Background” slide for documentation
- 3. Examples of step #1 are found at the end of the presentation**

BTM:NG Resource ICAP and UCAP Calculations

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ICAP and UCAP Calculations

- **Defined in the Behind-the-Meter Net Generation Resource Section of the ICAP Manual**
 - Section 4.15 of the currently effective ICAP Manual
 - http://www.nyiso.com/public/webdocs/markets_operations/documents/Manuals_and_Guides/Manuals/Operations/icap_mnl.pdf

ICAP Calculation

- **Net-ICAP is the capability of the Generator serving the BTM:NG Resource less its Adjusted Host Load (“AHL”)**
 - AHL is the host facility’s Average Coincident Host Load (“ACHL”) plus the defined reserve margin
- **Net-ICAP also considers interconnection and CRIS limits**
 - These considerations ensure the BTM:NG Resource’s ICAP is useful to the system, consistent with the treatment of wholesale resources

$$Net_ICAP = \min \left(\begin{array}{l} DMGC - AHL \\ Injection\ Limit \\ CRIS \end{array} \right)$$

UCAP Calculation

- **UCAP calculation converts both the BTM:NG Resource's generation from ICAP into UCAP and the BTM:NG Resource's Adjusted Host Load into UCAP**
 - BTM:NG Resource UCAP calculations use the Resource's EFORd
 - Adjusted Host Load is converted to UCAP using the NYCA derating factor to ensure the Resource meets its Host Load plus the defined reserve margin before selling capacity in the market

Part 2: Modeling BTM:NG Resources in the 2018 IRM study

Resource capability

- **BTM:NG Resource capability will be the “Adjusted DMGC”**
 - Adjusted DMGC is the least of the BTM:NG Resource’s DMGC test value, its CRIS cap, and its Injection Limit
- **Determine outages and maintenance consistent with treatment of wholesale generation resources in the IRM study**

$$Adj. DMGC = \min \left(\begin{array}{l} DMGC \\ AHL + Injection\ Limit \\ AHL + CRIS \end{array} \right)$$

Load data

- 2018 IRM study load will include the 2017 BTM:NG Resource Host Load adjusted to 2018
- BTM:NG Resources' load data will be posted during the process of determining the ICAP Load Forecast
 - By November, per the Load Forecasting Manual

Part 3: Examples

IRM load forecast: BTM:NG Resource operating at full capability

- Transmission District (TD) peak Load: 4,950 MW
- Host Load on the peak hour: 50 MW
- BTM:NG Resource output: 69 MW
 - Thus, net Load is 0 MW
- BTM:NG Resource host facility ACHL: 50 MW
- Ex. ICAP Load Forecast calculation: 4,950 MW
- Load for the IRM: ICAP Load Forecast + Host Load = 5,000 MW
- **BTM:NG Resource Adj. DMGC: 69 MW**
 - Capability in the IRM study: 69 MW

IRM load forecast: BTM:NG Resource not operating

- **Transmission District (TD) peak Load: 5,000 MW**
 - 4,950 MW from prior example plus 50 MW of LSE-served BTM:NG Host Load
- **Host Load on the peak hour: 50 MW**
- **BTM:NG Resource output: 0 MW**
 - I.e., the BTM:NG Resource is not operational during the peak hour. Net Load = 50 MW
- **BTM:NG Resource host facility ACHL: 50 MW**
- **Ex. ICAP Load Forecast calculation: 4,950 MW**
 - We deduct BTM:NG net load from TD peak load
- **Load for the IRM: ICAP Load Forecast + Host Load = 5,000 MW**
- **BTM:NG Resource Adj. DMGC: 69 MW**
 - Capability in the IRM study: 69 MW

BTM:NG Resources serve their entire Host Load. Therefore, NYISO market processes assume that BTM:NG Resource Host Load do not contribute to peak load growth

IRM load forecast: BTM:NG Resource derated

- **Transmission District (TD) peak Load: 4,975 MW**
 - 4,950 MW from prior example plus 25 MW of LSE-served BTM:NG Host Load
- **Host Load on the peak hour: 50 MW**
- **BTM:NG Resource output: 25 MW**
 - I.e., the BTM:NG Resource is not fully operational during the peak hour. Net Load = 25 MW
- **BTM:NG Resource host facility ACHL: 50 MW**
- **Ex. ICAP Load Forecast calculation: 4,950 MW**
 - We deduct BTM:NG net load from TD peak load
- **Load for the IRM: ICAP Load Forecast + Host Load = 5,000 MW**
- **BTM:NG Resource Adj. DMGC: 69 MW**
 - Capability in the IRM study: 69 MW

BTM:NG Resources serve their entire Host Load. Therefore, NYISO market processes assume that BTM:NG Resource Host Load do not contribute to peak load growth

BTM:NG Resource ICAP and UCAP calculations

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Definitions for the following examples

- **Injection Limit**
 - Maximum injection of a BTM:NG Resource onto the NYS Transmission System or distribution system
- **CRIS**
 - MW determined to be deliverable by the NYISO
- **DMNC**
 - Demonstrated Maximum Net Capability
- **DMGC**
 - Demonstrated Maximum Gross Capability
- **AHL**
 - Adjusted Host Load

Determining the Net-ICAP of a BTM:NG Resource

CRIS-limited wholesale generator

Injection Limit	CRIS	DMNC	AHL	Net-ICAP
n/a	100	105	n/a	100

$$ICAP = \min \left(\begin{matrix} DMNC \\ CRIS \end{matrix} \right) = \left(\begin{matrix} 105 \\ 100 \end{matrix} \right) = 100$$

Determining the Net-ICAP of a BTM:NG Resource

CRIS-limited BTM:NG Resource

Injection Limit	CRIS	DMGC	AHL	Net-ICAP
110	100	205	100	100

$$Net_ICAP = \min \left(\begin{matrix} DMGC - AHL \\ Injection\ Limit \\ CRIS \end{matrix} , \right) = \left(\begin{matrix} 205 - 100 \\ 110 \\ 100 \end{matrix} \right) = \left(\begin{matrix} 105 \\ 110 \\ 100 \end{matrix} \right) = 100$$

Determining the Net-ICAP of a BTM:NG Resource

Injection Limit limited BTM:NG Resource

Injection Limit	CRIS	DMGC	AHL	Net-ICAP
90	100	205	100	90

$$Net_ICAP = \min \left(\begin{matrix} DMGC - AHL \\ Injection\ Limit \\ CRIS \end{matrix} , \right) = \left(\begin{matrix} 205 - 100 \\ 90 \\ 100 \end{matrix} \right) = \left(\begin{matrix} 105 \\ 90 \\ 100 \end{matrix} \right) = 90$$

Determining the Net-ICAP of a BTM:NG Resource

DMGC limited BTM:NG Resource

Injection Limit	CRIS	DMGC	AHL	Net-ICAP
90	100	180	100	80

$$Net_ICAP = \min \left(\begin{matrix} DMGC - AHL \\ Injection\ Limit \\ CRIS \end{matrix} , \right) = \left(\begin{matrix} 180 - 100 \\ 90 \\ 100 \end{matrix} \right) = \left(\begin{matrix} 80 \\ 90 \\ 100 \end{matrix} \right) = 80$$

Questions?

We are here to help. Let us know if we can add anything.

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- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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