Behind the Meter Net Generation Initiative: Energy Supplier Participation Requirements

Pradip Ganesan
Market Product Specialist
New York Independent System Operator

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Background

- **Currently, behind the meter resources can register as a wholesale generator by:**
  - ***Qualifying to and then selling the full capability into the wholesale markets ('coming out from behind the meter').***
  - ***Moving the load they serve into the wholesale market via an LSE and,***
  - ***Setting up a wholesale market bilateral contract between the generator and LSE.***
- **The BTM:NG model is designed to allow the generator to participate in the NYISO wholesale markets without:**
  - ***Requiring the load to also become a wholesale customer; or***
  - ***Requiring the generator to avail itself entirely to the NYISO wholesale market.***

Background

- There have been several requests from generators that serve load behind the meter to allow them to participate in the NYISO wholesale markets as a generator.
- A behind the meter (BTM) generator has excess or 'net' generation (NG) capability after serving its retail load.
- The NYISO is proposing a set of market rule changes that would allow these generators to participate in the NYISO energy and capacity markets with this net generation.
  - *The NYISO BPWG process has identified a market design deliverable for 2015.*

Benefits of BTM:NG

- Access to this additional supply may improve grid reliability and operational flexibility.
- Improve awareness of resources not currently participating in the NYISO wholesale markets.
- Provide more clarity and certainty for future resource investment within New York State.

Today's Discussion

- Review the scope of current market design proposal for BTM:NG participation.
- Define a BTM:NG resource.
- Review requirements for a BTM:NG resource to participate as an energy supplier.
- Review the different configurations that are allowed for a BTM:NG resource to participate in the wholesale markets.

Scope of BTM:NG Participation

- **In order to meet stakeholder requests to expedite participation of BTM:NG resource in the NYISO markets, the initial phase of this design will not permit a generator:**
  - ***To register as a BTM:NG resource and as a Demand Response provider in a NYISO or Transmission Owner program or participate as a supplier in a Transmission Owner "buy-back" tariff program.***
  - ***To register as a BTM:NG if it is an Intermittent Power Resource (solar, wind, landfill gas) or if it is a Limited Control Run-of-River Hydro Resource.***
- **The design for participation in other demand response programs and as intermittent resources shall be considered after the initial phase is deployed.**

BTM:NG Definition

- **In response to questions raised during the May 28th ICAPWG meeting, the NYISO proposes the following definition of a BTM:NG resource:**
  - ***A facility within which a generator, or an interconnected group of generation units, regularly serves behind-the-meter load. The facility must:***
    - **Have its load and generation interconnected within a defined electrical boundary behind a single ISO/TO approved net injection meter point;**
    - **Be responsive to dispatch instructions as a single entity interfacing with the grid;**
    - **Be configured to allow the NYISO to dispatch all or a subset of the generation units for the duration scheduled by the NYISO;**
    - **Be operated to provide electricity to the behind-the-meter load, beyond station power, in the regular course of business, not only when more economic than grid provided energy.**
  - ***All generation inside the electrical boundary that will be serving load or providing the NYISO with excess energy must be permitted to operate other than as emergency generators.***

Energy Market Participation Requirements

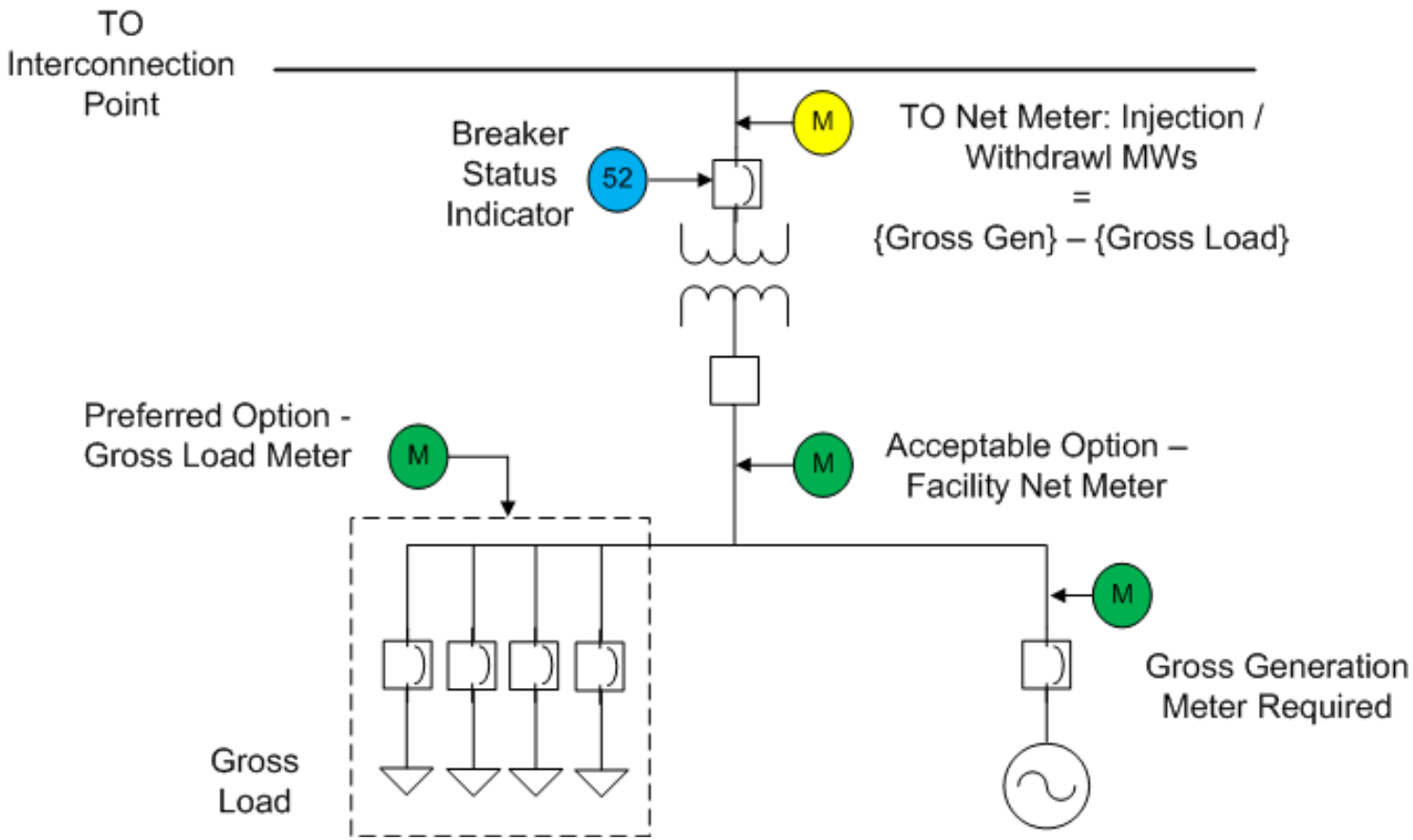
- **A BTM:NG resource must be large enough to export (inject to the grid) at least 1 MW of energy after serving its behind-the-meter load.**
  - ***If selling capacity, a discount to its excess energy equal to the (1 + the IRM) * its connected Load (see 05/18/2015 ICAPWG presentation on BTM:NG for details) is also considered.***
- **The interconnection must also allow an export (injection to the grid) of at least 1 MW at the approved net injection meter point.**
  - ***The ISO shall review and approve each plant configuration on a case by case basis for a facility seeking to participate as a BTM:NG resource.***
- **Using the aggregation model discussed in this presentation, a BTM:NG resource may aggregate the generation source(s) at the facility in order to export at least 1 MW of energy.**
  - ***The generation and load at the facility must be electrically connected to each other in order to aggregate them.***

BTM:NG Configurations

- **Each BTM:NG in the configurations listed below shall require a net meter at each interconnection point from the BTM:NG to the distribution grid or the bulk transmission system.**
- **Participation at a facility will be either:**
  - ***As a single generator serving a load (Option 1);***
  - ***As an aggregated set of generators serving a load (Option 2); or***
  - ***As several BTM:NGs at a single facility each serving an identified, separately metered load (Option 3).***

BTM:NG Configuration – Option 1

Single generator serving a load

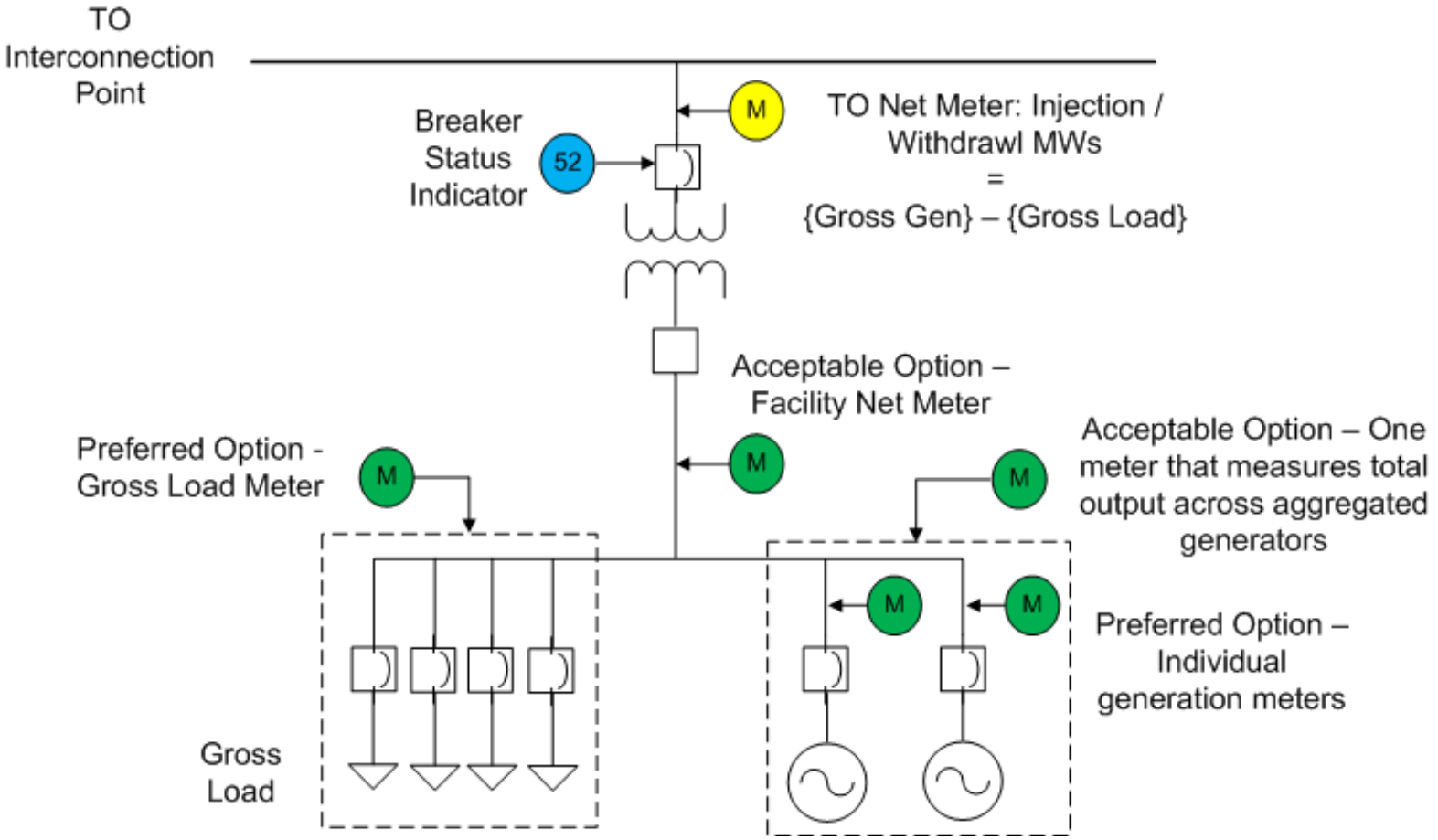


BTM:NG Configuration – Option 1

- **Only one physical generation asset serving behind the meter load at the facility.**
- **In this configuration, the unit participating as a BTM:NG resource is eligible to provide spinning reserves and regulation because ramp rates can be adequately captured.**
- **The generator can offer to sell its excess energy up to its UOL in the DA and RT markets.**
  - ***If qualified and bidding flexibly, reserve offers will be required.***
  - ***If qualified and bidding flexibly, regulation service may be offered.***

BTM:NG Configuration – Option 2

Aggregated set of generators serving a load



BTM:NG Configuration – Option 2

- **In the aggregated model, several generation assets are aggregated behind a single PTID with a single dispatch signal to the facility. A grouped (2x1) combine cycle plant with a single PTID is modeled and treated this way in the wholesale market.**
- **An aggregated BTM:NG resource:**
  - ***May offer Energy and Capacity.***
  - ***Is required to offer non-spinning reserve up to its scheduled UOL if qualified and bidding flexibly.***
- **An aggregated BTM:NG resource cannot offer spinning reserves or regulation:**
  - ***The NYISO has no view into the operating state of individual assets in the aggregation. Therefore, the NYISO assumes a BTM:NG resource with an Operating Reserve schedule may have to turn on another unit to convert the reserves to energy. Similar concerns exist if a Regulation Service schedule was awarded.***

BTM:NG Configuration – Option 2, cont'd.

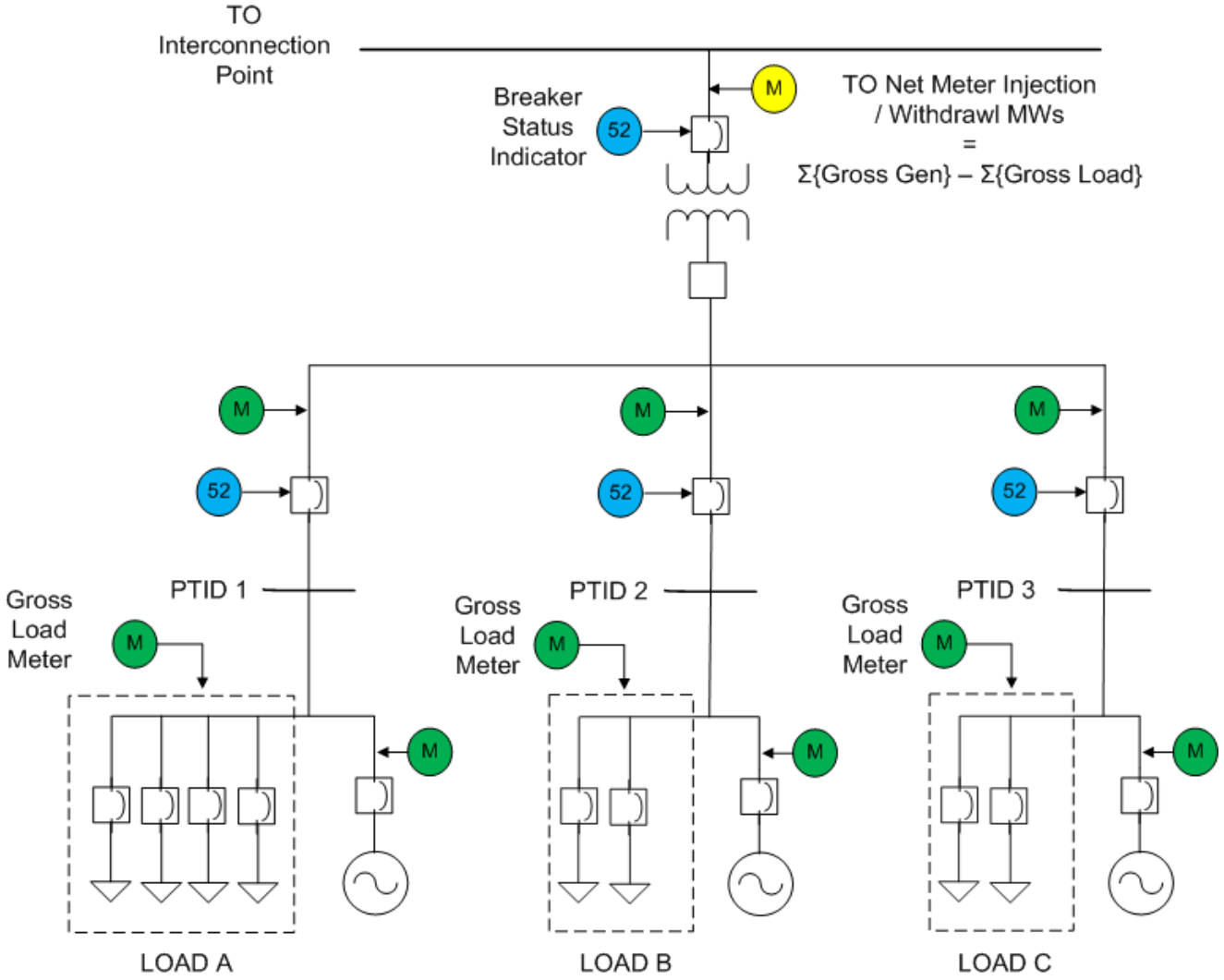
- **An aggregated BTM:NG resource that has an offer with no load included and is not currently providing energy will be paid start-up and minimum generation costs if scheduled by the NYISO. Incremental starts will not be eligible for start-up costs.**
  - ***Start up and min gen costs associated with the need to start an additional unit to meet the NYISO's dispatch will not be paid.***

BTM:NG Configuration – Option - 2 Example

- **Consider the following plant configuration:**
  - ***Generation = Three 20 MW units.***
  - ***Typical Load ~ 25 MW.***
  - ***Two units ON at any given time (40 MW capacity). The BTM:NG can produce an additional 15 MW after serving its 25 MW load without incurring start up or min gen costs.***
- **If the BTM:NG resource is an energy-only supplier and intends for the NYISO to dispatch it above 15 MW, if economic, the unit needs to bid a gross UOL of 60 MW, and the third unit needs to be turned ON. If the facility does not intend this result, the facility would bid a gross UOL of 40 MW.**

BTM:NG Configuration – Option 3

Several BTM:NG resources at the same facility



BTM:NG Configuration – Option 3

- **A facility with several generation assets each serving separately metered load may choose to register each generating unit serving discrete behind the meter load as a BTM:NG resource, each with a single PTID.**
  - ***Load and generation must be paired for each BTM:NG resource PTID.***
- **In this configuration, each unit participating as a BTM:NG resource is eligible to provide spinning reserves and regulation because ramp rates can be adequately captured.**
- **Requires each registered generation resource and behind the meter load to have separate meters installed.**
  - ***In addition, each BTM:NG resource PTID must have a separate net injection meter.***

Next Steps

- Review energy market and capacity market design concepts with stake holders at a joint MIWG/ICAPWG meeting specifically for the BTM:NG initiative in late July.
- Present the BTM:NG concepts for energy market and capacity market participation to stake holders for concept approval during the August 12th BIC session.

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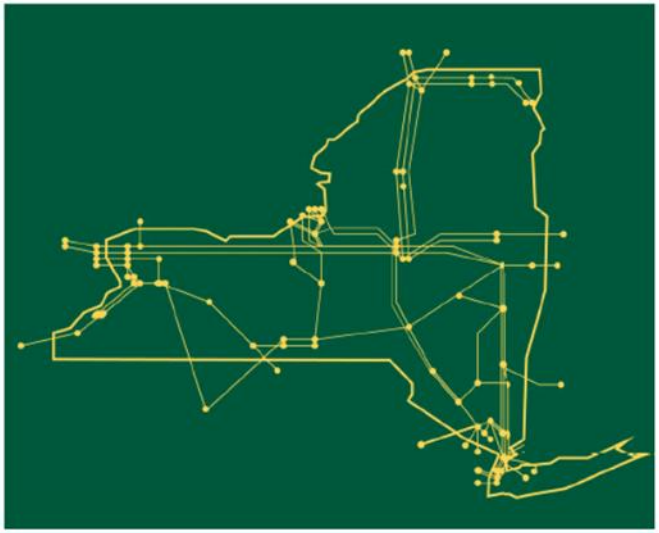

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