Distributed Energy Resources (DER) Update
Behind the Meter Generation (BtMG) Visibility

MIC-DER Special Session

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Impact of DER on PJM processes

• Address system issues to avoid manual load dump
  – Request for DER output
  – Example – local capacity shortage in MI where DER can mitigate (Sturgis)
• Operational awareness
  – understand grid situation for future dispatch actions & communication
  – Example – PEPCO low voltage issue that resulted in DER output which appeared as load drop.
• Improve real time and long term forecast or better understand forecast errors
• Improve RTEP load flow studies
• Administer Non-Retail Behind the Meter Generation (“NRBTMG”) rules

DER represents BTMG/NRBTMG (including batteries) not transparent or controlled by PJM
(Does not include generation that went through PJM queue OR participates through DR)
2013 Sept. Behind-the-Meter Event

Action 1: City of Sturgis starts 6 MW behind-the-meter unit

Excessive line flow and load observed

Action 2: City of Sturgis implements Voluntary Customer Load Curtailment

Reduced load and line flow observed
Behind-the-Meter Generation Data Collection

**Scope:**
Behind-the-Meter facilities includes batteries

**Details collected:**
Location, capacity, nearest substation, time-to-start, mode of operation.

**Number of identified units:**
~425 units

**Total capacity of identified units:**
~3500 MW
Data Options being considered

Dispatch Interactive Map Application (DIMA), visually shows area maps for Weather, Line Outages, Demand Resources, Gas Pipeline, and BtMG resources.

Energy Management System modeling attributes:
- Visibility on individual single line
- Shows connectivity
- Telemetry can indicate operation
- Negative load to not negatively impact State Estimator solution
- Tabular list based on BTM naming

Coordinated effort to enhance communications during critical operational periods
Behind-the-Meter Visibility at PJM

Behind-the-meter plants added to display

Dispatch
Interactive
Map
Application
(DIMA)
Ability to search for behind-the-meter plants in specific zone

Dispatch Interactive Map Application (DIMA)
BtMG Technical information and Data submission

Two Items:
1. BtMG PJM Position Technical Paper
2. Data submission form
High Level Process Overview: EMS processing

PJM Manual 3A, Section 1.2.1 and Appendix D has specifics.
123 Substation

EMS Location

Node Location
BtMG Data Form

Description of each data entry field is given in PJM Manual 3A, Appendix D.

http://www.pjm.com/~media/committees-groups/subcommittees/dms/postings/btmg-submission-form.ashx
Non-Retail Behind the Meter Generation ("NRBTMG")

• What is NRBTMG?
  – BTMG that is used by municipal electric systems, electric cooperatives, and electric distribution companies to serve load
  – Total amount eligible to net generation against load is capped.
  – Should operate during maximum emergency generation events

• Current PJM process
  – Members should notify PJM of NRBTMG and associated output.
  – Model in EMS or maintain separate list, depending on level of information.
Next Steps

1. Develop and enhance process to keep information accurate and current (need TO/EDC assistance)
   - EMS vs DIMA to manage the information
   - Non-Retail Behind the Meter Generation and “retail” Behind the Meter Generation reporting process.
   - Evaluate enhancements to BtMG form

2. Refine load forecast process with DER information, as applicable.

3. Coordinate with MIC-DER special session regarding process enhancements and changes.

Work in progress – more to follow