Distributed Energy Resources (DER) Update

Behind the Meter Generation (BtMG) Visibility

MIC-DER Special Session

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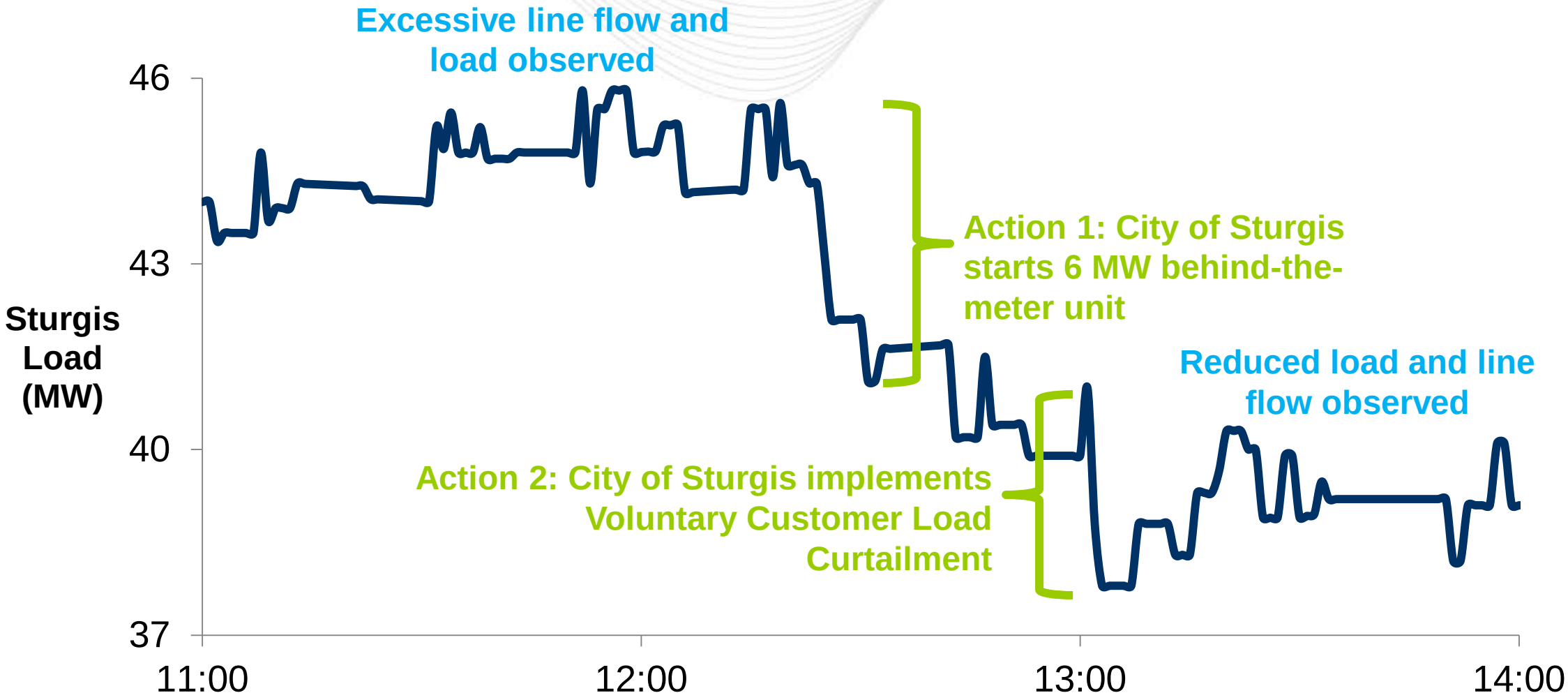
PJM Interconnection

Impact of DER on PJM processes

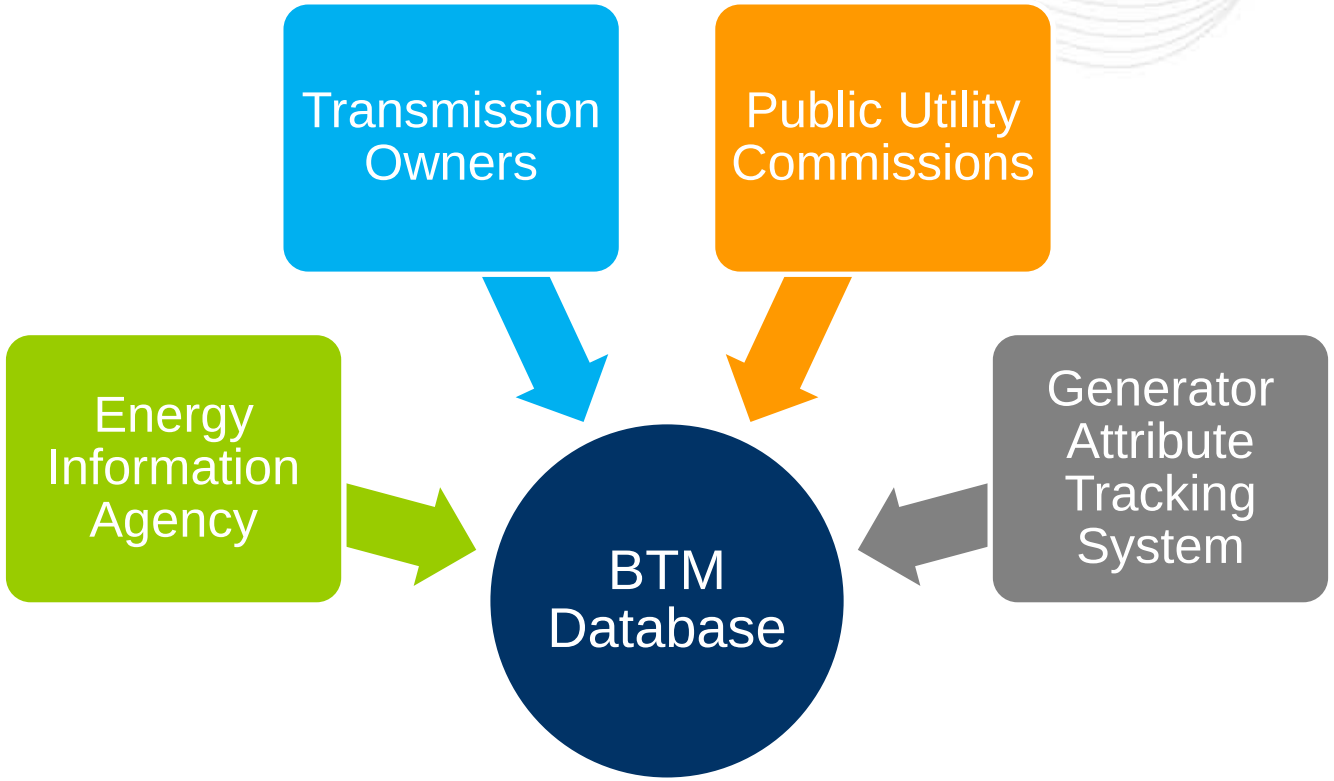
- Address system issues to avoid manual load dump
  - Request for DER output
  - Example – local capacity shortage in MI where DER can mitigate (Sturgis)
- Operational awareness
  - understand grid situation for future dispatch actions & communication
  - Example – PEPCO low voltage issue that resulted 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



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.

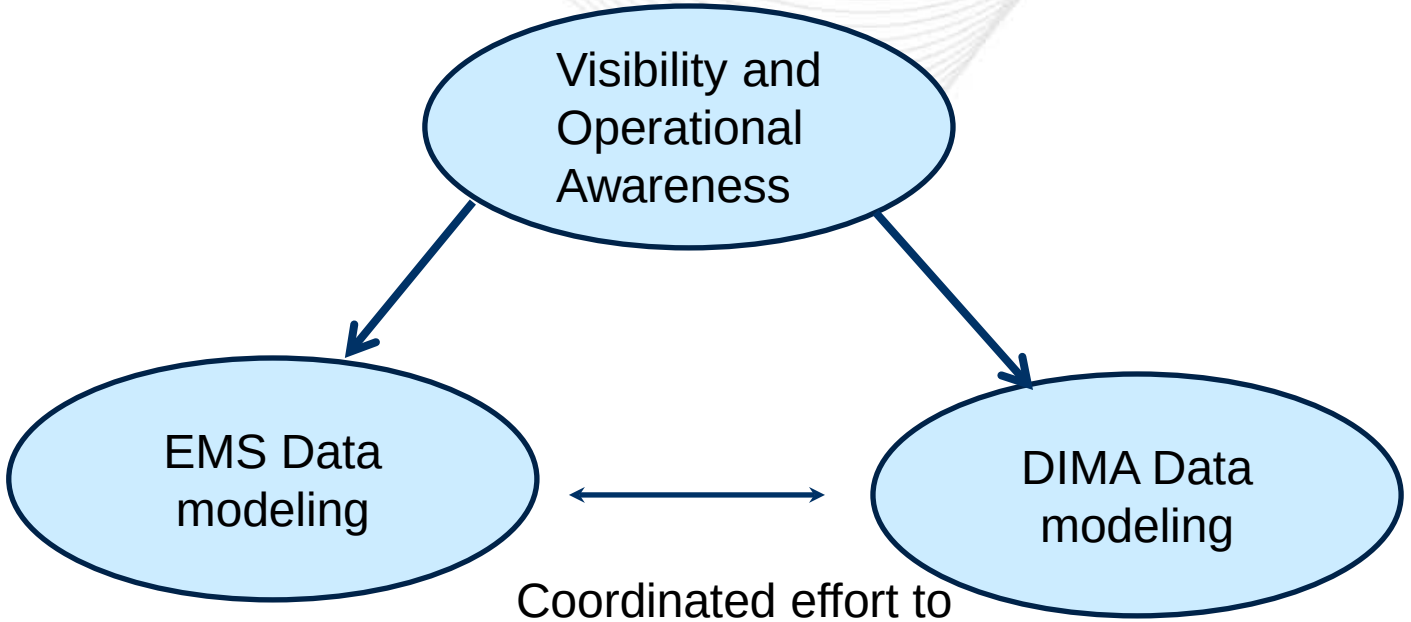
Number of identified units:

~425 units

Total capacity of identified units:

~3500 MW

Data Options being considered



Energy Management System modeling attributes:

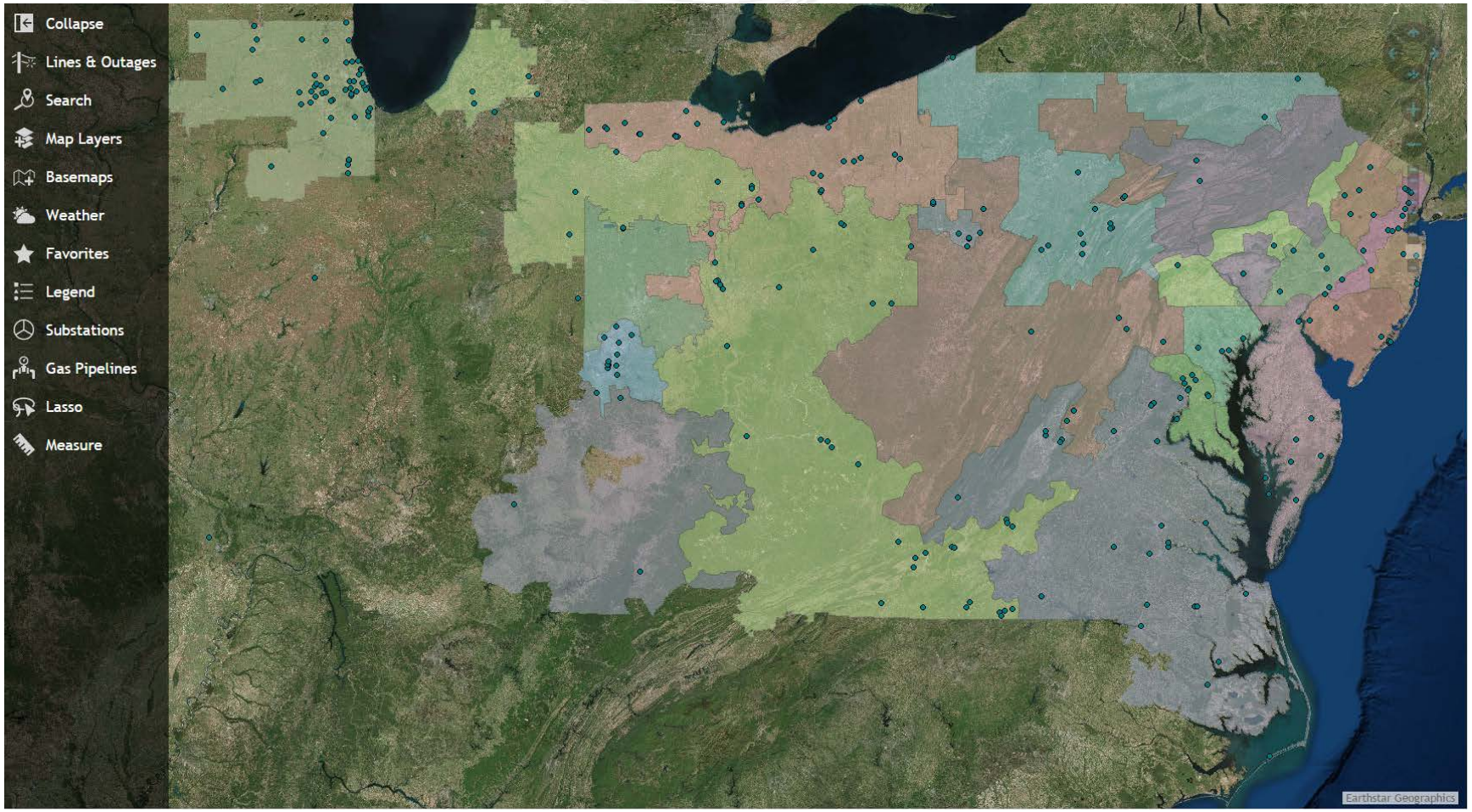
- Visibility on individual single line
- Shows connectivity
- Telemetry can indicate operation
- Negative load to not negatively impact State Estimator solution
- Tabular list based on BTM naming

Coordinated effort to enhance communications during critical operational periods

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

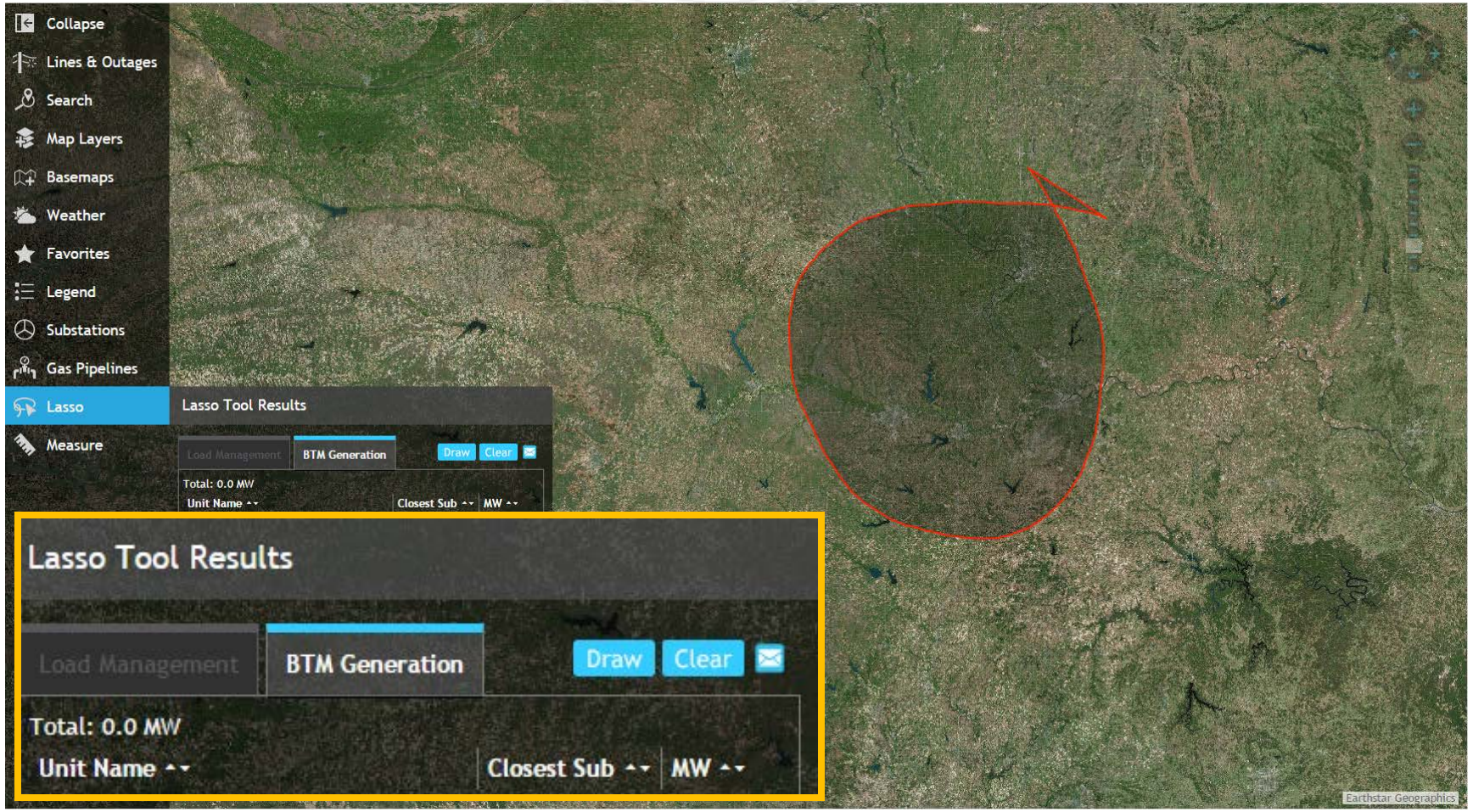
Behind-the-meter plants added to display

Dispatch Interactive Map Application (DIMA)

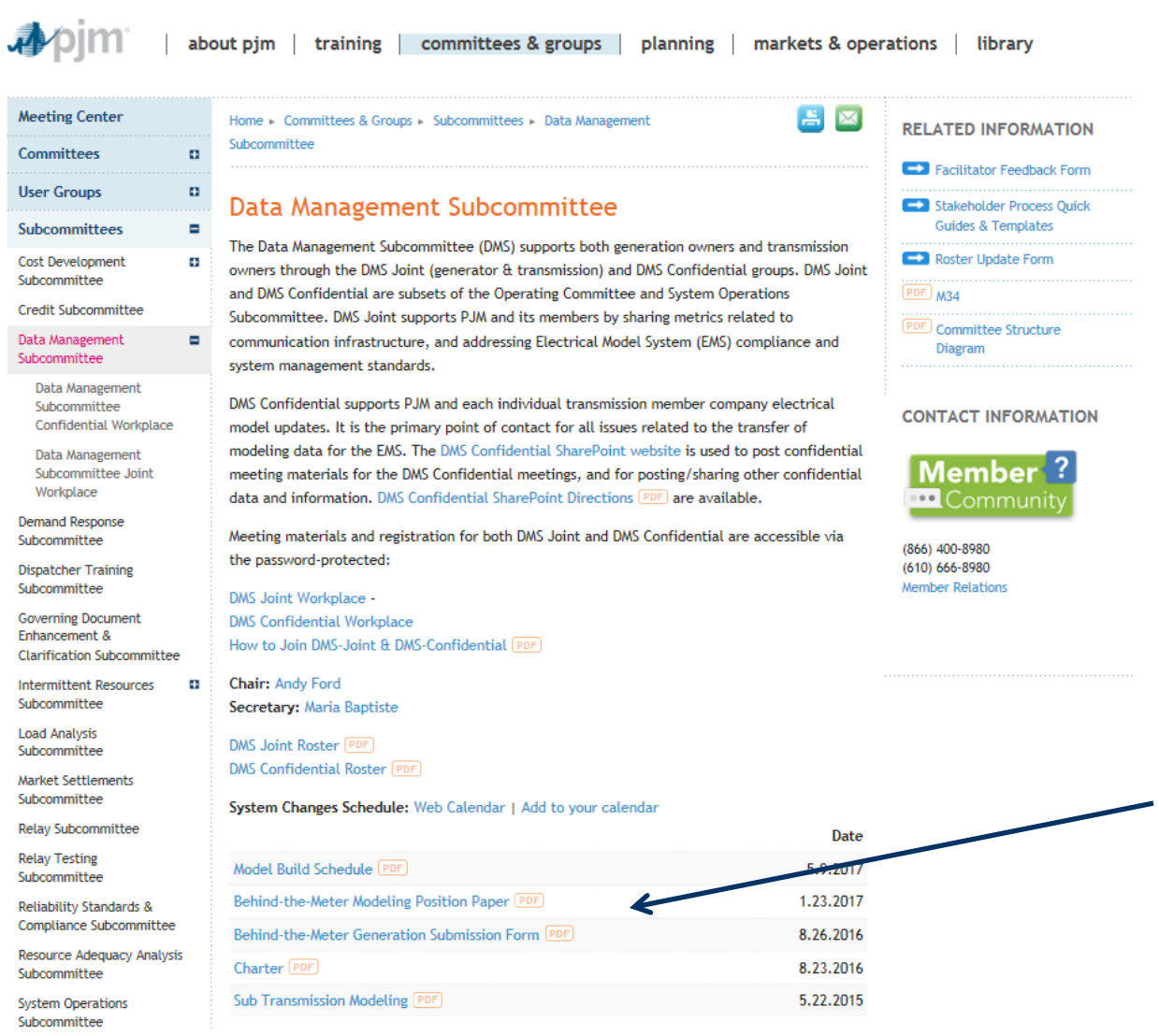


Ability to search for behind-the-meter plants in specific zone

Dispatch Interactive Map Application (DIMA)



BtMG Technical information and Data submission



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Meeting Center
Committees
User Groups
Subcommittees
- Cost Development Subcommittee
- Credit Subcommittee
- Data Management Subcommittee
  - Data Management Subcommittee Confidential Workplace
  - Data Management Subcommittee Joint Workplace
- Demand Response Subcommittee
- Dispatcher Training Subcommittee
- Governing Document Enhancement & Clarification Subcommittee
- Intermittent Resources Subcommittee
- Load Analysis Subcommittee
- Market Settlements Subcommittee
- Relay Subcommittee
- Relay Testing Subcommittee
- Reliability Standards & Compliance Subcommittee
- Resource Adequacy Analysis Subcommittee
- System Operations Subcommittee

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Data Management Subcommittee

The Data Management Subcommittee (DMS) supports both generation owners and transmission owners through the DMS Joint (generator & transmission) and DMS Confidential groups. DMS Joint and DMS Confidential are subsets of the Operating Committee and System Operations Subcommittee. DMS Joint supports PJM and its members by sharing metrics related to communication infrastructure, and addressing Electrical Model System (EMS) compliance and system management standards.

DMS Confidential supports PJM and each individual transmission member company electrical model updates. It is the primary point of contact for all issues related to the transfer of modeling data for the EMS. The DMS Confidential SharePoint website is used to post confidential meeting materials for the DMS Confidential meetings, and for posting/sharing other confidential data and information. DMS Confidential SharePoint Directions (PDF) are available.

Meeting materials and registration for both DMS Joint and DMS Confidential are accessible via the password-protected:

DMS Joint Workplace -
DMS Confidential Workplace
How to Join DMS-Joint & DMS-Confidential (PDF)

Chair: Andy Ford
Secretary: Maria Baptiste

DMS Joint Roster (PDF)
DMS Confidential Roster (PDF)

System Changes Schedule: Web Calendar | Add to your calendar

	Date
Model Build Schedule (PDF)	5.9.2017
Behind-the-Meter Modeling Position Paper (PDF)	1.23.2017
Behind-the-Meter Generation Submission Form (PDF)	8.26.2016
Charter (PDF)	8.23.2016
Sub Transmission Modeling (PDF)	5.22.2015

RELATED INFORMATION
- Facilitator Feedback Form
- Stakeholder Process Quick Guides & Templates
- Roster Update Form
- M34 (PDF)
- Committee Structure Diagram (PDF)

CONTACT INFORMATION

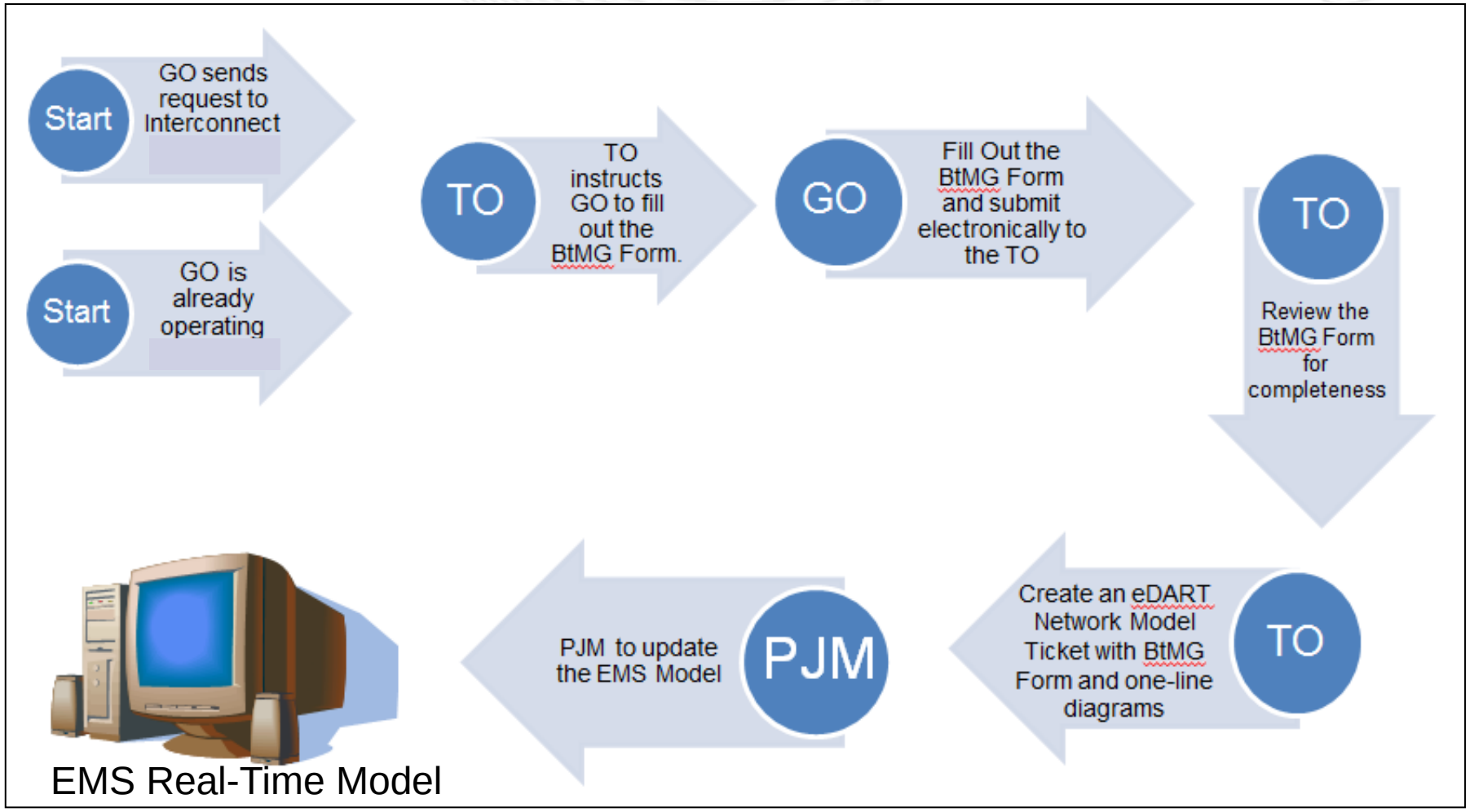
Member Community

(866) 400-8980
(610) 666-8980
Member Relations

Two Items:

1. BtMG PJM Position Technical Paper
2. Data submission form

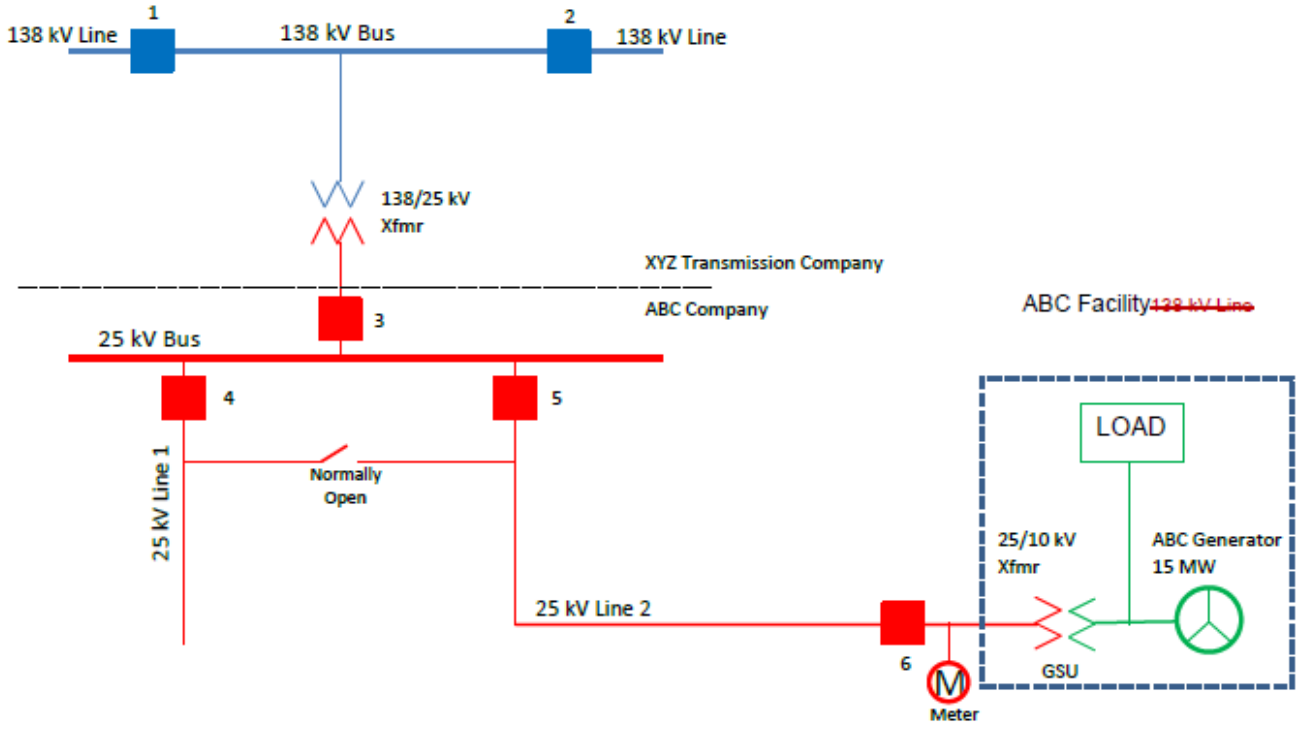
High Level Process Overview: EMS processing



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

BES Location

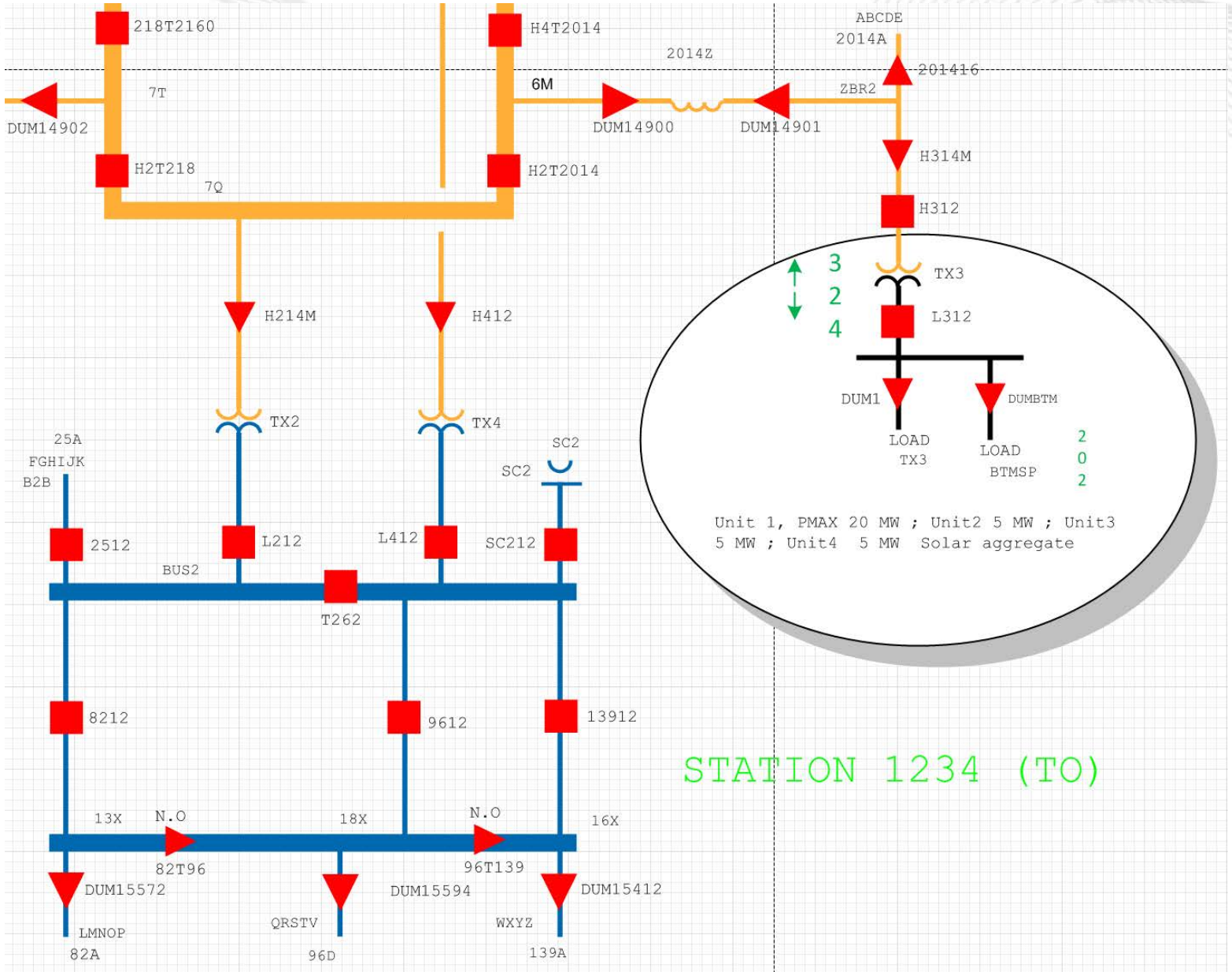
123 Substation



Revision 12, Effective Date: 09/30/2016

EMS Node Location

EMS Discussion Example



BtMG Data Form

PJM Behind the Meter Generation Submission Form

BtMG Form Description

This form is to gather information on Behind the Meter Generators. PJM will use this information to update the EMS model. Refer to PJM Manual 3A Section 1.2.1 for more details regarding this form.

General Information

In Service Date:		Transmission Owner:	
Utility Company Name:		Generator Name:	
Utility Company Address:		Generator Address:	
Utility Company Phone:		BtM Generator Contact:	
Utility Company Email:		Generator Email:	
System Operating to (check one): Distribution (<100 kV) ☐ Transmission (>100 kV) ☐		Generator Code:	
GIS Data (latitude, longitude):			

Modeling Information

Generator Model Update (required section):

- Commercial name:
- Attach Generator single-line diagram
- Generator Information:
  - Unit Type (see below):
  - Fuel Type:
  - Maximum Output PMax (total): MW
  - Number of Units:
  - Operating Voltage: (kV)

Transmission Model Details (can be supplied by TO in Network Model Request):

- Nearest Transmission Substation name:
- Attach Transmission Substation single-line diagram

Telemetry (see Manual 14D, Appendix A (9) to determine applicability):

- From TO via ICCP
  - Provide status of circuit breakers and switches
  - Provide MW and MVAr measurements
  - Provide Voltage

Please complete and attach to eDART Network Model Application

http://www.pjm.com/~/media/committees-groups/subcommittees/dms/postings/btmg-submission-form.ashx

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

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