

# NYISO Smart Grid Investment Grant Project Update

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# Project Infrastructure Overview

- ◆ **PMN System Design Study work in progress**
- ◆ **Key Deliverables**
  - PMN Functional Requirements
  - PME/PDC Locations
  - PMN Equipment Specifications
  - PMN Testing Requirements
- ◆ **Study completion expected by November 15, 2010**

# Local-Area vs. Wide-Area View

	LOCAL AREA VIEW	WIDE-AREA VIEW
STATIC CONDITIONS	<u>RTU-SCADA-EMS</u>  <b>SE</b> <b>VSM</b>	<u>NERCnet</u>
DYNAMIC CONDITIONS	<u>Relays &amp; Recorders</u>  <b>SA</b> <b>Dynamic Model</b> <b>System Separation</b>	<u>Dynamic Information Networks</u> <u>NASPInet...</u>  <b>WASA</b> <b>Post Mortem</b>

# Project Infrastructure Overview - 2

## ◆ **PMN System Characteristics**

- *Production grade*
- *Scalable to support future system expansion*
- *Adaptable to interoperability and cyber security standard evolvment*
- *Seamlessly integrated with the NYISO and TO existing systems*
- *Capable of providing support for regional (i.e. NYSRC, NPCC, NERC, EI) functions (e.g. wide area security monitoring, post mortem fault analysis)*
- *Can handle data sharing with other ISOs/RTOs, EI, etc.*
- *Capable to support the proposed CC applications*
- *Staged deployment*

# NYISO Synchrophasor Applications

- ◆ **Wide Area Situational Awareness**
- ◆ **PMU Enhanced Static State Estimator**
- ◆ **Voltage Stability Monitor**
- ◆ **System Model Validation and Calibration**
- ◆ **Controlled System Separation Study**

# Wide Area Situational Awareness

- ◆ **Visualization of data and information with a focus on**
  - *Tiered visual displays*
  - *Grid stress monitoring (static and dynamic)*
  - *Operator real time alarms*
- ◆ **Operators and engineering support will play a pivotal role in customizing visualization tools for their use**
- ◆ **Use of DTS environment**
- ◆ **RFP will be issued in late 2010 / 2011**

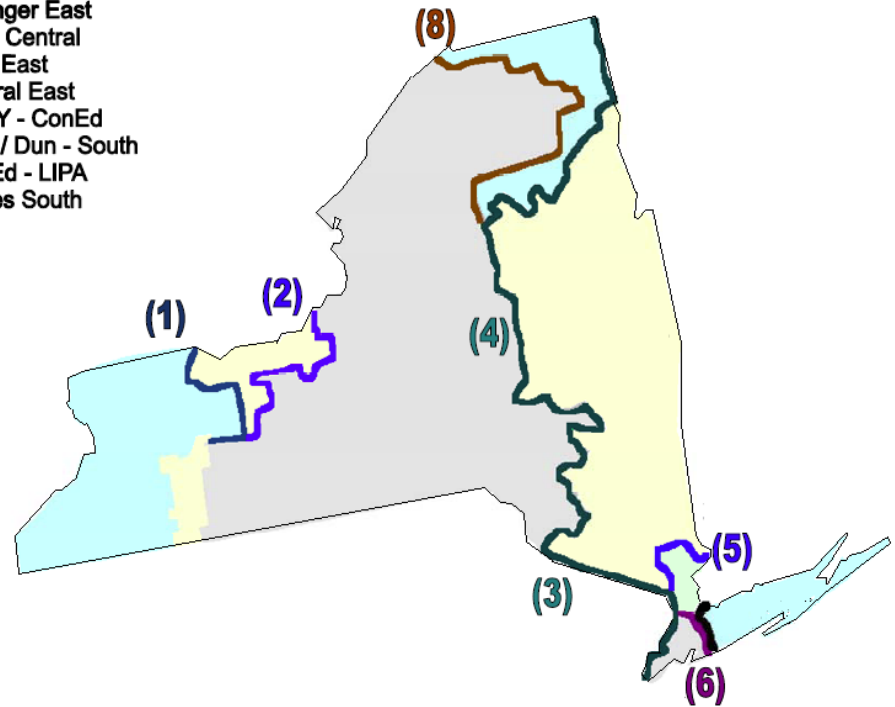
# PMU Enhanced Static State Estimator

- ◆ **Direct angle measurements from ~50 PMEs will be added to the existing ABB SE operating at NYISO CC**
- ◆ **Comparative test trials and performance profiles will be recorded and analyzed.**
- ◆ **Feasibility of Phasor-only non-iterative SE for the higher voltage portion of the NYCA grid (230 kV and up) will be examined and if viable run on the experimental basis.**
- ◆ **RFP to be issued in late 2010 / early 2011**

# Voltage Stability Monitor

- ◆ can detect voltage instability problems in real-time
- ◆ can help operators monitor system voltage stability condition by providing the power transfer limits in terms of real or reactive power.
- ◆ Initially to be installed at the C-E interface – later to be extended to include all NYCA critical interfaces
- ◆ RFP to be issued in late 2010 / early 2011
- ◆ VSM will be integrated with the existing NYISO EMS system

- (1) Dysinger East
- (2) West Central
- (3) Total East
- (4) Central East
- (5) UPNY - ConEd
- (6) Sprm / Dun - South
- (7) ConEd - LIPA
- (8) Moses South





# System Model Validation and Calibration

- ◆ **Develop a process to validate/calibrate models to faithfully represent the performance of the power system element under consideration.**
  - *Transmission System Component Model*
  - *Generating Unit Component Models*
  - *Load Component Models*
- ◆ **Provide input into siting and configuration of additional PMEs to support model calibration;**
- ◆ **Teaming up with a prospective vendor**
- ◆ **RFP will be issued in November 2010**

# Controlled System Separation Study

- ◆ **Collaborative effort with TOs and NYSRC;**
- ◆ **Examine feasibility of controlled NYCA system separation;**
- ◆ **Develop system baselines and identify indicators for conditions warranting separation;**
- ◆ **Identify transmission system separation points;**
- ◆ **Develop criteria to trigger and protocols to administer system separation;**
- ◆ **Develop process(es) for recovery from separation; and**
- ◆ **Identify requirements for implementation.**
- ◆ **RFP will be issued in October 2010**

# Challenges Ahead

- 1. Anticipating and adjusting to forthcoming technological changes and evolving standards at the lowest cost**
- 2. Increasing engagement of operation and planning specialists through continuous information sharing, technology seminars and demonstrations**
- 3. NASPI meetings should provide more time for in-depth discussions of technical topics**