

Smart Grid Investment Grant Project

Presenter

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New York Independent System Operator

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Acknowledgment & Disclaimer

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Project Participants

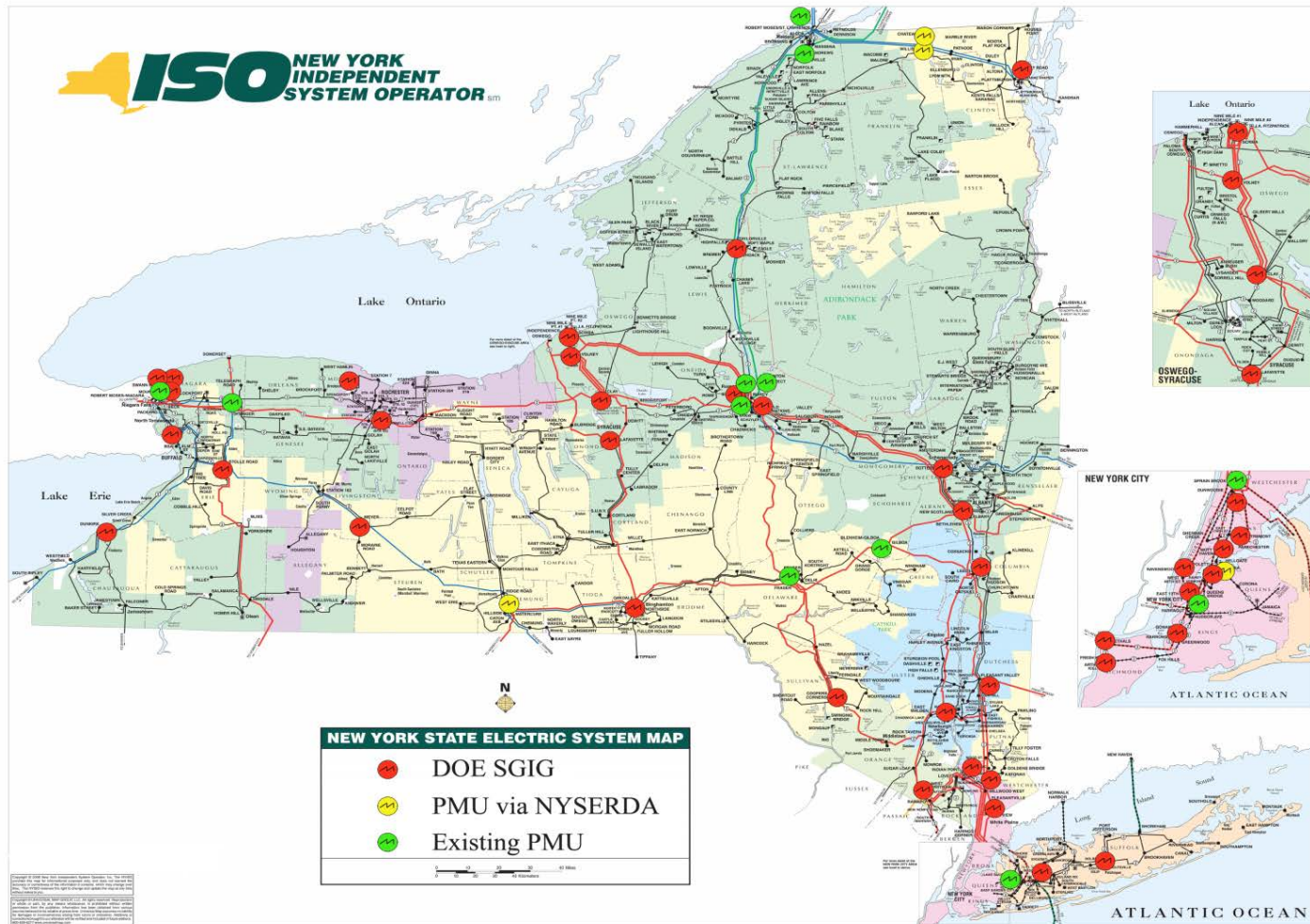
- ◆ **NYISO – Lead Agency**
 - *Project Manager – PMO link*
- ◆ **Engineering Lead**
 - *Quanta Technologies*
- ◆ **Grant Administration**
 - *Crowe Horwath*

Project Participants

New York Transmission Owners (TOs)

- ◆ **Central Hudson Electric & Gas**
 - *1 Substation, 1 PDC*
- ◆ **Consolidated Edison**
 - *14 Substations, 2 PDCs*
- ◆ **Long Island Power Authority**
 - *3 Substations, 1 PDC*
- ◆ **National Grid**
 - *12 Substations, 1 PDC*
- ◆ **New York Power Authority**
 - *4 Substations, 2 PDCs*
- ◆ **New York State Electric & Gas**
 - *6 Substations, 1 PDC*
- ◆ **Rochester Gas & Electric**
 - *1 Substation, 1 PDC*

Project Map



Project Timeline

◆ **Completed Implementation Phase**

June 30, 2013

- *41 New Locations/Substations in service within NYISO territory – 48 Total*
- *Exchanging data with MISO*
- *938 MVArS installed across 336 locations*
- *Completed two studies*
 - **Calibration of system model study – EPRI**
 - **Controlled System Separation – EnerNex**

PMU Installations

- ◆ **Transmission Elements Monitored by PMUs**
 - *PMU Placement study by Quanta at onset of the project*
 - *Substation – based PDC (one location)*
- ◆ **Exchanging Data with MISO – (PJM soon)**
 - *Engaged Grid Operations for selection of PMUs in visualization applications*

PDCs and Communications

- ◆ **PDCs**

- *8 TO control centers with PDCs*
- *1 field PDC*

- ◆ **Communications System**

- *Communication links to TOs – Virtual Private LAN service (VPLS) Network*
- *Centralized Design (Topology - Hub and Spoke)*

Communications and Data

◆ Data Flows and Speeds

- *PMUs installed support 60 samples per second*
 - Grandfathered 8 PMUs from previous installation

◆ Data Storage

- *Retention Planned for 90 Days Real Time Database, 2 years (full resolution) Historical Archive*
 - Anticipated 12-15 TB of data per year

Data Quality and Availability

◆ Challenges

- *Project transition – project points of contact replaced by operational SMEs*
- *Incorporation of new assets in Network Operation Center (NOC) monitoring*
- *Incorporation of new assets in NOC monitoring process*
- *Calibration of PMU measurements was done collaboratively with TO partners*
 - **Organizational differences (CT polarity, Phase sequence) identified and accounted for in software**

Project Priorities From Here

- ◆ **Continue to add data streams from other regions**
 - *MISO and PJM (Soon)*
- ◆ **Roadmap Planning**
 - *Use of Gateways*
 - *Planning for common private network in East: EIDSN (Eastern Interconnection Data Sharing Network)*
 - *5 year plan is being formulated*

Applications Being Used

- ◆ **Wide-Area Situational Awareness Visualization**
 - *Software/vendor used – Electric Power Group suite of applications*
 - *Integrated into other control room applications? Alerts / Alarms to be passed to EMS*
- ◆ **State Estimation**
 - *Software/vendor used – ABB*
- ◆ **Voltage Stability Monitoring**
 - *Software/vendor used – ABB*

Post Event Analysis

- ◆ **Before system went “live,” Grid Operations was using the data to research system disturbances “seen” after shift.**
- ◆ **Internal Disturbance Reports make use of Synchrophasor Data**

Operator's Dashboards

- ◆ **Development of Operators Dashboard**
 - *Done with Grid Operations*
 - *Contains both data within NY Control Area and outside of NY Control Area*

Operator Training

- ◆ **Control Room Operators have received 9 hours of formal “phasor” classroom training to date**
- ◆ **Several Control room operators participated in the product test / acceptance process**
- ◆ **Users and support staff received vendor training for specific tools**
- ◆ **Additional training will occur for both NYISO and TO dispatchers**

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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