

# NYISO Smart Grid Investment Grant Project

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# Acknowledgment & Disclaimer

- **Acknowledgment:** This material is based upon work supported by the Department of Energy under Award Number(s) DE-OE0000368
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# Project Participants

- ◆ NYISO as the Primary Awardee for the Grant
- ◆ New York Transmission Owners as SubAwardees
- ◆ Quanta Technology as the primary consultant, providing Engineering and Technical expertise
- ◆ Crowe Horwath LLP as a subcontractor to provide Grant Administration and Compliance expertise
- ◆ PMOLink, LLC as a subcontractor to provide Project Planning and Management services



# Project Participants

## New York Transmission Owners (TOs)

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

# Consulting Teams & Vendors

- ◆ Utilicast / EPG as the vendors providing PDC software, integration and synchrophasor applications
- ◆ ABB as the vendor providing Enhanced State Estimator and Voltage Stability Monitoring applications
- ◆ EPRI as the vendor conducting the Dynamic Model Calibration Study
- ◆ EnerNex as the vendor conducting the Controlled System Separation Feasibility Study



Electric Power Group



# Accomplishments to Date

- ◆ PMU Design & Build Out
  - *23 (of 39) PMUs installed to date*
- ◆ PDC Design & Build Out
  - *5 (of 8) TO Control Center PDCs installed to date*
- ◆ Smart Grid Enabled Capacitor Installations
  - *197.2 (of 932.1) MVAR of Capacitors installed to date*
- ◆ PMN Design Architecture
  - *Wide Area Network Build out Complete for 9 (of 10) Sites*
  - *4 (of 8) Transmission Owner Control Center PDCs Networked*

# Accomplishments to Date

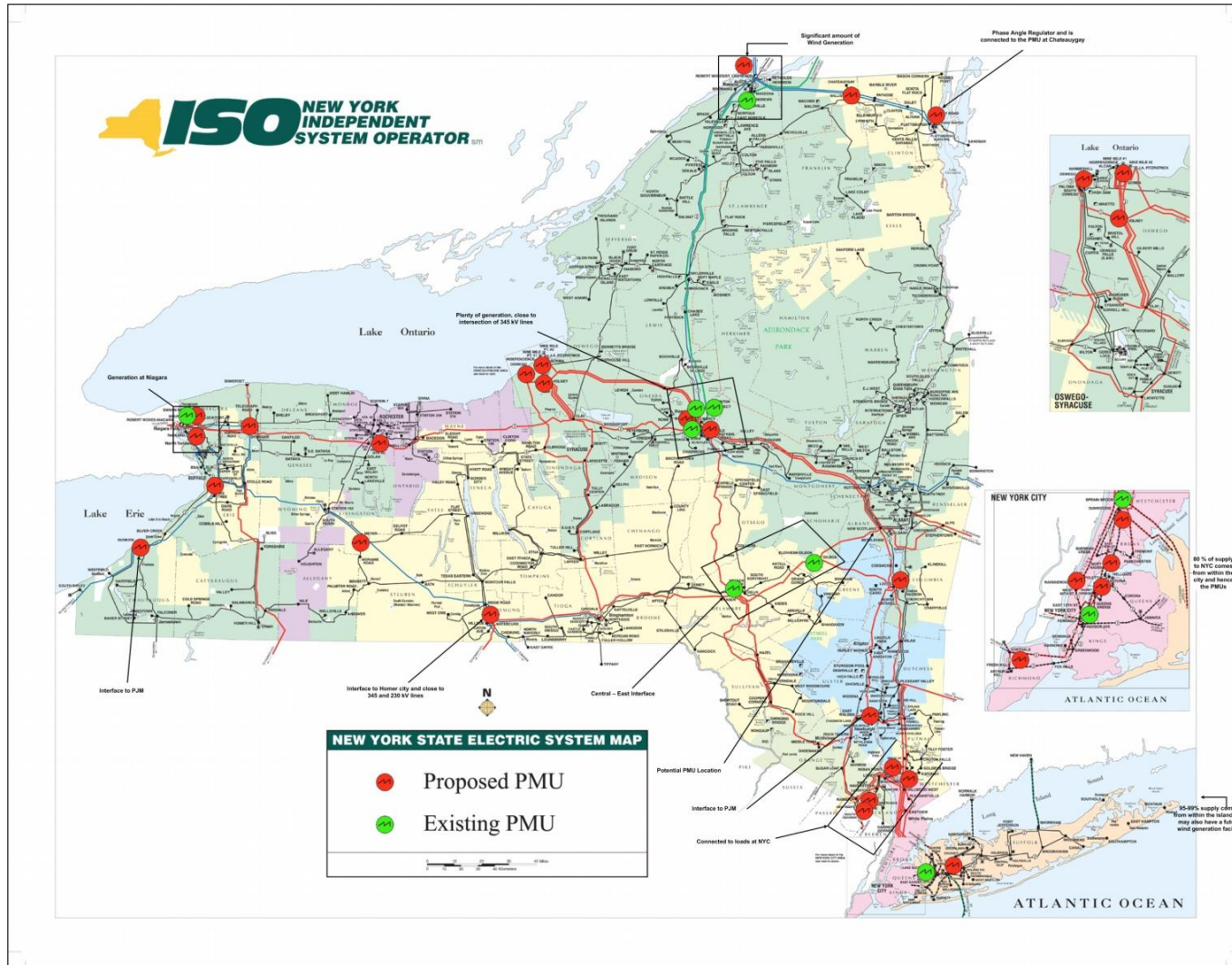
- ◆ Situational Awareness (Visualization) Applications
  - *Currently Executing Enhancements Testing*
- ◆ PMU-Enhanced State Estimator Applications
  - *Code Delivered for Testing by NYISO / January 2013 Deployment*
- ◆ Voltage Stability Monitoring Applications
  - *Specifications Complete / June 2013 Deployment*
- ◆ System Studies: Controlled System Separation
  - *On Track; Expected Completion December 2012*
- ◆ System Studies: Dynamic System Model Calibration
  - *On Track; Expected Completion October 2012*

# Installation Schedule

Location	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	At Completion
<b>Capacitors</b>		<b>87.6</b>	<b>33.9</b>	<b>75.7</b>	<b>276.7</b>	<b>458.2</b>	<b>932.1</b>
Central Hudson				10	25		35
National Grid		87.6	33.9	65.7	104.7		291.9
NYSEG						458.2	458.2
O&R					48		48
RGE					99		99
<b>PDC</b>		<b>3</b>	<b>2</b>		<b>3</b>		<b>8</b>
Central Hudson		1					1
ConEd		1	1				2
LIPA					1		1
National Grid			1				1
NYPA		1					1
NYSEG					1		1
RGE					1		1
<b>PMU</b>	<b>2</b>	<b>9</b>	<b>5</b>	<b>7</b>	<b>15</b>	<b>1</b>	<b>39</b>
Central Hudson		1					1
ConEd	2	8	4				14
LIPA					2		2
National Grid			1	6	4	1	12
NYPA				1	3		4
NYSEG					5		5
RGE					1		1



# New York Control Area Map



# Data & Communications

- ◆ Data
  - *Project Goal is 50 PMUs (39 new, 11 legacy)*
  - *Expect Eastern Interconnection Data Exchange*
- ◆ PDCs
  - *8 TO Control Centers PDCs*
  - *1 Field PDC*
  - *NYISO PDCs*
- ◆ Communications system
  - *Communication Links to TOs – VPLS Network*
  - *Centralized Design*

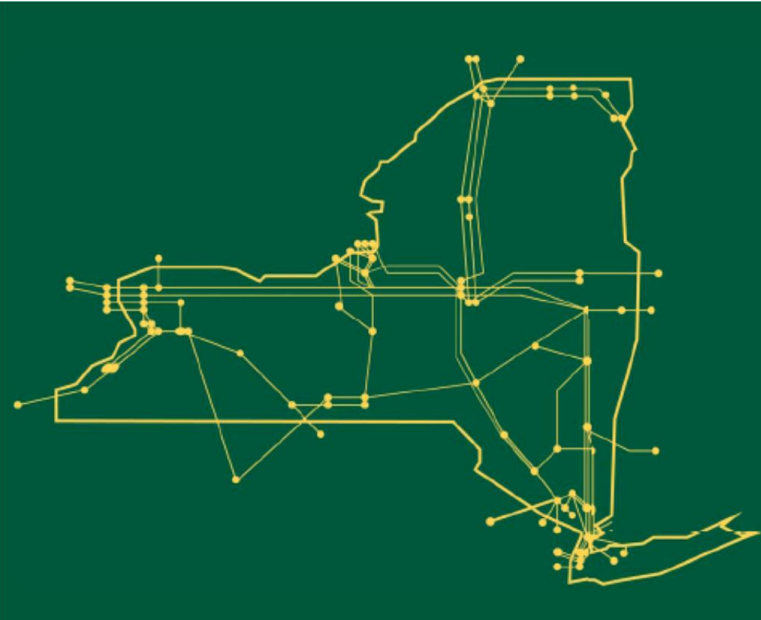
# Challenges and Lessons Learned

- ◆ Project Management / Project Execution
  - *External Dependencies*
  - *Coordination Among Multiple Entities*
  - *Schedule Delays*
- ◆ Technical Challenges
  - *Experience*
  - *Performance*
  - *Data*
- ◆ Training
  - *IT Architecture, Design, Support*
  - *Operations*
  - *Staff*

# Next Steps / Road Map

- ◆ Project Execution & Closure
  - *Equipment Installations*
  - *Application Development, Testing & Deployment*
  - *Closeout Activities*
  
- ◆ Strategic Plans
  - *SLAs*
  - *Redundancy*
  - *Coverage*
  - *Data Sharing*
  - *Training*

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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