

# Smart Grid Investment Grant Project Update

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*San Francisco, CA*

# Acknowledgment & Disclaimer

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# Project Participants

## ◆ New York ISO

- *Project Manager – Kathleen Dalpe*
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- *Business Owner – Rich Dewey, Senior Vice President & Chief Information Officer*

# 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*

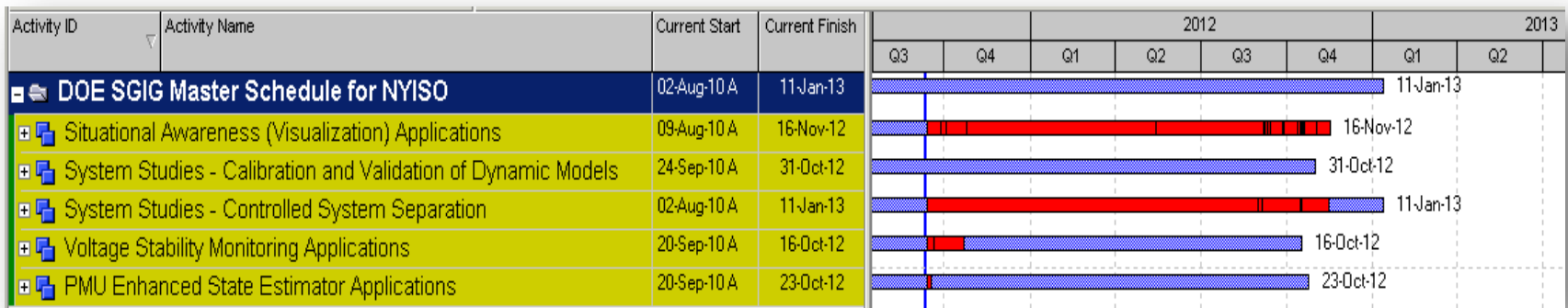
# Project Participants

- ◆ **Quanta Technologies, Inc.**
  - *Crowe Horwath LLP*
  - *PMOLink LLC*
- ◆ **EPRI**
- ◆ **EnerNex**
- ◆ **ABB**

# Project Timeline

Location	Activity Name	KV Level	Units	Start	Finish	Remaining Units	2012								
							Q4	Q1	Q2	Q3	Q4	Q1			
<b>Capacitors</b>															
	Central Hudson		35	11-Sep-11	30-Jun-12		22		13						
	National Grid		286	11-Sep-11	31-Dec-12			70	61	55	100				0
	NYSEG		320	04-Jun-12	31-Dec-12						320				
	O&R		64	11-Jun-12	15-Feb-13				14	34					16
	RGE		99	15-Sep-11	31-Dec-12			24							75
<b>PDC</b>							2	3	2	2					
	Central Hudson		1	01-Nov-11	30-Jun-12				1	0					
	ConEd		2	11-Sep-11	30-Mar-12		1	1							
	LIPA		1	01-Oct-11	31-Dec-11		1								
	National Grid		1	11-Sep-11	31-Jul-12					1					
	NYPA		2	02-Jan-12	15-Jan-12			2							
	NYSEG		1	28-Jun-12	09-Aug-12					1					
	RGE		1	19-Apr-12	31-May-12					1					
<b>PMU</b>							5	6	10	15	1				2
	Central Hudson		1	01-Nov-11	30-Jun-12				1	0					
	ConEd		14	24-May-11 A	30-Sep-12		3	4	6	1					
	LIPA		2	01-Oct-11	31-Dec-11		2								
	National Grid		12	01-Apr-12	31-Jul-12					12					
	NYPA		4	01-Feb-12	18-May-12			2	2						
	NYSEG		5	17-May-12	07-Jan-13					2	1				2
	RGE		1	08-Mar-12	31-May-12					1					

# Project Timeline



# Phasor Measurement Units

- ◆ **Seven TO organizations in project**
  - *Total of 50 PMUs (39 new + 11 existing)*
  - *Each TO is selecting its own PMU equipment from common minimum requirements set by the project*
- ◆ **PMU placement study dictated what signals were to be monitored at each location**
- ◆ **Number of substations with PMUs -- 50**
- ◆ **Sample rate -- 60 samples per second**
- ◆ **Range of PMUs being installed**
  - *Disturbance Fault Recorders (DFRs)*
  - *Dynamic Disturbance Recorders (DDRs)*
  - *Stand-alone*



# Phasor Measurement Units

- ◆ **Installation rate**
  - *Installing 39 new PMUs by EOY 2012 and folding in 11 existing PMUs*

# PDCs and Communications

- ◆ **Phasor Data Concentrators (PDCs)**
  - *ISO control centers*
  - *TO primary control centers*
  - *Some TO secondary control centers*
  - *One field PDC*
  
- ◆ **Archive**
  - *Envisioned to hold Real-Time, one year of full resolution data, seven years of event specific data*

# PDCs and Communications

## ◆ **Communications System**

- *Communication links to TOs will be fiber based from two separate Telecomm vendors*
- *Virtual Private LAN Service (VPLS) – cloud-based architecture*
- *Managed by NYISO*

# Major Project Goals

- ◆ **Low Frequency Oscillation Monitor**
- ◆ **Voltage Stability Monitor**
- ◆ **Offline Study for model calibration**
- ◆ **Offline Study of viability of Controlled System Separation**

# Major Application Goals

- ◆ **All TOs will have access to visualization apps through TO portal**
- ◆ **Wide Area Situational Awareness (WASA) will be provided through third-party vendor - TBD**
- ◆ **Phasor enhanced State Estimation function planned to begin validation in 2012**
- ◆ **Hardware and software installations scheduled to be complete by 4<sup>th</sup> quarter 2012**

# Challenges & Lessons Learned

- ◆ **Biggest technical challenges to date?**
  - *Changing Standards / Future Proofing*
  - *Calibration of Signals / Testing*

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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