NYSERDA/DOE Joint Energy Storage Initiative

November 2, 2010

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Cooperation on ESS projects in New York

• Demonstrate electric energy storage for increasing reliability and for electric energy management to be:
  – technically viable
  – cost-effective
  – broadly applicable

Start: FY2005
DOE/Sandia Activities

• Assist in project selection process

• Data Acquisition System Management –
  – EnerNex

• Data and Economic Analysis –
  – Distributed Utilities Associates

• Technical and project management support

http://www.storagemonitoring.com/nyserda-doe/storage-home.shtml
NYSERDA Projects

Currently 5 demonstration project sites:

- NAS BESS at MTA Long Island Bus Depot
- Flow Battery BESS at Niagara Falls State Park
- FESS Frequency Regulation at Stephentown, NY
- Dispatchable PV with ESS at LaGuardia Community College
- Long Island RR Trackside FESS
Economic Analysis Goals for Joint Initiative

- Obtain, analyze & disseminate data on ESS economics and realized benefits
- Increase collective knowledge of ESS – operations, uses, benefits & potential issues
- Accelerate growth and maturation of the electricity storage industry

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NAS BESS for Long Island Bus Depot

Project Description:

NYPA will install and demonstrate Sodium Sulfur (Na/S) Battery at MTA Long Island Bus facility in Garden City, NY

- NGK Insulators
- nominal rating
  - 1MW
  - 6.5MW-hrs
- installation, start-up and commissioning by ABB
- Project start FY05
NAS BESS for Long Island Bus Depot

**Cosponsors**
- American Public Power Association’s DEED Program
- CEATI International Inc.
- Electric Power Research Institute (EPRI)
- Natural Resources Canada (NRCan)
- New York Independent System Operator (NYISO)
- New York State Energy Research and Development Authority (NYSERDA)
- United States Department of Energy (US DOE)
- CPS Energy
- Consolidated Edison, Inc. (Con Ed)

**Cosponsors**
- FirstEnergy Corp.
- Hydro One
- Hydro-Québec
- Long Island Power Authority (LIPA)
- New York Power Authority (NYPA) (project developer)
- Public Service Electric and Gas Company (PSE&G)
- San Diego Gas & Electric (SDG&E)
- Southern Company
- Tennessee Valley Authority (TVA)
NAS BESS for Long Island Bus Depot

Value Proposition

- **Primary**
  - Shift natural gas bus refueling compressor station demand and energy use from peak to off-peak

- **Secondary**
  - Grid reliability
  - Backup power
Flow Battery BESS at Niagara Falls State Park

Project description:
Demonstrate the technical and economic performance of Zinc Bromine flow battery at Niagara Falls State Park.

– Premium Power Zinc-Flow PowerBlock®150
– 100kW / 150kWh
– 30 kW PV system
– National Grid distribution feeder
– Project start: FY09
Flow Battery BESS at Niagara Falls State Park

Cosponsors and Collaborators

– Premium Power Corp.
– NYS Parks
– National Grid
– NYSERDA
Flow Battery BESS at Niagara Falls State Park

Value Proposition

• Primary benefits:
  – reduced energy-related cost commensurate with 150kWh/day reduction of energy purchased
  – reduced peak demand charges commensurate with 100 kW peak demand reduction.

• Generic Benefits: Reduced transmission and/or distribution congestion “at critical ‘load pockets.’”

• Un-quantified Benefits: “mobile storage deployed in emergencies, for backup power…”
FESS Area Regulation - Stephentown, NY

Project Description:
Install, test, and demonstrate performance of 20 MW flywheel energy storage plant to provide ancillary services
- Beacon Power
- 20 MW FESS
- NYISO market
- Stephentown, NY
FESS Area Regulation - Stephentown, NY

Cosponsors and Collaborators

- Beacon Power
- NYISO
- NYSEG
- NYSERDA
- DOE Loan Guarantee Program
FESS Area Regulation - Stephentown, NY

- Value Proposition
  - “Merchant” area regulation service provider
  - Reduced air emissions
  - Reduced need for regulation capacity
Status and Next Steps

• NAS BESS at Long Island Bus Depot is operational
• Premium Power PB150 installed, site upgrades in progress at Niagara State Park
• Beacon FESS under construction
• ESS at LaGuardia Community College on hold
• Long Island RR Trackside FESS on hold

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• Status on Economic Analysis
  – Reviewed value propositions and project status with NYSERDA
  – Contact project site owner/integrator and review data needs

• Next steps
  – Review DAS systems and coordinate data collection needs with DAS Management teams for each demo
Thank you