

# NYSERDA/DOE Joint Energy Storage Initiative

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# DOE/NYSERDA MOU

## 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**

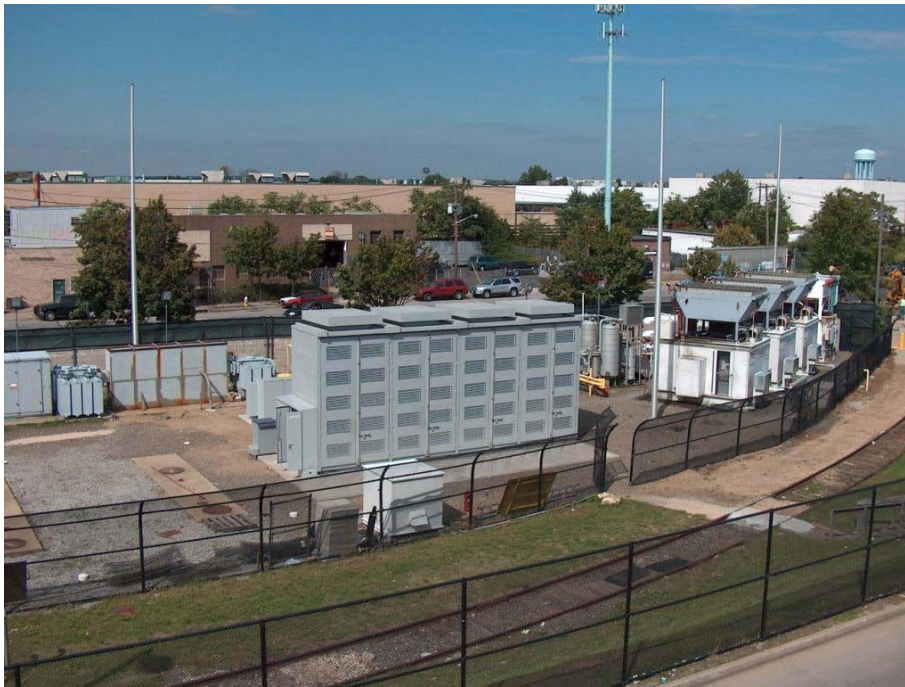
<http://www.storage-monitoring.com/nyserda-doe/storage-home.shtml>



# 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 and Next Steps

- 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



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*Thank you*

