



East Penn Manufacturing Co Grid-Scale Energy Storage Demonstration Using UltraBattery™ Technology

Project Description

East Penn Manufacturing will design and construct an energy storage facility consisting of an array of UltraBattery™ modules integrated in a turnkey Battery Energy Storage System (BESS). In addition to the UltraBatteries™, the BESS will include a power conditioning system, a master programmable controller, and a battery monitoring system. The completed energy storage system will be designed to sell up to 3 MW of frequency regulation to PPL EnergyPlus, a designated load serving entity within PJM. In addition to frequency regulation, the system will provide demand management services to Met-Ed during specified peak power periods. These services will provide up to 1MW for 1 to 4 hours to meet the requirements of PA Act 129. The UltraBattery™ is uniquely suited to these applications because it was designed for High Rate Partial State of Charge cycling. The system is sized to maintain the battery's state of charge between 70 percent and 30 percent for a maximum 40 percent depth of discharge for continuous regulation services. The UltraBattery™ is a hybrid energy storage device that combines an asymmetric ultracapacitor and a lead-acid battery in one unit cell. The UltraBattery™ is expected to provide the same benefits as lead-acid battery systems, such as low initial cost, full recyclability, plus increased cycle life by incorporating ultracapacitor technology within the battery. To demonstrate modularity and portability, self-contained, Containerized UltraBattery™ System will be designed and included as a subset of this project.

Goals/Objectives

- **Integrate advanced energy storage technology into an existing utility grid.**
- **Demonstrate the economic and technical viability of an UltraBattery™ BESS for frequency regulation ancillary services and demand management.**
- **Establish the cost of the UltraBattery™ and all of the controlling power electronics required for a utility grid management application.**

Key Milestones

- System installation/integration complete (December 2011)
- Commissioning complete (January 2012)
- First year data collection/operation report (March 2013)
- Second year data collection/operation report (March 2014)

Benefits

- Retain Jobs
- Lower electricity costs
- **Grid reliability improved**
- **Renewable resource integration**
- **Greenhouse gas emissions decreased**



CONTACTS

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PARTNERS

Ecoult
PJM
PPL Energy Plus
Met-ED

PROJECT DURATION

02/01/2010–01/31/2015

BUDGET

Total Project Value
\$5,087,269

DOE/Non-DOE Share
\$2,543,523/\$2,543,746

EQUIPMENT

UltraBatteries™
Power Conversion System
15 kV Switchgear
69Kv Bus and Fused Switch
Battery Cooling System

DEMONSTRATION STATES

Pennsylvania
CID: OE0000302

Managed by the National Energy Technology Laboratory for the Office of Electricity Delivery and Energy Reliability

