Premium Power
Distributed Energy Storage System

Project Description

Premium Power and its partners will demonstrate a multi-hour, zinc bromide battery-based energy storage system (ESS) for load shifting, peak shaving, renewable system integration, and support for micro-grid operations. The project is based on Premium Power's trailer-mounted 500 kW, 6-hr TransFlow 2000 energy storage system, providing capacity on demand. The TransFlow 2000 is a fully integrated system that comprises energy storage, power conditioning, system control, and thermal manage- ment subsystems. Two utilities will demonstrate this technology, National Grid and Sacramento Municipal Utility District (SMUD). A fleet of three energy storage units will be installed in Syracuse, New York. Two units will be installed at National Grid's Rock Cut Road substation and one unit will be installed nearby at Syracuse University, mid-point on a feeder that is served by the Rock Cut Road substation. These units will be controlled as a fleet from the substation to explore substation-feeder storage control methods. A fleet of two energy storage systems will be installed in Sacramento, California, one at the SMUD headquarters substation serving the SMUD campus micro-grid and one at a substation serving the Anatolia III SolarSmart Homes[SM] community development that has 600 homes totaling 1.2 MW of photo-voltaic (PV) generating capacity. The headquarters storage system will improve micro-grid operations, emergency operations, and augment peak period campus operation with non-peak generated electricity. National Grid and SMUD will deploy, operate, and monitor the TF2000 units in their respective systems for two years.

Goals/Objectives

- Demonstrate competitively priced, multi-megawatt, long-duration batteries for utility grid applications
- ***Validate the potential of zinc bromide flow batteries***
- ***Demonstrate multiple approaches to battery integration with intermittent renewable energy systems with aggregated homes, in a micro-grid, and at a substation***
- ***Develop and verify creative control algorithms to manage fleet operation of energy storage systems that are not co-located***

Key Milestones

- Detailed engineering design complete (June 2011)
- Completion and delivery of ESS unit 1 (December 2011)
- Installation and integration of all five units complete (April 2012)
- Test operations complete (November 2013)

Benefits

- Jobs created
- Power quality improved
- Cost of electricity reduced
- Electricity reliability improved

CONTACTS

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PARTNERS

National Grid USA Service Company Inc
Sacramento Municipal Utility District
Syracuse University
Science Applications International Corp
National Renewable Energy Laboratory

PROJECT DURATION

8/13/10–12/12/13

BUDGET

Total Project Value
$12,514,660

DOE/Non-DOE Share
$6,062,552/$6,452,108

EQUIPMENT

TransFlow 2000 Flow Batteries
Advanced Metering Equipment and Sensors
Transformers
Switchgear
Circuit Breaker/Protective Relays

DEMONSTRATION STATES

California
New York
CID: OE0000224

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