



Southern California Edison Company Tehachapi Wind Energy Storage Project

Project Description

The Tehachapi Wind Energy Storage Project, funded by Southern California Edison (SCE) and federal stimulus funding awarded by the Department of Energy as part of the American Recovery and Reinvestment Act of 2009, is positioned to demonstrate the effectiveness of lithium-ion battery and smart inverter technologies to improve grid performance and assist in the integration of variable energy resources. The project is based at SCE's Monolith Substation in Tehachapi, California and includes a 32 MWh battery energy storage system (BESS) and the associated power conversion system. The project will evaluate the performance of the BESS to improve grid performance and assist in the integration of large-scale variable energy resourced generation. Project performance will be measured with 13 specific operational uses: provide voltage support and grid stabilization; decrease transmission losses; diminish congestion; increase system reliability; defer transmission investment; optimize size of new renewable-related transmission; provide system capacity and resource adequacy; integrate renewable energy (smoothing); shift wind generation output; frequency regulation; spin/non-spin replacement reserves; ramp management; and energy price arbitrage. Most of the operations either shift other generation resources to meet peak load and other electricity system needs with stored electricity, or resolve grid stability and capacity concerns that result from the interconnection of variable energy resources. SCE will also demonstrate the ability of lithium-ion battery storage to provide nearly instantaneous maximum capacity for supply-side ramp rate control to minimize the need for fossil fuel-powered back-up generation.

Goals/Objectives

- Validate the performance and effectiveness of lithium-ion technology
- Demonstrate the integration of intermittent resources
- Develop a smarter, more efficient electrical grid
- Advance market readiness of utility-scale storage

Key Milestones

- Completed installation of baselining equipment (June 2011)
- Began facility construction (February 2012)
- Deployment of Energy Storage System (Q3 2013)
- Start of Measurement and Verification testing (Q2 2014)
- Completion of Measurement and Verification testing (Q2 2016)

Anticipated Benefits

- Create/retain jobs
- Improve power quality
- Increase system reliability
- Integrate more clean, renewable energy
- Foster energy independence

CONTACTS

Kimberly Nuhfer
Project Manager
National Energy Technology Laboratory
3610 Collins Ferry Road
Morgantown, WV 26507-0880
304-285-6544
Kimberly.Nuhfer@netl.doe.gov

Naum Pinsky
Principal Investigator
Southern California Edison Company
14799 Chestnut Street
Westminster, CA 92683
714-895-0645
Naum.Pinsky@sce.com

PARTNERS

LG Chem Ltd.
California Independent System Operator
Quanta Technology
Cal Poly Pomona

PROJECT DURATION

2/10–05/16

BUDGET

Total Project Value
\$49,956,528

DOE/Non-DOE Share
\$24,978,264/\$24,978,264

EQUIPMENT

Lithium-Ion Batteries
Smart Inverter
Transformers
Communication Gateway
Phasor Measurement Unit

DEMONSTRATION STATES

California

CID: OE0000201

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