SANDIA NATIONAL LABS
ENERGY STORAGE TEST PAD
(ESTP)
Albuquerque, NM

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Funded in part by the Energy Storage Systems Program of the U.S. Department Of Energy through Sandia National Laboratories
Why Energy Storage Test Pad

- Utility scale energy storage testing facilities are uncommon and a very expensive asset.

- Large energy systems need to be evaluated through various tests (IEEE1547, power quality, etc.) to insure adequate performance and compliance.

- Test leading edge technology in a safe controlled lab environment.
Funding

- $1.1 M for design, procurement and construction.
Benefits of Energy Storage Test Pad At SNL Distributed Energy Test Test Lab (DETL)

- SNL is one of the leading national labs in energy storage

- Enable vendors of large scale battery systems (≤1MW AC) and electrical utilities to obtain a non-bias performance evaluation whether UL/NRTL certified or not

- Utility and islanded tests can be performed

- Use of sub-cycle metering for transient analysis

- Develop improved energy storage models using gathered field measured data

- Enhance control algorithms
ESTP One-Line

Energy Storage Test Pad
Albuquerque, NM

From SNL Grid

1500 kVA 12470Δ/480Y Volt Transformer

Facilities Meter

Main CB 2500 a

480Y/277 Volt Outdoor Switchgear

225 a
1600 a
1600 a
1600 a
1600 a
600 a
30 a

1PH1 200a Pnl
750kW - 1MW Energy Storage
1 MW Resistive Load Bank
1 MVAR Reactive Load Bank
1PH2 1200a Pnl
10-750kW Energy Storage
Future Micro Grid tie
TVSS

Power Flow to Load
Power Flow From Source
Construction Phase
Time Line

- June, 2010 → Funding received, Project scope developed

- June, 2010 – August, 2010 → Develop energy storage test pad design, equipment specifications and order equipment

- August 2010 - October 2010 → Clear designated site of electrical equipment and debris, adjust property fence, install underground conduits, install conduits for future DETL microgrid interconnection, install concrete pads for equipment, set electrical equipment on concrete pads, install load bank, install fiber communication and resurface area

- October 2010 – January 2011 → Install and terminate conductors to electrical equipment, develop control system and commission test pad
SNL received funding for developing a large scale energy storage test pad

ESTP will be used to evaluate performance and compliance of large scale energy systems while interconnected to the electric utility or islanded

Completion of project is scheduled for the end of January ‘11

Future enhancement of the testing facility include PV/Wind emulator, capacitor load bank and interconnection to the existing 480V AC DETL microgrid
Future Enhancement

- Connect the ESTP to the DETL existing 480V AC microgrid

- Increase load bank capability by adding a remotely operated and adjustable capacitor load bank for testing complex loads and evaluating anti-islanding algorithms

- Purchase and install (≤ 1MW) PV/Wind emulator
Need More info

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Sandia Labs Energy Storage Website:
www.sandia.gov/ess