ENERGY STORAGE and TRANSMISSION ANALYSIS

SAND2011-7705P

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Electrical Energy Storage Systems Program

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ENERGY STORAGE SYSTEMS

The Electrical Energy Storage Systems Program at Sandia sponsors and conducts research on advanced energy storage materials, devices, and concepts to–

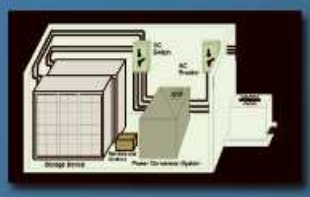
- Improve the security and reliability of U.S. electricity grid;
- Facilitate the integration of renewable generation on the grid; and
- Increase the system efficiency of grid-tied and standalone energy storage systems

Grid Security and Reliability.

Energy storage can be used to mitigate voltage fluctuations that can lead to brownouts and blackouts on the grid. It can also be used at customer sites to mitigate grid disturbances that can cause costly damage to equipment and systems.

Renewables Integration.

Wind and solar power are, by their nature, intermittent; demand, on the other hand, is fairly constant and usually well defined. Energy storage can be used to smooth the output of wind-generated electricity and to store electricity for use when the renewable resource (wind or solar) is unavailable, but the demand is still there. Additionally, when electricity from renewable resources is stored and can be dispatched on demand (for example, during summer load peaks) it can result in cost savings for both the consumers and utilities.



System Efficiency

Reducing losses in electrical systems (improving system efficiency) means that, for a given amount of generation, more electricity gets delivered to the load with the same amount of gene. Consequently, the need for additional generation (and the expense that goes with it) is reduced. Improving system efficiency for energy storage systems will make them a more cost effective tool for improving grid security and reliability and for facilitating the integration of renewable generation onto the electricity grid.

Energy Storage mediates between variable generation sources and variable loads.

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