



Battery Energy Storage in ERCOT

ERCOT PSWG

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AES develops, owns, and operates fast response grid stability projects, such as this 12 MW installation in Chile.



Largest Lithium-ion battery in service on the power grid.

The AES portfolio of assets and broad market footprint provide the market insight and capability to create a grid services business.



1,173 MW Wind Generation in the United States

35 MW Solar PV Generation in the Europe

An industry leader in...

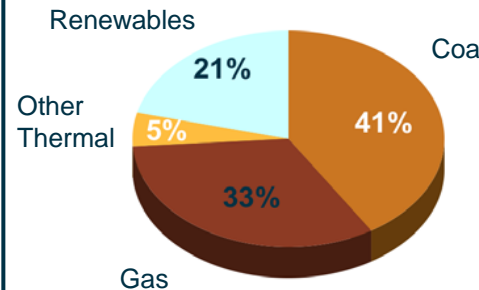
- Independent Power Production
- Project Finance
- Carbon Offsets
- International Privatizations
- Deregulation
- GHG as a business
- Solar PV

100 million people are served with AES electricity.

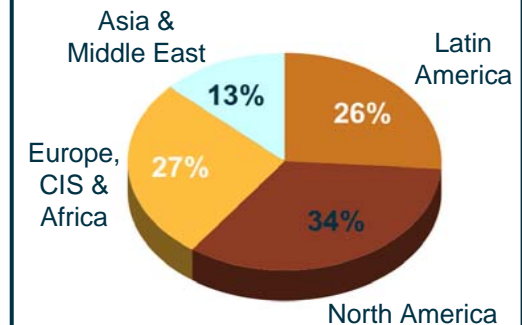
132 Power plants worldwide totaling approximately 43 GW gross generation capacity

14 Utilities worldwide, serving 11 million customers, with sales of 77,000 GWh

Fuel Type



Geography



AES Energy Storage: Operational Projects

- 12 MW in Chile
 - Spinning reserve and frequency regulation in Chile's northern interconnection
- 2 MW California
 - Tested with CAISO for frequency regulation
- 1 MW Pennsylvania (PJM)
 - In PJM's frequency regulation market
 - Preceded by technology validation



Project under construction: 20 MW at AES Westover in NY



THE DEPARTMENT OF ENERGY

Office of Public Affairs

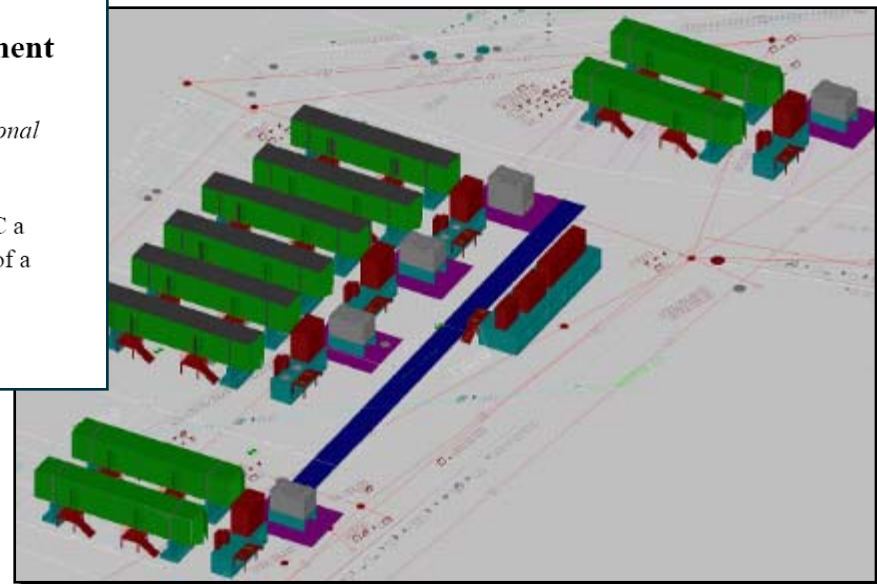
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For Immediate Release:
Monday, August 2, 2010

Department of Energy Offers \$17 Million Conditional Commitment to Improve Reliability of New York State's Electrical Grid

First Battery-Based Energy Storage System Project to Be Selected by DOE for a Conditional Loan Guarantee Commitment

Washington D.C. --- Energy Secretary Steven Chu today offered AES Energy Storage, LLC a conditional commitment for a loan guarantee for \$17.1 million to support the construction of a 20 megawatt (MW) energy storage system using advanced lithium-ion batteries. The AES project, located in Johnson City, New York, will help provide a more stable and efficient electrical grid for the state's high-voltage transmission network.



- › Project will supply Regulation to NYISO using fast response grid stability system
- › April 2010: FERC granted Exempt Wholesale Generator status
- › April 2010: NY PSC approved construction
- › August 2010: DOE Loan Guarantee conditional commitment

Battery technologies are suited to quick, modular, scalable deployments with few environmental risks. Duration can often be scaled independently of power, depending on the application requirements.

Battery Technology	Advantages	Disadvantages	Initial Applications
Advanced Lithium Ion	Power, safety, life, efficiency	High \$/kWh	Power applications: frequency regulation
Advanced Lead Acid	Lower \$/kWh	Life, usable range	Peak-shifting, ramping
Flow	Scales to longer duration	Proven track record	Peak-shifting
Sodium Sulfur	Deployment history	High cost	High-value T&D sites
New chemistries	Cost, efficiency	Technology risk	Multiple





How are other ISO/RTOs integrating batteries in their markets?

ISO/RTO	Market Integration
NYISO	LESR is defined as a type of generator that can provide regulation. - 20 MW battery project under construction. - 1-hr duration requirement for regulation removed from NPCC rules
PJM	Tuned regulation signal to take advantage of fast response capability to optimize overall generation/storage fleet in managing ACE. - 1 MW battery in the market for 1+ year. - 32 MW and 14 MW battery projects under development.
ISO-NE	Alternative technologies pilot program.
MISO	SER category defined.
CAISO	Regulation Energy Management proposed and under study. - 2 MW pilot studied

AES Energy Storage business overview



AES Energy Storage – Grid Stability & Efficiency Services

- Develop, install & operate grid-scale storage resources serving markets and utilities.
- Manage solution development, projects, and lifecycle technology risks.
- A part of The AES Corporation; extensive experience working with utilities and system operators in 29 countries.

Key Value:

Improve the Grid Today

- Reduce system operating costs
- Improve efficiency and reliability
- Reduce environmental footprint

Enable the Future

- Provide fast response capabilities to support renewables
- Deploy granular smart grid control capabilities



Improving the grid today...

...enabling the future.

