2020 Energy Storage Vision for California

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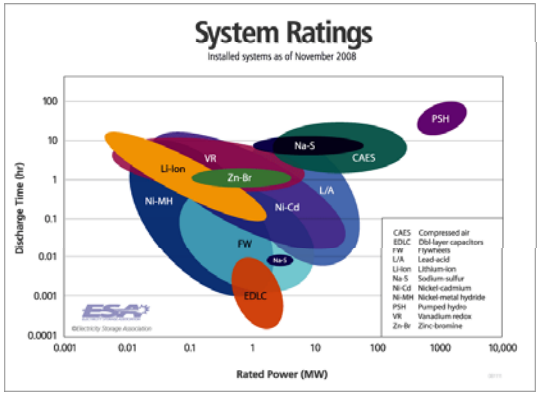
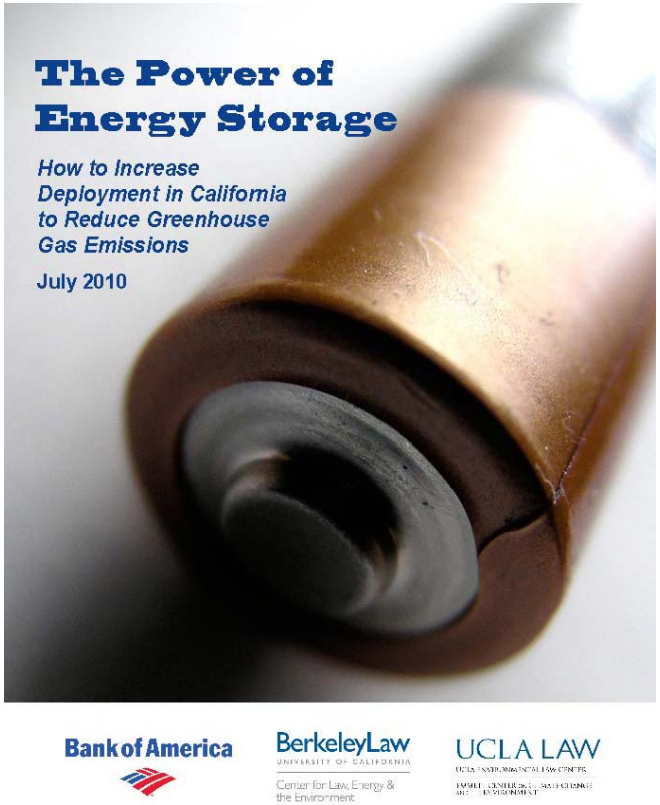


2011 Integrated Energy Policy Report
Committee Workshop on Energy Storage for Renewable Integration
April 28, 2011
Sacramento, California

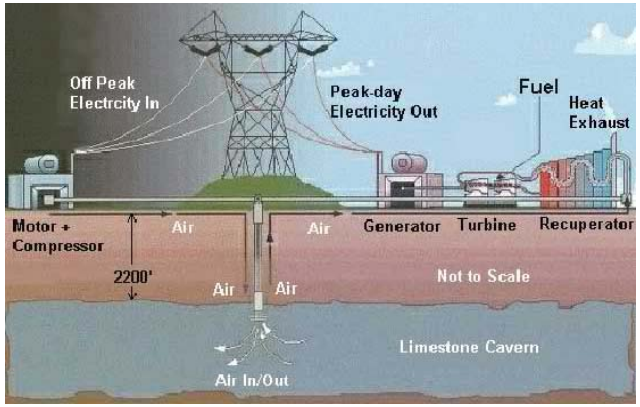
Energy Storage Policy Overview

- UC Berkeley/UCLA Law White Paper on Energy Storage
- Gathering of industry stakeholders
- Key barriers
- Recommended policies



Why Energy Storage?

- Definition: "A physical system with the ability to capture energy for dispatch or for displacement of electricity use at a later time"
- Integrating 33% renewables by 2020
- Reduces need for peak load power and spinning reserves
- Grid operational support



Key Barriers to Deploying Energy Storage

- Regulations & Utility Processes
- Monetizing the Ratepayer, Utility, & Societal Benefits
- Technology Maturity/High Capital Costs
- Lack of Public Awareness of Energy Storage Benefits

Regulatory Considerations

- FERC rules for energy storage asset class
- CAISO “unbundling” ancillary services
- CEC and CPUC add energy storage to energy loading order
- CPUC establish “resource adequacy” value
- Method for energy storage value to be reimbursed to providers
- 33% Renewable Portfolio Standard

Considerations to Lower Costs

- Continued R&D
- Tax credits and incentives
- CPUC standardized contracts for customer provided storage
- Rate basing substation and utility scale storage systems
- Encourage large-quantity, long-term commitments

Deploy at the *"speed of total value"*

Energy Storage Vision Project

- Sponsored by the California Energy Commission PIER Program
- Research Team:
- California Institute for Energy and Environment (CIEE)
- University of California, Berkeley School of Law
- University of California, Los Angeles
- University of California, San Diego

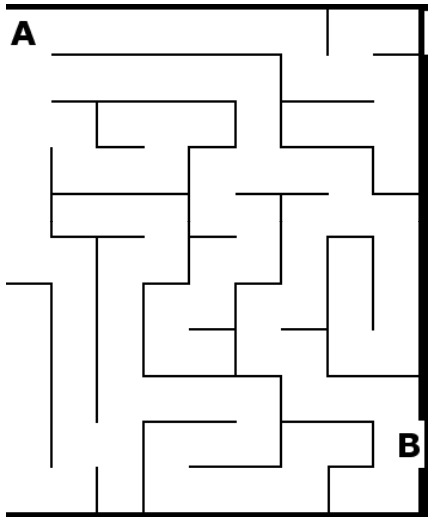
Energy Storage Vision Project (Cont.)

- Project Partners and Advisory Committee:
- CA IOUs
- CA ISO
- CPUC
- CESA / ESA
- CA POUs
- Energy Storage Industry
- EPRI
- National Labs, and
- Other energy storage interested parties

2020 California Energy Storage Vision

- Part 1: Technical status review of various technologies and remaining research and development needs
- Part 2: Strategic vision of energy storage scenarios over next ten years
- <u>Highlights value of energy storage to meet future state energy goals</u>

Goals and Project Timeline



- Support CPUC AB 2514 process
- Input to CEC 2011 IEPR process
- Input from utilities, energy storage system manufacturers, and other stakeholders
- Findings by June 2011
- Final report Summer 2011

Energy Storage Vision Project Approach – Technical Survey

- Survey existing technical and cost data
  - Highly vetted current publications
  - Publicly disclosed energy storage contracts
- Identify on-going R&D needs so that
  - "procurement targets and policies that are established are technologically viable and cost effective."
- Analyze feasibility of accelerated deployment by 2015 and 2020

Energy Storage Vision – Policy Analysis

- Analyze state and federal policies affecting energy storage
- Highlight policies from other jurisdictions
- Identify most critical policies

Envisioning 2020

- Evaluate scenarios for potential CPUC targets under AB 2514
- 3 to 5 most promising applications for energy storage to address likely grid problems/ opportunities in 2020
- Business-as-usual scenario vs. accelerated deployment from policy changes
- Potential for disruptive events
- Ongoing research needs

Project Progress since February 2011

- Participation in CPUC AB 2514 Proceedings (March 9, 2011)
- Meeting with Energy Storage Stakeholders (March 30, 2011 at 4th Annual Energy Storage Summit)
- Ongoing input and feedback from stakeholders
- Technical survey of technologies mostly complete
- Framework developed for vision analysis

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