Electric Storage - Building the Market
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Policy Challenges in Energy Storage Development

- Lack of incentives for development and commercialization
- Uncertain federal and state regulatory terrain
- Depressed energy markets and tight credit markets

Government can help get this industry off the ground by helping to reduce development risks
PSEG is Developing Energy Storage

• Energy Storage and Power: a strategic alliance between:
  – Public Service Enterprise Group
  – Dr. Michael Nakhamkin, a leader in the compressed air energy storage field for nearly two decades

• Technology and engineering platform to market and deliver second generation compressed air energy storage (CAES2).

• Available to participate in all stages of CAES2 execution from conceptual evaluation to delivery of plant on turnkey basis with business partners.

• Two customers have received DOE funding to develop ES&P technology
Energy Storage: Neither Fish nor Fowl

• Converts variable renewable resources into firm, dispatchable power available when customers need it
• Enhances grid reliability, which will become increasingly important as variable renewable resources become a larger part of the supply equation

• Optimizes the utilization of transmission, minimizing new required construction
• Has elements of both transmission and generation
Key Stakeholders in Policy Development

- **Congress**
  - Financial support for nascent technology
  - Incentives to compete

- **Department of Energy (DOE)**
  - Technology validation
  - Project financing

- **Federal Energy Regulatory Commission (FERC)**
  - Rules that provide storage with its full economic and reliability value
  - Fair competition in markets
DOE Funding Storage Technology Development

- **American Recovery and Reinvestment Act of 2009**
  - $200M targeted to various storage technologies
    - $50-$60M targeted specifically to CAES
  - Loan guarantees available for storage technologies
    - Project financing at competitive rates
    - Projects must have 20% equity contribution
  - Energy Storage and Power (ES&P) had a number of customers apply for CAES projects using our technology ranging from 15MW to 300 MW.
  - Funds for projects will likely not flow until 2010

- **American Clean Energy Leadership Act (S.1462)**
  - Directs Secretary of Energy to report to Congress recommendations to secure the timely development of energy storage, demand response, distributed generation and energy efficiency

DOE incentives help “kick start” the industry, but cannot sustain it beyond its nascent years
Federal Legislation

- Federal legislation can provide storage developers with structured, longer term incentives on par with incentives provided to renewable energy developers
  - Broad incentives that reward low and zero carbon technologies
  - Direct incentives to help advance commercialization
  - S. 1901 – Storage Technology of Renewable and Green Energy Act of 2009 (STORAGE Act) provides targeted incentives for energy storage systems
  - Removal of disincentives that hinder storage development
Transmission Policy

Some legislative proposals for transmission fail to recognize the important opportunity provided by storage.

- Build upon existing transmission planning practices and principles
- Hidden pitfalls of a “renewable transmission superhighway”
  - Storage is cheaper and could reduce need for transmission
- “Support all Solutions”
  - Promotes local and regional renewable development, jobs
  - Prevents mid-western coal plants from getting subsidized access to east
  - Protects consumers from excessive transmission costs from overbuilt grid
FERC’s Role in Developing Energy Storage

- Energy storage has potential to revolutionize regulation of energy markets. Enhances reliability and can be a key component of the emerging smart grid.

- Currently, energy storage’s reliability and economic benefits are not fully valued in the wholesale market
  - FERC jurisdiction lies in transmission and wholesale power arena and some storage is implemented on the distribution network. State/Federal jurisdiction issues.
  - The costs of intermittency of wind and solar resources have not yet been determined. Energy storage will reduce or eliminate these costs.
  - Transmission planning and market models do not yet recognize the value and potential of storage.

- FERC has an important role to play in getting storage technologies to market
  - Order 890 addresses and directs the regional planning process to consider all energy sources including storage in addition to demand response and distribution
Close partnership with states is crucial

- Many permitting and regulatory hurdles are at the local and state level
- States can act as advocates for projects to navigate the challenging federal regulatory process
- The energy and economic development benefits will be realized by states
Conclusion

- Energy storage is an under-appreciated “piece of the energy puzzle” that is critical to enabling the widespread deployment of renewable energy.

- What the industry needs:
  - Investment Tax Credits
  - Removal of Wind Production Tax Credit (PTC) Disincentive
  - Climate change legislation - certainty through a price on carbon
  - Transmission - allow storage to compete against transmission on a level playing field
  - Clean Energy Deployment Administration – access to financing for investments in new technology