AES Energy Storage
DOE EAC Panel: Storage Market Environment
June 2, 2016
About the AES Corporation

Mission: Improving lives by providing safe, reliable and sustainable energy solutions in every market we serve

- 10M CUSTOMERS
- 8 UTILITY COMPANIES
- 21,000 GLOBAL WORKFORCE

- 6 MARKET-FACING STRATEGIC BUSINESS UNITS
- 4 CONTINENTS
- 17 COUNTRIES
- $37B TOTAL ASSETS OWNED & MANAGED
- $15B TOTAL 2015 REVENUES
- 36,000 MW GENERATION CAPACITY
AES operates the world’s largest fleet of battery-based energy storage arrays.

More than 8 years of commercial operating experience
Energy storage is a viable alternative to peaking power plants. Storage competitively contracted for local capacity in California; cost effective

- Capacity, local reliability
- Peak power/off peak mitigation
- Ancillary services

**Impact**
- Competitive bid vs thermal peaker, cost effective
- Replaces environmental retired units
- Meets flexibility (duck curve)
Energy storage is a proven solution for multiple applications.
Enhancing grid efficiency and reliability

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<th>Generation alternatives</th>
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Credit: GE

- 20 MWi Angamos BESS
- 10 MWi The Netherlands
- 100 MWi for Southern California Edison
DOE is positioned to provide analysis of energy storage benefits to grid planners and regulators faced with big challenges.

**Challenges**

- Replacing generation retiring from age, once-through cooling, air emissions.

- Meeting peak demand with capacity that is flexible enough to manage variability.
  - Utilities in the SW U.S. alone have ~10,000 MW of gas peakers planned for the next decade.

- Transmission expansion to bring large-scale renewable generation to load.

- Grid modernization initiatives.

- Gas infrastructure challenges.

**Energy storage benefits:**

- Reduced capacity and infrastructure costs
- Reduced fuel and O&M costs
- Reduced air emissions
- Improved reliability
- Improved asset utilization

DOE/labs are capable of good ES analysis.

→ Apply it to real and relevant challenges.

→ Publish more and more frequently (vs demos).
DOE analysis of energy storage benefits: Seek real and relevant challenges; publish more frequently.