Electricity Advisory Committee

Energy Storage Subcommittee

Ramteen Sioshansi

Integrated Systems Engineering
The Ohio State University

DOE OE Energy Storage Peer Review
25 September,2018

Electricity Advisory Committee

Charge

Providing Advice to the Department On:

1. Implementing the Energy Policy Act of 2005
2. Executing the Energy Independence and Security Act of 2007
3. Modernizing the Nation's Electricity-Delivery infrastructure

Energy Storage Subcommittee

Statutory Requirements

- Energy Independence and Security Act of 2007 (EISA)
  - ➥ Energy Storage (Technologies) Subcommittee of EAC formed in March 2008 in response to Title VI, Section 641(e)
- Title VI, Section 641(e) has two parts pertaining to this subcommittee
  1. Section 641(e)(4): '. . . every five years [the Energy Storage Technologies Subcommittee], in conjunction with the Secretary, shall develop a five-year plan for. . . domestic energy storage industry for electric drive vehicles, stationary applications, and electricity transmission and distribution.'
  2. Section 641(e)(5): '. . . the Council shall (A) assess, every two years, the performance of the Department in meeting the goals of the plans developed under paragraph (4); and (B) make specific recommendations to the Secretary on programs or activities that should be established or terminated to meet those goals.'

THE OHIO STATE UNIVERSITY

Energy Storage Subcommittee

Statutory Requirements

- Energy Independence and Security Act of 2007 (EISA)
  - ➥ Energy Storage (Technologies) Subcommittee of EAC formed in March 2008 in response to Title VI, Section 641(e)
- Title VI, Section 641(e) has two parts pertaining to this subcommittee
  1. Section 641(e)(4): '. . . every five years [the Energy Storage Technologies Subcommittee], in conjunction with the Secretary, shall develop a five-year plan for. . . domestic energy storage industry for electric drive vehicles, stationary applications, and electricity transmission and distribution.'
  2. Section 641(e)(5): '. . . the Council shall (A) assess, every two years, the performance of the Department in meeting the goals of the plans developed under paragraph (4); and (B) make specific recommendations to the Secretary on programs or activities that should be established or terminated to meet those goals.'

THE OHIO STATE UNIVERSITY

Energy Storage Subcommittee

Members

- Ramteen Sioshansi (Chair); The Ohio State University
- Lola Infante (Vice Chair); Edison Electric Institute
- John Adams; Electric Reliability Council of Texas
- Christopher Ayers; North Carolina Utilities Commission Public Staff
- Laney Brown; Avangrid
- Armond Cohen; Clean Air Task Force
- Robert Cummings; North American Electric Reliability Company
- Ann Delenela; Ameren
- Andrew Fellon; Trane Energy Supply Services
- Flora Flygt; American Transmission Company (retired)
- Lisa Grow; Idaho Power

THE OHIO STATE UNIVERSITY

Energy Storage Subcommittee

Members

- Michael Heyeck; The Grid Group LLC
- Clay Koplin; Cordova Electric Cooperative
- Arthur Kressner; Grid Connections, LLC
- Shaun Mann; Tri-State Generation and Transmission
- Jeff Morris; Washington State House of Representatives
- Delia Patterson; American Public Power Association
- Darlene Phillips; PJM Interconnection
- Wanda Reder; Grid-X Partners, LLC
- David Wade; Chattanooga Electric Power Board
- Tom Weaver; American Electric Power

Previous Reviews

- The '2012 Storage Report: Progress and Prospects: Recommendations for the U.S. Department of Energy,' approved 24 January, 2014, fulfilled both requirements
- The '2014 Storage Plan Assessment: Recommendations for the U.S. Department of Energy,' approved 25 September, 2014, fulfilled the second
- The '2016 Storage Plan Assessment: Recommendations for the U.S. Department of Energy,' approved 29 September, 2016, fulfilled both requirements
- The '2018 Storage Plan Assessment: Recommendations for the U.S. Department of Energy,' is proposed to fulfill the second

Scope

- The 2012 review focused on storage-related activities of OE
- The 2014 review expanded this scope to include OE, EERE, ARPA-E, and SC
  - The report also examined coordination between the Department and other Federal agencies (*e.g.*, NSF and DOD)
  - This was in line with offices and agencies included in the Department's overall strategy
- The 2016 review maintained the same broad programmatic scope
  - Technological scope was expanded beyond electricity in/electricity out storage
  - Includes power-to-gas, thermal, and virtual storage
- The 2018 review will maintain this same breadth

Planned Process

- Outside interviews: ‘users’ and ‘implementers’ of the Department’s storage program to inform assessment and recommendations
- Interviewee groups:
  1. Energy-storage developers
  2. Energy-storage deployers
  3. Energy-storage researchers
  4. State policymakers
  5. ISOs/RTOs
  6. NERC
  7. FERC
  8. Energy and environment think tanks and NGOs
  9. Renewable developers
- DOE/OE Energy Storage Peer Review 2018: ‘piggy back’ off of gathering of interested parties
- Telephone interviews: to supplement the peer review

THE OHIO STATE UNIVERSITY

Other Work Products

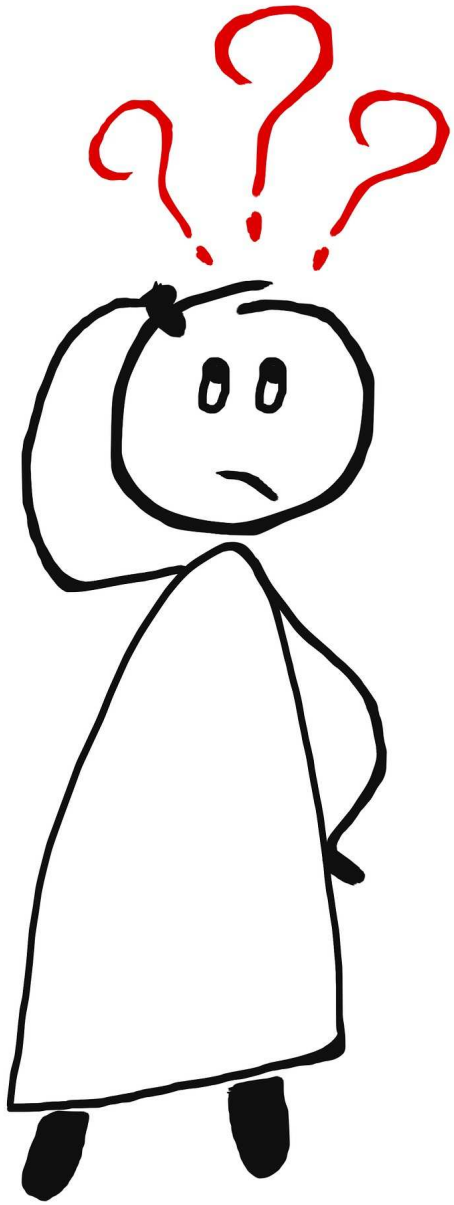
Previous

- National Distributed Energy Storage in the Electric Grid (March, 2016)
- High Penetration of Energy Storage Resources on the Electricity System (June, 2017)
- Securing the 21st-Century Grid: The Potential Role of Storage in Providing Resilience, Reliability, and Security Services (June, 2018)
- A Review of Emerging Energy Storage Technologies (June, 2018)

Ongoing

- Rate, Tariff, and Market Design for Energy Storage

Questions/Comments?



THE OHIO STATE UNIVERSITY