

2020 Biennial Energy Storage Review

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Integrated Systems Engineering
The Ohio State University

Department of Energy Office of Electricity Energy Storage Peer Review
2019

Albuquerque, New Mexico
24 September, 2019

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.’

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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
- Tom Bialek; San Diego Gas & Electric Company
- Laney Brown; Avangrid, Inc.
- Paul Cicio; Industrial Energy Consumers of America
- Armond Cohen; Clean Air Task Force
- Robert Cummings; North American Electric Reliability Corporation
- Ann Delenela; Entergy
- Kimberly Denbow; American Gas Association
- Andrew Fellon; Trane Energy Supply Services
- Flora Flygt; American Transmission Company (retired)

Energy Storage Subcommittee

Members

- Lisa Grow; Idaho Power Company
- Michael Heyeck; The Grid Group, LLC
- Clay Koplín; 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, LLC
- Anda Ray; Electric Power Research Institute
- Wanda Reder; Grid-X Partners, LLC
- Marcos Valenzuela Ortíz; Centro Nacional de Control de Energía
- David Wade; Chattanooga Electric Power Board
- Tom Weaver; American Electric Power Company Inc.

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 Biennial Energy Storage Review,' approved 20 June, 2019, fulfilled the second
- The '2020 Biennial Energy Storage Review,' 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 examined also 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 did and 2020 review will maintain this same breadth

Process

- Outside interviews: users and implementers of the Department's storage program to inform assessment and recommendations
- Interviewee groups:
 - 1 Energy-storage industry
 - 2 Generation industry
 - 3 Utility industry
 - 4 State regulators, energy officials, and legislators
 - 5 Consumer advocates
 - 6 Energy and environment think tanks and NGOs
 - 7 Department and National Laboratory program managers
- DOE OE Energy Storage Peer Review 2019
- Web form and supplemental telephone interviews

Other Work Products

- 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)
- DOE's Role in Assisting State-Level Implementation, Valuation, and Policy Treatment of Energy Storage (March, 2019)

Thank you