

DOE Long Duration Energy Storage Workshop

**“BIG” Energy Storage:
Priorities and Pathways to Long-Duration Energy Storage**

*Hosted by Sandia National Laboratories
Pacific Northwest National Laboratory
Oak Ridge National Laboratory*

Agenda

March 9th: Defining the Long Duration Energy Storage Challenge

11:00-11:10 Welcome and Outline of Workshop (*Erik Spoerke, Sandia National Laboratories*)

11:10-11:30 Keynote by Dr. Imre Gyuk, U.S. DOE, Director of Energy Storage Research, Office of Electricity

11:30-12:40 Panel 1: What is Long-Duration Energy Storage? Defining LDES Through Need (*Moderator: Dr. Imre Gyuk*)

Panelists:

- Mike Gravely (*California Energy Commission*)
- Scott Egbert (*New York State Energy Research and Development Authority*)
- King Look (*Con Edison*)
- Todd Olinsky-Paul (*Clean Energy Storage Alliance*)
- Ryan Stephens (*Shell*)
- David Howell (*DOE Vehicle Technologies Office*)

12:40-12:50 Break (with Fun Trivia, Polls, and Quizzes!)

12:50-13:20 A Conversation about Policy
(*Moderator: Rebecca O’Neil, Pacific Northwest National Laboratory*)

Panelists:

- Erin Childs (*Strategen*)
- Rose Anderson (*Oregon Public Utilities Commission*)
- Debbie Mursch (*General Electric Renewable Energy*)
- Vladimir Koritarov (*Argonne National Laboratory*)

13:20-13:40 Keynote by Scott Litzelman, U.S. DOE, Program Director, ARPA-E

13:40-14:50 Panel 2: Economics and Valuation of Long Duration Energy Storage
(Moderator: Scott Litzelman)

Panelists:

- Paul Albertus (*U. Maryland*)
- Marco Ferrara (*Form Energy*)
- Max Tuttmann (*DOE ARPA-E*)
- Paul Denholm (*National Renewable Energy Laboratory*)
- Ali Amirali (*Starwood Energy Group*)

14:50-15:00 Break (with Fun Trivia, Polls, and Quizzes!)

15:00-15:30 Keynote by Kelly Speakes-Backman, U.S. DOE, Principal Deputy Assistant Secretary for the Office of Energy Efficiency and Renewable Energy.

15:30-16:40 Panel 3: Long Duration Energy Storage Use Cases: Energy Storage Grand Challenge and Beyond
(Moderator: Eric Hsieh, U.S. DOE Director of Grid Systems and Components, Office of Electricity; Technology Development Lead for the DOE Energy Storage Grand Challenge)

Panelists:

- Abbas Akhil (*Former New Mexico State Representative*)
- Carlos Reyes (*EcoElectrica*)
- Kevin Peng (*Los Angeles Department of Water and Power*)
- Sander Cohan (*Enel NA*)
- Dmitry Kosterev (*Bonneville Power Administration*)
- David Bianco (*National Grid, Nantucket Island*) – Substitute panelist, Dr. Imre Gyuk

16:40 Closing Remarks and Open Discussion (*Erik Spoerke*)

March 10th: Emerging Technical Solutions for Long-Duration Energy Storage

11:00-11:10 Welcome and Outline of Day 2 (*Erik Spoerke, Sandia National Laboratories*)

11:10-11:25 Keynote Remarks by Michael Pesin, U.S. DOE, Deputy Assistant Secretary for Advanced Grid Research and Development

11:25-12:35 Panel 4: Thermal Storage
(*Moderator, Clifford Ho, Sandia National Laboratories*)

Panelists:

- Bruce Kelly (*SolarDynamics; Molten-Salt Thermal Storage*)
- Maxwell Cameron-Jones (*Siemens-Gamesa; Rock-Bed Thermal Storage*)
- Zhiwen Ma (*National Renewable Energy Laboratory; Moving Particle Packed Bed Thermal Storage*)
- Ben Bollinger (*Malta; Pumped Thermal Storage*)
- Torbjörn Lindquist (*Azelio; Molten Alloy Latent Heat Storage*)
- Richard Riley (*Highview; Liquid Air Latent Heat Storage*)

12:35-12:50 Virtual Tours of Technologies/Systems I

12:50-13:00 Break (with Fun Trivia, Polls, and Quizzes!)

13:00-14:10 Panel 5: Mechanical and Gravity Storage
(*Moderator Michael Starke, Oak Ridge National Laboratory*)

Panelists:

- Andrea Pedretti (*Energy Vault; Stacked Block Energy Storage*)
- Russ Weed (*ARES; Advanced Rail Energy Storage*)
- Jeremy Goodman (*Tennessee Valley Authority; Pumped Hydro Storage*)
- David Havard (*GE Renewable Energy; Modular Pumped Hydro*)
- Joe Zhou (*Quidnet*)

14:10-14:25 Virtual Tours of Technologies/Systems II

14:25-15:35 Panel 6: Chemical, Hydrogen, and Fuels Storage
(Moderator: *Chris San Marchi, Sandia National Laboratories*)

Panelists:

- Neha Rustagi (*DOE Hydrogen and Fuel Cell Technologies Office*)
- Christian Sattler (*German Aerospace Center*)
- Thomas Autrey (*Pacific Northwest National Laboratory; Liquid Organic Hydrogen Carriers*)
- Ron Kent (*SoCalGas; Hydrogen Storage*)
- Noah Meeks (*Southern Company Services; Hydrogen Storage*)
- Anna Lord (*Sandia National Laboratories*)

15:35-15:45 Break (with Fun Trivia, Polls, and Quizzes!)

15:45-16:00 Virtual Tours of Technologies/Systems III

16:00-17:10 Panel 7: Battery storage

(Moderator: *Vince Sprenkle, Pacific Northwest National Laboratory*)

Panelists:

- Tomio Tamakoshi (*NGK; Sodium-sulfur batteries*)
- Gary Yang (*UniEnergy Technologies; Vanadium Redox Flow Batteries*)
- Richard Brody (*Lockheed Martin; Aqueous Redox Flow Batteries*)
- David Bradwell (*Ambri; Molten Metals Batteries*)
- Sanjoy Banerjee (*Urban Electric Power; Zn-based Batteries*)
- C. Michael Hoff (*Hoffpower; Li-Ion Batteries*)

17:10-17:30 Summary, Closing Remarks