

**Tuesday, September 25**

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**PRE-MEETING REGISTRATION**

4:00 pm – 6:00 pm Registration

**Wednesday, September 26**

TIME	PROJECT	SPEAKER
7:00 am	Registration (all day) & Complimentary Breakfast Sponsored by Aquion Energy	
	8:30 am – <a href="#">Welcome</a> : Georgianne Huff, <i>SNL</i>	
	<a href="#">Session Chair</a> : Dr. Imre Gyuk, <i>DOE</i>	
8:35	Welcome and DOE Perspective	Dr. Imre Gyuk — US Department of Energy / Office of Electricity Delivery & Energy Reliability
8:50	DOE / OE Program Overview	Dr. Imre Gyuk — US Department of Energy / Office of Electricity Delivery & Energy Reliability
9:05	DOE / ARRA Program Overview	Ron Staubly — National Energy Technology Laboratory
9:15	OE / SNL Program Overview	Ross Guttromson — Sandia National Laboratories
9:25	OE / PNNL Program Overview	Vincent Sprenkle — Pacific Northwest National Laboratory
9:35	DOE / ARPA-E Program Overview	Dr. Mark Johnson — US Department of Energy / Advanced Research Projects Agency-ENERGY
9:50am – 10:10 am	BREAK	
	10:10 am – <a href="#">Session Chair</a> : Ron Staubly, <i>NETL</i>	
10:15	ARRA Wind Firming Energy Farm	Tom Stepien — Primus Power
10:30	ARRA Grid-Scale Energy Storage Demonstration for Ancillary Services Using Ultrabattery	John Wood — Ecoult
10:45	ARRA PV Plus Storage for Simultaneous Voltage Smoothing and Peak Shifting	Steve Willard — PNM
11:00	ARRA Demonstration of a Sodium Ion Battery for Grid Level Applications	Theodore Wiley — Aquion Energy
11:15	ARRA Solid State Li Metal Batteries for Grid-Scale Energy Storage	Mohit Singh — Seeo Inc.
11:30	ARRA Amber Kinetics Flywheel Energy Storage Demonstration	Edward Chiao — Amber Kinetics, Inc.
11:45 pm – 1:00 pm	LUNCH (On Your Own)	
	1:00 pm – <a href="#">Keynote</a> : Jeanne M. Fox, <i>Commissioner, New Jersey Board of Public Utilities</i>	
	1:20 pm – <a href="#">Session Chair</a> : Bill Capp, <i>Grid Storage Consulting</i>	
1:25	ARRA Flow Battery Solution for Smart Grid Renewable Energy Applications	Sheri Nevins — Raytheon Ktech Ron Mosso — EnerVault Corporation
1:40	ARRA Painesville Municipal Electric Power Vanadium Redox Battery Demonstration Project	Joseph Startari — Ashlawn Energy LLC
1:55	Energy Storage Controls for Grid Stability	Ray Byrne — Sandia National Laboratories

**Wednesday, September 26 (continued)**

<b>TIME</b>	<b>PROJECT</b>	<b>SPEAKER</b>
2:10	Secondary Use of Vehicle Batteries in Power Systems	Omer Onar — <i>Oak Ridge National Laboratory</i>
2:25	Second Generation Emissions Study	Rick Fioravanti — <i>DNV KEMA Energy &amp; Sustainability</i>
2:40	Energy Storage Computational Tool (ESCT)	Colette Lamontagne — <i>Navigant Consulting, Inc.</i>
2:55 pm – 3:10 pm	<b>BREAK</b>	
3:15	Poster Session One	<a href="#">Session Chair</a> : Dr. Mark Johnson, <i>ARPA-E</i>
5:30 pm	<b>RECEPTION</b> — Sponsored by the Electricity Storage Association and East Penn/Ecoult	

## POSTER SESSION ONE (WEDNESDAY)

PROJECT	PRESENTER
Metrics for Storage and Pre-Standards Analyses	David Rose — Sandia National Laboratories
Oahu Energy Storage Study: Comparison of Distributed vs. Central Storage Value	Michael Kintner-Meyer — Pacific Northwest National Laboratory
Flow Battery Modeling	Soowhan Kim — Pacific Northwest National Laboratory
Engineered Gate Oxides for Wide Bandgap Semiconductor MOSFETs	Jon Ihlefeld — Sandia National Laboratories
Impact Study of Value-Added Functionality on Inverters in Energy Storage Systems	Eric Green & Vivek Ramachandran — North Carolina State University
Linear Analysis of Power Electronics for Energy Storage Systems	Luke Watson — Missouri University of Science & Technology
Tri-lab Distributed Storage Study for Maui	Jim Ellison — Sandia National Laboratories
International Energy Storage Database	Janice Lin — StrateGen Consulting LLC
Next Generation Composite Materials for Flywheel Development	Timothy Lambert — Sandia National Laboratories
Synthesis and Stability of NaSICON for Sodium-Based Batteries	Dave Ingersoll & Erik Spoerke — Sandia National Laboratories
ES-Select™ – An Energy Storage Selection Tool	Dhruv Bhatnagar — Sandia National Laboratories
Reducing the Costs of Manufacturing Flow Batteries	Dhruv Bhatnagar — Sandia National Laboratories
NYSERDA Energy Storage Projects	Dhruv Bhatnagar — Sandia National Laboratories
Nevada Energy Storage Study	Jim Ellison — Sandia National Laboratories
Energy Storage in the Southeast	Jim Ellison — Sandia National Laboratories
<b>ARPA-E PROJECTS</b>	
Fuel-Free, Ubiquitous, Compressed Air Energy Storage and Power Conditioning	Ian Lawson — General Compression
Novel Regenerative Fuel Cells based on Anion Exchange Membranes for Affordable Renewable Energy Storage	Katherine Ayers — Proton OnSite
Low Cost, High-Energy Density Flywheel Storage Grid Demonstration	Mike Strasik — The Boeing Company
A Robust and Inexpensive Iron-Air Rechargeable Battery for Grid-Scale Energy Storage	Sri Narayan — University of Southern California
Development of a 100kWh Flywheel	Jim Arseneaux — Beacon Power Corporation
Flow-Assisted Zinc Anode Batteries for Grid-Scale Electricity Storage	Valerio De Angelis and Nilesh Ingale — CUNY Energy Institute
Hydrogen-Bromine Flow Batteries for Grid-Scale Energy Storage	Vincent Battaglia — Lawrence Berkeley National Laboratory
Superconducting Magnet Energy Storage System with Direct Power Electronics Interface	V.R. Ramanan — ABB, Inc.
GRIDS Soluble Lead Flow Battery Technology	Aaron Sathrum — General Atomics
Low Cost, High Performance and Long Life Flow Battery Electrodes	Tom Stepien — Primus Power

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## POSTER SESSION ONE (WEDNESDAY)

PROJECT	PRESENTER
Transformative Electrochemical Flow Storage System	Mike Perry — <i>United Technologies Research Center</i>
Electroville: High-Amperage Storage Device Energy Storage for the Neighborhood	Paul Burke — <i>Massachusetts Institute of Technology</i>
Semi-Solid Rechargeable Power Sources – Flexible, High Performance Storage for Vehicles at Ultra-Low Cost	Taison Tan — <i>24M</i>
Planar Na-beta Batteries for Renewable Integration and Grid Applications	Robert Higgins — <i>EaglePicher Technologies, LLC.</i>
Affordable Energy Water and Sunlight	Daniel Nocera — <i>Sun Catalytix</i>
Quaternary Phosphonium Based Hydroxide Exchange Membranes	Yushan Yan — <i>University of Delaware</i>
2.5kW/10kWh Redox Flow Battery (RFB) with Low-cost Electrolyte and Membrane Technologies	Thomas Kodenkandath — <i>ITN Energy Systems, Inc.</i>
Advanced Sodium Battery	Joonho Koh — <i>Materials &amp; Systems Research, Inc.</i>

**Thursday, September 27**

[www.sandia.gov/ess](http://www.sandia.gov/ess)

TIME	PROJECT	SPEAKER
7:30 am	Registration (all day) & Complimentary Breakfast Sponsored by Raytheon Ktech	
	8:20 am – <a href="#">Welcome</a> : Georgianne Huff, SNL	
	8:25 am – <a href="#">Session Chair</a> : Tony Martino, SNL	
8:30	CAES Geo Performance for Natural Gas and Salt Reservoirs and Thermal-Mechanical-Hydraulic (TMH) Response of Geological Storage Formations (CAES)	Payton Gardner — Sandia National Laboratories
8:55	Thermoelectrochemical Energy Storage	Nicholas Hudak — Sandia National Laboratories
9:10	Component Research for Redox Flow Batteries	Tom Zawodzinski — Oak Ridge National Laboratory
9:25	Nitrogen/Oxygen Battery – A Transformational Architecture for Large Scale Energy Storage	Frank Delnick — Sandia National Laboratories
9:40	Sodium-based Battery Development	Dave Ingersoll — Sandia National Laboratories
10:00	Intermediate Temperature Planar Na-Metal Halide Batteries	Jin Kim — Pacific Northwest National Laboratory
10:20 am – 10:40 am	BREAK	
	10:40 am – <a href="#">Session Chair</a> : Ross Guttromson, SNL	
10:45	Na-ion Intercalation Electrodes for Na-ion Battery	Jun Liu — Pacific Northwest National Laboratory
11:00	Unique Li-ion Batteries for Utility Applications	Daiwon Choi — Pacific Northwest National Laboratory
11:15	Carbon Enhanced VRLA Batteries	David Enos — Sandia National Laboratories
11:30	Improved Properties of Nanocomposites for Flywheel Applications	Tim Boyle — Sandia National Laboratories
11:45	Magnetic Composites for Flywheel Energy Storage	Jim Martin — Sandia National Laboratories
12:00 pm – 1:20 pm	LUNCH (On Your Own)	
	1:20 pm – Georgianne Huff, SNL	
	1:25 pm – <a href="#">Session Chair</a> : Stan Atcitty, SNL	
1:30	Novel High Energy Density Dielectrics for Scalable Capacitor Needs	Geoff Brennecka — Sandia National Laboratories
1:45	Design and Development of a Low Cost, Manufacturable High Voltage Power Module for Energy Storage Systems	Brandon Passmore — Arkansas Power Electronics International, Inc.
2:00	6.5 kV Silicon Carbide Half-Bridge Power Switch Module for Energy Storage System Applications	John Hostetler — United Silicon Carbide, Inc.
2:15	15 kV Phase Leg Power Modules with SiC Devices	Ranbir Singh — GeneSiC Semiconductor, Inc.
2:30	Experimental Investigation of Silicon Carbide Power Device Reliability	Robert Kaplar — Sandia National Laboratories
2:45 pm – 3:05 pm	BREAK	
3:05	Poster Session Two	<a href="#">Session Chair</a> : Georgianne Huff, SNL

## POSTER SESSION TWO (THURSDAY)

PROJECT	PRESENTER
<b>SBIR PROJECTS</b>	
High Power Motor for ARPA-E Flywheel	Jim Arseneaux — <i>Beacon Power Corporation</i>
Acid Based Blend Membranes for Redox Flow Batteries	Alan Cisar — <i>Lynntech, Inc.</i>
Flow Battery Membrane	David Ofer — <i>TiAx, LLC</i>
Sodium Intercalation Battery for Stationary Storage	David Ofer — <i>TiAx, LLC</i>
Modular Undersea Compressed Air Energy Storage (UCAES) System	James Kesseli — <i>Brayton Energy, LLC</i>
Highly Selective Proton-Conducting Composite Membranes for Redox Flow Batteries	Alan Cisar — <i>Lynntech, Inc.</i>
Low Cost and Highly Selective Composite Membrane for Redox Flow Batteries	Fei Wang — <i>EIC Laboratories, Inc.</i>
Low-Cost, High-Performance Hybrid Membranes for Redox Flow Batteries	Hongxing Hu, PhD — <i>Amsen Technologies, LLC</i>
Nanocatalytic Rechargeable Lithium Air Cathode	D. "Pera" Peramunage — <i>EIC Laboratories, Inc.</i>
Flow Battery Structures to Improve Performance and Reduce Manufacturing Cost	E. Jennings Taylor — <i>Faraday Technology, Inc.</i>
A Single Substance Organic Redox Flow Battery	Paul Rasmussen — <i>Vinazene, Inc.</i>
Next Generation Processes for Carbonate Electrolytes for Battery Applications	Kris Rangan — <i>Materials Modification, Inc.</i>
Organic and Inorganic Solid Electrolytes for Li-ion Batteries	Nader Hagh — <i>NEI Corporation</i>
<b>UNIVERSITY PROJECTS</b>	
Strategies for Liquid-Anode Alkali Batteries of High Energy Density Operating at 0 to 100°C	C. Austen Angell — <i>Arizona State University</i> Professor Steve Martin — <i>Iowa State University</i>
Iron Based Flow Batteries for Low Cost Grid Level Energy Storage	Jesse Wainright — <i>Case Western Reserve University</i>
Development of Electrode Architectures for High Energy Density Electrochemical Capacitors	Yury Gogotsi — <i>Drexel University Department of Materials Science and Engineering</i>
The Architectural Diversity of Metal Oxide Nanostructures: An Opportunity for the Rational Optimization of Group II Cation Based Batteries	Esther Takeuchi — <i>Stony Brook University</i>
<b>ARRA PROJECTS</b>	
20 MW Flywheel Frequency Regulation Plant (Stephentown NY)	Jim Arseneaux — <i>Beacon Power Corporation</i>
Detroit Edison's Advanced Implementation of Community Energy Storage Systems for Grid Support	Haukur (Hawk) Asgeirsson, PE — <i>Detroit Edison</i>
Notrees Wind Storage	Jeff Gates — <i>Duke Energy</i>
Compressed Air Energy Storage	Robert Booth — <i>PG&amp;E/BAI</i>
Premium Power Distributed Energy Storage System Demonstration	Dennis McKay — <i>Premium Power</i>
Tehachapi Wind Energy Storage Project Using Li-Ion Batteries	Christopher Clarke — <i>Southern California Edison</i>
Isothermal Compressed Air Energy Storage for Grid-Scale Applications	Adam Rauwerdink — <i>SustainX</i>

**Friday, September 28**

TIME	PROJECT	SPEAKER
7:30 am	Registration (all day) & Complimentary Breakfast Sponsored by A123 Systems and EnerVault	
	8:20 am – <a href="#">Welcome</a> : Georgianne Huff, <i>SNL</i>	
	8:25 am – <a href="#">Session Chair</a> : Dan Borneo, <i>SNL</i>	
8:30	DOE-OE FY12 Electrical Energy Storage Demonstration Projects	Dan Borneo — <i>Sandia National Laboratories</i>
8:45	State & Federal Energy Storage Technology Advancement Partnership (ESTAP)	Todd Olinsky-Paul — <i>Clean Energy States Alliance</i>
9:00	Life Cycle Testing and Evaluation of Energy Storage Devices	Summer Ferreira — <i>Sandia National Laboratories</i>
9:15	Energy Storage Test Pad	David Rose — <i>Sandia National Laboratories</i>
9:30	Maui Electric Company Storage Evaluation Project	Jim Ellison — <i>Sandia National Laboratories</i>
9:45	Protocol for Measuring and Expressing Performance for Energy Storage Systems	Vilayanur Viswanathan — <i>Pacific Northwest National Laboratory</i> David Schoenwald — <i>Sandia National Laboratories</i>
10:05 am – 10:20 am	BREAK	
	10:20 am – <a href="#">Session Chair</a> : Landis Kannberg, <i>PNNL</i>	
10:25	Advanced Membranes for VRFB. A Collaboration with SNL, PNNL and ORNL	Cy Fujimoto — <i>Sandia National Laboratories</i>
10:40	Advanced Materials for Flow Batteries	Travis Anderson — <i>Sandia National Laboratories</i>
10:55	Flow Battery Modeling	Mario Martinez — <i>Sandia National Laboratories</i>
11:10	New Generation Redox Flow Battery Prototype Development	Vincent Sprenkle — <i>Pacific Northwest National Laboratory</i>
11:25	New Generation Aqueous Base Redox Flow Battery Component Development	Wei Wang — <i>Pacific Northwest National Laboratory</i>
11:40	Estimation of Capital and Levelized Cost for Redox Flow Batteries	Vilayanur Viswanathan — <i>Pacific Northwest National Laboratory</i>
11:55 pm – 1:25 pm	LUNCH (On Your Own)	
	1:25 pm – <a href="#">Session Chair</a> : Ray Byrne, <i>SNL</i>	
1:30	Wholesale Electricity Market Design Project	Jim Ellison — <i>Sandia National Laboratories</i>
1:45	Evaluating Utility Owned Electric Energy Storage Systems: A Perspective for State Electric Utility Regulators	Dhruv Bhatnagar — <i>Sandia National Laboratories</i>
2:00	National Assessment of Energy Storage for Grid Balancing and Arbitrage	Michael Kintner-Meyer — <i>Pacific Northwest National Laboratory</i>
2:15	DOE-EPRI Energy Storage Handbook in Collaboration with NRECA	Abbas Akhil — <i>Sandia National Laboratories</i>
2:30 pm	CLOSE	Dr. Imre Gyuk — <i>US Department of Energy</i>