



Tuesday, July 13 – Energy Storage Summit – Day One

7:00 – 8:00 *Registration & Continental Breakfast*

8:00 – 8:15 **Welcome & Introduction by the Chairman**
Kenneth S. Culotta, *Partner*, KING & SPALDING LLP

8:15 – 8:45 **Keynote Address**
Terry Boston, *CEO*, PJM INTERCONNECTION

Session I: Legislative Initiatives and Industry Development

8:45 – 9:15 *Presentation:*

Legislative Developments in Washington DC

- *The fate of the Carbon bill - will it be broken up into separate planks of incremental clean energy legislation?*
- *Ron Wyden's Storage ITC Bill – what is the current status?*
- *Harry Reid's Clean Energy Transportation Corridors Bill - role of storage and impacts on creating a storage market?*
- *What about moves towards a Green Infrastructure Bank?*

Jason Makansi, *President*, PEARL STREET, INC. & *Executive Director*, THE COALITION TO ADVANCE RENEWABLE ENERGY THROUGH BULK STORAGE (CAREBS)

Thomas J. Spulak, *Partner*, KING & SPALDING, LLP & *Lead Counsel*, CAREBS

9:15 – 10:15 *Keynote Panel:*

Growing the Market for Grid-Scale Storage in California

- *33% by 2020 in California: Storage as a strategic asset in meeting the US's most aggressive renewables goal yet*
- *Brown/Skinner AB2514 status; prospects for passage; how are utilities reacting?*
- *Self-Generation Incentive w/Storage*
- *Market Design Factors*
- *California Smart Grid Storage Demos*
- *CEC and utility pilot programs*
- *Customer-side projects*

- *Potential impact of PACE energy financing to ramp up a market for customer-sided storage*

Moderator: **Janice Lin**, *Executive Director*,
CALIFORNIA ENERGY STORAGE ALLIANCE (CESA)

Panelists:

Ed Cazalet, *Vice President & Co-Founder*,
MEGAWATT STORAGE FARMS, INC.

David Nemtzow, *Chief Policy Officer & Executive Vice President*,
ICE ENERGY, INC.

Clifford Rechtschaffen, *Special Assistant to the Attorney General*,
CALIFORNIA DEPARTMENT OF JUSTICE (Sponsor of AB2514)

Laurie ten Hope, *Senior Advisor*, CALIFORNIA ENERGY COMMISSION

10:15 -10:45 *Networking Break*

Session II: Capturing and Modeling the Business Opportunities of Grid-Scale Energy Storage

10:45 – 11:15 *Presentation:*

Understanding the Opportunities for Storage in Regional Markets and ISO/RTO Tariffs

- *Introduction to how grid operators and resource planners view the world with regard to storage*
- *Opportunities for various storage technologies to capture multiple value streams through:*
 - *Energy and ancillary services*
 - *Installed capacity*
 - *Demand response*
- *How the stakeholder process works and an update on recent changes in tariffs and recent FERC & PUC rulings.*

Jacqueline DeRosa, *Director of Regulatory Affairs – California*,
CUSTOMIZED ENERGY SOLUTIONS

11:15 – 12:15 *Panel:*

Storage Economics I: Business Models for Longer Duration Storage

Storage technology options are exploding. Many multi-megawatt projects are underway. Equipment vendors, consultants and utilities are now grappling with how to select and tailor a particular technology for a specific market, and how best to integrate revenue streams to get projects into the black. The fundamental challenge is that storage attributes do not fit the old generation, transmission, distribution scheme. Even the standard modeling tools are in need of revision. “Bulk” storage technologies (from tens to hundreds of megawatts and capable of providing energy for longer than an hour) include pumped hydro, compressed air, sodium sulfur and flow batteries. While load-shifting/energy arbitrage is the big value proposition here, ancillary services can also boost the bottom line.

This unique panel convenes the leading analysts and consultants who have been refining these business models. They will compare the key results of their studies and share strategic insights both into how the value of individual storage projects can be maximized, and how to make compelling business cases to the gatekeepers of the electric power industry, whether they be utility planners, IPPs, ISOs, or regulators.

Moderator: **David G. Tewksbury**, *Partner*, KING & SPALDING, LLP

Panelists:

James S. Diemer, *Executive Vice President*, PACE GLOBAL

Richard Fioravanti, *Director, Storage Applications & Support*, KEMA, INC.

Mark Griffith, *Managing Director*, BLACK & VEATCH CORPORATION

Ron Moe, *Senior Vice President/Head of Advisors*, VENTYX ADVISORS

Rahul Walawalkar, Ph.D., *Vice President, Emerging Technologies & Markets*, CUSTOMIZED ENERGY SOLUTIONS

12:15 – 1:45 *Group Luncheon*

1:45 – 2:45 *Panel:*

Storage Economics II: Business Models for Shorter Duration Storage

As a generalization, storage technologies with shorter than one hour duration are being applied to grid regulation and other services, although in many cases they are used for distributed renewables peak-shifting (solar vs. grid peak)-sometimes exclusively one or the other, sometimes in combination. Technologies commonly used for these types of applications include lithium ion and lead acid batteries, ultracapacitors, flywheels, and other hybrid devices. This panel of analysts and ISO/RTO planners will explore the best current thinking about how to and how to extract the most value from a given storage installation, and combine the value of different ancillary services.

Moderator: **Mark C. Kalpin**, *Partner & Co-Chair, Energy and Clean Tech Group*, WILMER CUTLER PICKERING HALE & DORR LLP

Panelists:

Ziad Alaywan P.E., *President & CEO*, Z-GLOBAL, INC.; *Senior Vice President & COO*, TRES AMIGAS, LLC; *Strategic Advisor*, WESTERN GRID DEVELOPMENT

William Capp, *President & CEO*, BEACON POWER

Mark Griffith, *Managing Director*, BLACK & VEATCH CORPORATION

Todd P. Hillman, *Executive Director, Market Development & Services*, MIDWEST INDEPENDENT TRANSMISSION SERVICE OPERATOR

Shaun Johnson, *Manager, Energy Markets Products*, NYISO

David Walls, *Managing Director, Energy Practice*, NAVIGANT CONSULTING

2:45 – 3:15 *Networking Break*

3:15 – 4:15 *Panel:*

Grid-Scale Storage Operators Perspectives

This panel brings together strategic planners and asset managers from utilities with merchant power providers. Panelists either have had hands-on experience running storage facilities, or will be implementing storage systems in the near future. Participants will share their experiences thus far, and respond to the analysts' debate about business models in the preceding panels. Utilities will address how they evaluate the economics of storage as one option among others for shaving peak loads, balancing renewables, and regulating the grid. Merchant providers will talk about how they are seeing the value proposition of storage, and what are the most opportune regional markets for the different kinds of storage services.

Moderator: **William H. Holmes**, Partner, STOEL RIVES, LLP

Panelists:

Mark Kapner, Senior Strategy Engineer, AUSTIN ENERGY

Hal LaFlash, Director of Emerging Clean Technologies, PACIFIC GAS & ELECTRIC (PG&E)

Mark Rawson, Senior Project Manager, Advanced Renewables & Distributed Technologies Program, SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

Johannes Rittershausen, Senior Project Manager, Advanced Technologies, SOUTHERN CALIFORNIA EDISON

Chris Shelton, President, AES ENERGY STORAGE

Session III: The Regulatory Landscape for Energy Storage

4:15 – 5:15 *Panel:*

The Regulators Respond

This closing panel for the Summit Day One will provide utility commissioners and policy analysts the opportunity to comment on the various perspectives, arguments and counter-arguments heard thus far. Panelists will share their thoughts on pros and cons for rate-basing storage for different applications, storage's overall value proposition, and its role in meeting reliability, RPS and carbon reduction goals and mandates.

Moderator: **Marcus Wood**, Partner, STOEL RIVES, LLP

Panelists:

Ron Binz, Chairman, COLORADO PUBLIC UTILITIES COMMISSION

Laurence G. Chaset, Senior Attorney,
CALIFORNIA PUBLIC UTILITIES COMMISSION

Jeanne Fox, Commissioner, NEW JERSEY BOARD OF PUBLIC UTILITIES

Jeff Goltz, Chairman,
WASHINGTON UTILITIES & TRANSPORTATION COMMISSION

5:15 – 6:15 *Networking Reception – Sponsored By:*



Wednesday, July 14 – Energy Storage Summit – Day Two

Making It Real: Storage Case Studies and Economics

- 7:00 – 8:00 *Registration & Continental Breakfast*
- 8:00 – 8:05 **Welcome & Re-Cap by the Chairman**
Kenneth S. Culotta, *Partner*, KING & SPALDING LLP
- 8:05 – 8:35 **Keynote Address:**
UNITING THE NATION’S POWER GRID
Phillip G. Harris, *Chairman & CEO*, TRES AMIGAS LLC
- 8:35 – 9:00 *Presentation:*
Smart Grid Storage Funding and Project Updates
The most recent round of Stimulus funding from the DOE included over a dozen projects incorporating some type of storage into Smart Grid pilots and demonstrations. This presentation from a DOE representative at the Office of Electric Deliverability and Reliability will talk about storage primarily from the perspective of grid modernization and strengthening.
Dr. Imre Gyuk, *Program Manager, Energy Storage Research*,
 U.S. DEPARTMENT OF ENERGY
- 9:00 – 9:30 *Special Presentation:*
Innovations in Fast Energy Storage for the Grid
Altairnano’s fast storage systems began operation with the PJM control area in Fall 2008. This milestone marketed the first commercial use of an advanced lithium ion battery systems for frequency regulations. Today the 1MW/250kWh System is operated nearly continuously by the AES Corporation as a revenue-generating asset. The use of fast storage for frequency regulation has far-reaching benefits, including freeing up fossil fuel plant capacity for baseload, reducing carbon emissions and accelerating renewable integration. This presentation will highlight the critical benefits of fast energy storage, differences from conventional generation assets, and insights into the commercial deployment of such projects.
Bob Misback, *Senior Director – Energy Solutions*, ALTAIRNANO, INC.
- 9:30 – 10:00 *Special Presentation:*
Integrated Smart Energy Storage as Part of an Energy-Solution Development Open Platform
With its proprietary technologies in key areas related to energy management, SANYO has recently announced its new Energy Solution Business which will focus on the SANYO Smart Energy System (SANYO SES). The system is a fully integrated energy storage system combining SANYO’s world-leading solar panels, industrial-use lithium-ion batteries and power management controller. To facilitate the various key technologies, SANYO has announced production increases in solar

panels, industrial-use lithium-ion battery systems for energy storage, and other products used in conjunction with the system. Additionally, demonstration projects are being conducted in a variety of locations around the globe. Most recently, SANYO has been developing an open platform for energy management systems based on its own SANYO SES to collaborate with a wider range of industry. For example, last month SANYO and the University of California San Diego announced a research collaboration agreement for further development on this type of system, including business models. This presentation will highlight SANYO's competitive energy storage technology and current energy storage projects in Japan and the U.S.

Dr. Hiroshi Hanafusa, General Manager, Energy Solution Business Division, SANYO ELECTRIC CO., LTD.

10:00 – 10:30 *Networking Break*

10:30 – 11:30 *Panel:*

Strategic Corporate and Private Equity Perspectives

The entry of leading OEMs into a space once dominated by venture and start-up companies signals a new stage of acceptance and commercialization for stationary storage. In 2009 GE commenced a factory for sodium-sulfur batteries. Japanese electronics majors are marketing lithium ion batteries for home and community applications, and looking for grid-scale installations. Haddington Ventures sold their first compressed air project. This panel discussion by strategic and private equity investors will explore how they see the scope and segmentation of the global market for grid-scale storage projects and technologies, what the most attractive short term versus long-term niches and applications are, and what kinds of companies they are considering either investing in, partnering with or acquiring.

Moderator:

Richard Baxter, President, MUSTANG PRAIRIE, LLC

Panelists:

Andrew Friendly, Principal, ADVANCED TECHNOLOGY VENTURES

Scott Gardner, Managing Director, US RENEWABLES GROUP

James R. Levy, Principal, WARBURG PINCUS LLC

David R. Marchese, Vice President, HADDINGTON VENTURES LLC

Shawn Patterson, Technology & Financial Services Research Analyst, ATREIDES CAPITAL, LLC

11:30 – 12:30 *Panel:*

Vendor Perspectives on Progress in Getting Storage onto the Grid

- *What is the real threshold for renewables integration after which storage becomes critical? Can enough distributed intermittent sources really balance themselves?*
- *Storage's contribution to demand-side management*
- *Impact of California's Self-Generation Incentive, which includes a role for storage*

- *The cost equation for storage as a renewables buffer, and peak-shifting applications*
- *Community-Energy Storage*

Moderator: **Peter Mostow**, *Partner*,
WILSON SONSINI GOODRICH & ROSATI, LLP

Panelists:

Royal Daniel, *COO*, ENERGY STORAGE AND POWER LLC

Jim Heid, *Vice President, Global Business Solutions*, DRESSER-RAND

Michael Oster, *CEO*, GRID STORAGE TECHNOLOGY

Aaron Pollak, *Business Development Engineer*, DYNAPOWER

Frank Ramirez, *CEO*, ICE ENERGY

Steve Vechy, *Director of Marketing for UPS & Utilities*, ENERSYS

Chris Winter, *CEO*, REDFLOW TECHNOLOGIES, LTD.

12:30 – 1:45 *Group Luncheon*

1:45 – 5:30 **Two Concurrent Tracks:**

A. Bulk Storage

B. Renewable Project & Substation-Level Storage

Track A: Bulk (Wholesale) Storage

This track will be devoted to compressed and pumped hydro storage methods, both widely understood as the cheapest and best suited for large-scale peak shifting/energy arbitrage uses. Activity in this segment is more project development and finance focused, although there are some technology developments of note.

1:45 – 1:50 **Introduction by the Track A Chairmen**

Kenneth S. Culotta, *Partner*, KING & SPALDING LLP

David R. Marchese, *Vice President*, HADDINGTON VENTURES, LLC

1:50 – 2:20 *Presentation:*

Project Case Study #1

Rob Webster, *General Manager*, WESTERN ENERGY HUB

2:20 – 3:20 *Panel:*

Developing, Permitting & Financing Compressed Air Storage Projects

CAES is starting to get traction with utilities and private developers. Recent developments include the selling of the Norton facility by Haddington, PGE's phase one funding from the CPUC, the formation of Energy Storage & Power LLC in a JV between PSEG and inventor Michael Nakhmkin, the Iowa Storage Energy Park project moving to drilling stage, and RWE in Europe commencing a major adiabatic CAES project with GE. At least a half dozen other developments are in discussion. This panel will bring together CAES developers, technology and service providers and private equity and debt to discuss the financial models for utility vs. merchant

CAES, permitting hurdles, and other operational challenges for what is widely accepted as the cheapest storage source alongside hydropower.

Moderator: **Kenneth S. Culotta**, *Partner*, KING & SPALDING, LLP

Panelists:

Robert Kraft, *CEO & President*, ENERGY STORAGE AND POWER LLC

David R. Marchese, *Vice President*, HADDINGTON VENTURES, LLC

Michael McGill, *Partner*, ELECTRICITY & AIR STORAGE ENTERPRISES, LLC

Dan Pastor, *Principal Energy Consultant*, TETRA TECH, INC.

Joe Spease, *CEO*, WINDSOHY

Chuck Zabriskie, *Partner*, ACQUEST ADVISORS, LLC

3:20 – 3:35 *Networking Break*

3:35 – 3:55 *Presentation:*

Project Case Study #2

Rexford J. Wait, *Vice President*, THE NEVADA HYDRO COMPANY

3:55 – 4:15 *Presentation:*

Project Case Study #3

Rick Miller, *Senior Vice President, Renewable Energy Services*, HDR/DTA

4:15 – 5:15 *Panel Discussion:*

Pumped Storage Project Development

Pumped hydro is the one type of storage that utilities have long-term experience with. Traditionally hydropower storage is a very high ticket item with a development time-frame of about a decade. However new technologies for above or underground closed loop pumped hydro promise to accelerate a new generation of pumped hydro facilities as a transmission asset and wind-firming/peak-shifting asset.

Moderator: **Marcus Wood**, *Partner*, STOEL RIVES, LLP

Panelists:

Carl Borgquist, *President*, GRASSLANDS RENEWABLE ENERGY, LLC

Peter Donalek, *Manager – Power Systems Studies*, MWH GLOBAL, INC.

Wayne Dyok, *Vice President Hydropower Program*, TETRA TECH

Roger Faulkner, *President*, ELECTRIC PIPELINE CORPORATION

Kim Johnson, *Executive Vice President, Commercial*, SYMBIOTICS, LLC

Track B: Grid Services

This track of storage project case studies will give precedence to projects already underway, with actual performance data wherever possible, followed by funded and announced projects. Case Studies will include smart grid-related projects, substation-level and renewables integration. Presenters will explain the applicable value proposition and economics, criteria for technology selection, and siting considerations.

- 2:00 – 2:15 Overview by the Track Chair
Dr. Imre Gyuk, Program Manager, Energy Storage Research,
 U.S. DEPARTMENT OF ENERGY
- 2:15 – 2:35 Case Study #1
Chris Winters, *CEO*, REDFLOW TECHNOLOGIES, LTD.
- 2:35 – 2:55 Case Study #2
Clayton Such, *Lead Power Systems & Controls Engineer*, XTREME POWER
- 2:55 – 3:15 Case Study #3
 In-Service Chile Ancillary Services and Planned Tehachapi Wind Integration
Chris Campbell, *Vice President, Marketing & Business Development*
 A123 SYSTEMS
- 3:15 – 3:35 *Networking Break*
- 3:35 – 4:00 Case Study #4
Mark Tinkler, *Technology Advisor for the Strategic Options
 for Sustainable Power Generation Interest Group*,
 CEATI INTERNATIONAL
- 4:00 – 4:20 Case Study #5
Todd Headlee, *CEO*, SILENT POWER, INC.
- 4:20 – 4:40 Case Study #6
Rainer Bussar, *Team Manager*,
 RESTORE ENERGY SYSTEMS/EXIDE TECHNOLOGIES
- 4:40 – 5:00 Case Study #7
Raj DasGupta, *Director of Research*, ELECTROVAYA
- 5:00 – 5:15 Final Comments by the Track Chair
Dr. Imre Gyuk, *Program Manager, Energy Storage Research*,
 U.S. DEPARTMENT OF ENERGY
- 5:15 – 6:15 *Networking Reception – Sponsored By:*

