# U.S. Congress to Appropriate Funds to Support Energy Storage

## ESA Chairman testifies before Congress

On October 3, 2007, ESA's Chairman, Brad Roberts, testified to the U.S. House Subcommittee on Energy and Environment on the value of energy storage in the U.S. utility grid. Brad was joined by Larry Dickerman of American Electric Power (AEP), Tom Key from the Electric Power Research Institute (EPRI), and the Department of Energy (DOE) Deputy Director Research and Development, Patricia Hoffman.

Patricia Hoffman, ESA Chair Brad Roberts, Larry Dickerman, and Tom Key testify before the U.S. House Subcommittee on Energy and Environment.

The House Subcommittee requested inputs regarding House Bill HR 3776. The bill contains funding totaling $190 million to support energy storage basic research, applied research and demonstration activities for the grid and plug-in hybrid electric vehicles (PHEVs). These appropriations include $60 million annually for the next five years to fund demonstration projects based on a 50% matching with government funds managed by the DOE.

The hearing was chaired by Committee Chairman Nick Lampson (D-TX). Committee members used the meeting to gather a better understanding of the state of energy storage technologies and how the DOE's energy storage program could further advance these technologies.

"With both stationary and mobile energy storage, we cannot let an opportunity to establish a domestic manufacturing base for these technologies pass us by. And unfortunately, we may already be losing this race. New R&D activities with the Department of Energy are critical to advancing energy storage technologies, and we should purse this aggressively to ensure U.S. participation in this field," said Chairman Lampson.

The House passed the bill in October and is in the process of discussion with the Senate on the total energy bill. Once the final bill is passed, these funds for energy storage programs will be available beginning with the Government's fiscal 2009 budget effective October 2008.◀

## In this issue...

# EESAT Conference Attracts Great Interest

**Attendance at EESAT 2007 reflects increased international involvement in power grid issues**

By Georgianne Peek
EESAT2007 Conference Manager
Sandia National Laboratories

From September 23 – 26, EESAT 2007 successfully marked another forward step in international cooperation on the latest ideas, technologies, and developments in the use of electrical energy storage for the global power industry. This year, the Conference was hosted at the historic Westin St. Francis Hotel, located on the popular Union Square in San Francisco, California.

Fifty presenters spoke before more than 175 attendees from 16 countries. EESAT conferences afford an excellent opportunity for technical and economic experts from around the world to gather and exchange ideas and information.

Attendance at EESAT 2007 saw a 30% increase over 2005 and the origins of the 2007 presentations reflected an increased international interest in energy storage as one means of addressing economic, environmental and security issues surrounding our global power supplies. Out of 50 papers presented, almost 40% came from outside the U.S., including Japan, Australia, Europe, and Africa.

The Keynote Speaker, Susan Patterson, President of the Board of Directors of California's Sacramento Municipal Utility District (SMUD), opened the conference with an exciting talk on the emerging importance of electrical energy storage to California and, in particular, to SMUD. Ms. Patterson, a long time advocate of renewables, stressed the importance of energy storage as an enabler of technologies that strengthen the benefits of renewables for the electricity grid in California.

Referring to California's goals for reduction of carbon emissions, Ms. Patterson stated that SMUD's vision is to empower customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the costs of serving the region.

She went on to say that advancing the market potential of new and renewable energy technologies is a way of realizing that vision and, thus, strengthening SMUD's purpose of providing solutions to meet the electrical energy needs of its customers.

Garth Corey from Sandia National Laboratories, Imre Gyuk, EESAT 2007 Co-Chair and DOE Energy Storage Program Manager, and Abbas Akhil, also of Sandia, enjoy the EESAT welcoming reception.

Focusing on issues that will impact the management of SMUD in the future, SMUD is facing the challenges of how to meet the anticipated growth in the demand for electricity, while balancing its environmental and customer service goals. According to Patterson, "peak demand" is of particular concern because it is the single-highest point of impact on energy usage. She regards electrical energy storage as a means of reducing that impact.

The Sacramento Municipal Utility District is the nation's sixth-largest community-owned electric system.

The Agenda for EESAT 2007 covered a broad range of subjects, with two areas of electrical energy storage garnering the most presenters: "Economics" and "Innovations in Energy Storage Systems," both of which seemed to mirror the increased international interest in electrical energy storage as a means of addressing power grid concerns.

Increased interest was also shown in the other sessions: Power Electronics, Renewables & Distributed Energy Applications, International Energy Storage Programs, Multi-Megawatt Applications, Utility & Commercial Applications of Advanced Energy Storage Systems, and Rail Applications.

Phil Johnson of Boeing and Hydro-Quebec's Claude Girard network during a break.

The Agenda was kicked off by former ESA director Anthony Price (United Kingdom), who presented his paper on The Energy Storage Business Proposition; and over the course of the next three days, experts from around the globe offered a gamut of electrical energy storage solutions for addressing world power grid issues.

Several papers expounded on the role of electrical energy storage in mitigating $CO_2$ emissions and other environmental benefits. Others, including two from Japan that involved a 4.0 MW VRB system and a 34 MW NAS system, discussed energy storage as a means of stabilizing wind farms.

Many papers covered Compressed Air Energy Storage (CAES) possibilities: progress in designs, the environmental benefits, possible CAES locations, innovations in using transportable CAES, and an update of the project in Iowa.

American Electric Power discussed its corporate decision to institute system-wide electrical energy storage with the goal of installing 1,000MW of storage in the next two decades. AEP then described a successful installation at a large substation storage facility in West Virginia.

Australia revealed that it has selected six advanced energy storage projects for its initiative. Several of the six major projects undertaken by California and New York State, as part of their energy storage initiatives in collaboration with DOE, have now been commissioned and are undergoing detailed monitoring.

As in the past, power electronics continues to be an integral part of electrical energy storage systems drawing significant interest at the conference. This year many advances were reported in that area, including the material advances with silicon carbide.

The entire proceedings at EESAT 2007 are being published on a CD by Sandia National Laboratories. All registered attendees will receive a complimentary copy of the CD and non-attendees can purchase it online in the near future. Check the EESAT 2007 Web site (http://www.sandia.gov/eesat/) for details.

A conference highlight this year was a dinner event at the Carnelian Room, which encompasses the 51st floor of the Bank of America building and is enclosed in floor-to-ceiling glass. One would be hard-pressed to find a more spectacular view of the Bay Area.

The biennial Electrical Energy Storage Applications and Technologies Conferences are co-sponsored and conducted by the US Department of Energy and Sandia National Laboratories, in association with the Electricity Storage Association (ESA). Additional sponsorship for this year's event was provided by the California Energy Commission, American Electric Power, KiloFarad International, Beacon Power, and NGK International (Japan).

Based on the interest in EESAT 2007, the sponsors expect EESAT 2009 to be even more comprehensive. The location for EESAT 2009 will be announced soon.◀

# ESA Announces 18th Annual Meeting

### May 20 – 22, 2008
### Anaheim, California

The Electricity Storage Association is pleased to announce our 18th Annual Meeting, to be held in Anaheim, California, May 20 - 22, 2008. We are delighted to have Southern California Edison (SCE) as our hosts.


The ESA annual meeting is the premier event in the Energy Storage Calendar at a very exciting time, where there is an unprecedented level of interest in energy storage to facilitate Clean Tech and bulk energy management, as well as more traditional power quality and control applications. In this environment, the ESA meeting affords the opportunity to rapidly understand the current state-of-the-art in advanced storage solutions, economic models and evaluations, recent field installations, and case studies.

The venue will be the newly remodeled Doubletree Hotel, located minutes from Disneyland and John Wayne airport. The rate will be $119/night plus tax and will be honored for the weekend before and after the meeting. Your meeting registration will include dinner at the famous Bower Art Museum in Santa Ana, where a featured exhibit of Terra Cotta Warriors will have just opened.

Attendees will also have the opportunity to tour SCE's world-renowned Electric Vehicle Technical Center in Pomona. The facility was established in 1993 to test and evaluate electro-drive systems, battery types and charging infrastructure. By mid-2006, SCE's fleet had logged more than 12 million miles, reducing air pollutant and tailpipe greenhouse gas emissions by thousands of tons. Recent activities include testing the first OEM plug-in hybrid (the Mercedes Sprinter Van), as well as the addition of a Fuel Cell Testing Facility.

Paid membership in ESA includes registration for one person for the meeting, but requires the Registration Form to be completed and submitted. Additional attendees from the same company or non-member attendees must pay an additional $795 (U.S.). Complete registration information can be found on our Web site.

Further meeting details will be published in this newsletter and on our Web site as they become available. Mark your calendars now for this very important event!

On the Web:
http://www.electricitystorage.org
http://anaheimorangecounty.doubletree.com
http://www.bowers.org/

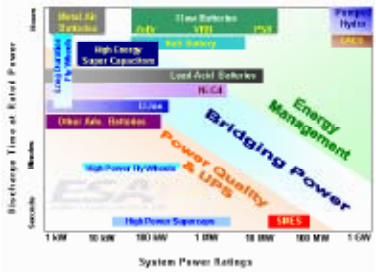
# What's Going On

# We Need Your Help!

## ESA to Update Application & Technology Charts

ESA's application and technology comparison charts are probably our most visible contribution to conference presentations, academic papers and news articles on electricity storage. In order to maintain the usefulness of these charts we need to update them from time to time, and we need help from our friends and colleagues in the storage community to do this.

To this end we have put together a brief questionnaire and have posted it on our Web site – you'll see the link on our home page in the 'News & Events' area. We would like everyone involved with a technology or application to complete the form so that we can be sure that all our friends and members are properly represented. Completed forms should be sent to Jim McDowall at questionnaire@electricitystorage.org.
Thank you for helping us with this effort!



# Investment Opportunities in Energy Storage Topic of Recent Conference in NYC

**Venture capitalists educated on storage's status and outlook**

ESA was well represented at the recent conference called "Investing in Energy Storage Technologies," held on October 11-12 in New York City. The conference was run by Financial Research Associates and organized by our good friend Richard Baxter of Ardour Capital Investments. The content was very much geared to the venture capital community and included presentations on the current status and future prospects for the market, in addition to talks on storage technologies that could attract funding.

The event was kicked off with a very informative pre-conference workshop on Energy Storage Investment Strategies. This was a panel discussion that presented the views of the financial community with regard to how they evaluate investment opportunities regarding energy storage. One presentation showed that there are 200 companies with products and services related to energy storage. An analogy was drawn between the worldwide renewable energy business and energy storage which showed considerable potential for the energy storage market in the future.

The conference keynote address was delivered by Imre Gyuk of the U.S. Department of Energy, who discussed the need to foster public support for the commercialization of electricity storage technologies. Imre's address was followed a presentation by ESA Chairman Brad Roberts on emerging trends in the development of our industry and highlighting increased public awareness in storage.

The remainder of the two-day event was an interesting mix of presentations by venture capital companies on their views of opportunities in energy storage, technology presentations, and talks providing important insight for potential investors. In this last category ESA board member Ali Nourai expressed American Electric Power's vision for the developing role of storage in its network and stressed the importance of strategic goals over short-term calculations of return on investment. In the same panel session, Robert Pike of New York ISO provided a grid operator's perspective on storage and how it fits into the current and future regulatory framework.

On the technology side there were updates from a number of ESA member companies and others on storage technologies ranging all the way from large-scale compressed air energy storage to 'printable' primary batteries for use in applications such as active RFID devices and transdermal patches for drug delivery.

Overall the conference demonstrated that electricity storage has graduated from being an interesting novelty with a few demonstrations to being a serious industry with ongoing growth and huge potential. Venture capitalists and private equity firms are alert to new opportunities in storage and actively teaming up with technology developers. ◄

## Welcome New ESA Members

Shaneshi McNair, CPS Energy
Robert Bachrach, Applied Materials
Robert Stoffregen, AIC Labs
James Perin, Blue Wave Energy

Be a part of exciting things happening in the energy industry. Get involved – join the ESA today. For Membership information, see page 7 of this newsletter or visit our Web site at www.electricitystorage.org.

# ESA Co-sponsors European Storage Conference

The ESA served as a co-sponsor for the second annual International Renewable Energy Storage (IRES) conference held in Bonn, Germany on November 19 -21, 2007. Organized by Europe's largest Renewable Energy Association, Eurosolar, the IRES meeting attracted more than 200 attendees from around the world. The three-day conference featured a variety of technical presentations covering wind and solar storage projects plus a poster session with 29 technical papers.

ESA Chairman, Brad Roberts, served as one of the meeting organizers and made a presentation on the "Status of Energy Storage Projects Around the World." Two ESA member companies, VRB Power Systems and NGK Insulators, Ltd. made technical presentations on the status of wind power storage projects in Ireland and Japan, respectively.

ESA Chairman Brad Roberts details the status of energy storage projects at a recent conference in Bonn.

The main themes of the meeting dealt with different ways to add storage to numerous wind and solar projects plus the performance of renewable energy in the European electrical grid. The proposed storage solutions ranged from large scale storage of energy in hot water tanks to a pumped hydro island constructed in the North Sea to store off-shore wind power. ◀

# Hassenzahl Receives Energy Storage Award at ESA's 17th Annual Meeting

The 17th Annual Meeting of the ESA was held in Boston, Massachusetts on May 23 & 24, 2007. This year's theme, "Energy Storage – Making it a Commercial Success" was very timely. This year's meeting attracted more than 100 industry professionals including a large presence from the financial community and venture capital businesses. The two-day program featured eight sessions ranging from grid initiations for energy storage to electric hybrid vehicles. The closing session was a very well received panel session on "Investing in Energy Storage." This session offered attendees a first-hand look at how venture capital firms assess new businesses and make investment decisions.

William Hassenzahl, President of Advanced Energy Analysis and active ESA member, left, receives the 2007 Phil Symons Achievement in Energy Storage Award. Presenting the award to Bill is Ali Nourai, the 2006 award recipient.

A highlight of the meeting was the presentation of the Phil Symons Achievement in Energy Storage Award. This is the second year for this award and the recipient for 2007 was Dr. William Hassenzahl, President of Advanced Energy Analysis. Bill has played an active role in the development of the ESA for more than 15 years and is a leading consultant in the energy storage industry.

This year's meeting was hosted by Beacon Power Corporation, headquartered in the Boston area. Matt Lazarewicz of Beacon served as the meeting chairman and put together a truly informative program. The meeting closed with a tour of the Beacon Power facility where meeting attendees got to see how Beacon's large flywheel energy storage systems are designed, manufactured and tested.◀

# AEP to Add 1,000 Megawatts of Storage to Grid

In September 2007, ESA member utility American Electric Power (AEP) announced an ambitious plan to add 1,000 megawatts of storage to their nationwide grid by 2020. AEP installed the first megawatt class Sodium Sulfur (NAS) battery in North America in 2006. They are currently in process with three additional 2.0-MW systems to be added in 2008. The plan calls for the total amount of storage to increase to 25 MW by 2010.

"We are extremely impressed with both the performance and the potential of this technology after using it in real-world applications and from experience we've gained through our long relationship with NGK," said Michael G. Morris, AEP's chairman, president and chief executive officer. "These new installations will move us a step closer to the full potential of advanced energy storage technologies in areas like reliability improvement, peak-load shaving and the use of stored energy from renewable sources like wind to supplement available generation resources.

"In our view, advanced storage technologies, like NAS batteries, and other emerging technologies to increase customers' ability to benefit from energy efficiency will play equally important roles in delaying or avoiding costly future investments in new energy delivery or generation infrastructure," Morris said. "I believe other companies will begin deploying storage technologies in the coming years." ◀

# Future Events

### Battcon 2008

**May 5-7, 2008, Marco Island, Florida.** Three day, noncommercial, technical symposium for storage battery users from various industries. http://www.battcon.com

### ESA Annual Meeting 2008

**May 20-22, 2008, Anaheim, California.** See page 4 for details, as well as http://electricitystorage.org

# About the ESA

### Our Mission

To promote the development and commercialization of competitive and reliable energy storage delivery systems for use by electricity suppliers and their customers, thereby bringing financial and technical benefits for energy storage operators.

### Membership Benefits

- Gain early knowledge of the latest developments in energy storage technology and field/customer applications of new/innovative storage technologies, and information on how these can be used for member's business advantage
- Early notification of upcoming business leads in U.S. and abroad
- Enhanced exposure to potential customers for energy storage products and services
- Ability to network with users, manufacturers, and researchers in the energy storage field
- Access to ESA contact list of more than 800 names of industry leaders interested in energy storage
- Ability to actively interface with key representative from government and industry to receive insights into energy storage markets and strategic directions of key industrial firms

### Join Now

General Membership is $795 per year which includes attendance at meetings, conference proceedings, special tours, and social events.

Join the ESA between now and December 31 and receive full ESA 2008 member benefits at no additional cost.

To join the ESA, complete our on-line membership form. You will be asked to provide credit card information over our secure transaction server.

For questions about membership in the ESA, contact Gerard Thijssen in the Netherlands at +31 26 3 56 26 03 or e-mail membership@electricitystorage.org.