

## Summary:

For the February 18<sup>th</sup> issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt and Advanced U.S. Indices increased 3.6% and 2.1%, respectively. The Asia Index declined 2.3%. The S&P 500 and Russell 2000 increased 1.0% and 2.2%, respectively.

Executive Director James Greenberger writes about why distributed energy storage is one of the most important and most underappreciated smart grid technologies. Read "***The Promise and the Challenge of Distributed Energy Storage***" in the Executive Director's Notes section of this newsletter below.

## Key Highlights:

- **Valence Technology** received a favorable ruling in its patent infringement lawsuit against **Phostech Lithium** regarding its **carbothermal** reduction technology. The lawsuit against Phostech Lithium was filed in January 31, 2007 and pertains to Canadian patent, number 2,395,115.
- **Altair Nanotechnologies** announced the signing of a binding contract with **Inversiones Energeticas, S.A. de C.V. (INE)**. The \$18 million contract with the **El Salvador** utility is to provide a 10 Megawatt (MW) lithium-ion (li-ion) battery system for frequency control.
- **DesignLine** and **Liberty Automotive** announced a joint hybrid/electric bus venture in the **United Arab Emirates (UAE)**. The two companies are planning to invest \$30 million investment in a new production facility in **Abu Dhabi** with an annual output of 300 buses.
- **Electrovaya** has started delivering battery packs to a second Plug-In-Hybrid vehicle platform to a **North American** automotive OEM. The company uses a non-toxic li-ion manufacturing process.
- **AeroVironment** has begun shipping and installing its UL-listed single-family and multi-unit residential **Smart Charging Dock** (model **EVSE-RS+**). The product is designed with an open architecture to ensure interoperability with the thousands of individual utilities nationwide.
- **Schneider Electric** has launched a portfolio of residential and commercial EV charging solutions. The home charging package is the first of an extensive line of residential, commercial and fast-charging chargers.
- The **Austin City Council** is considering charging drivers a \$50 annual fee to charge their batteries from any **Austin Energy** plug-in. The rate would enable city residents to use Austin Energy's "**Plug-in Everywhere**" program for a \$25 6-month subscription for unlimited service.
- **Transport for London (TfL)** has begun installation of 1,300 charging points across the capital. TfL has contracted **Siemens** manage the EV network.
- **Toyota** is expected to launch the first prototype of an EV based on its **iQ supermini** at the **Geneva Motor Show**. The iQ will begin European road tests later this year.
- **Saft** will supply renewable energy storage for **2500 R Street**, California's first micro-grid, distributed energy community housing project. The homes will use smart grid, solar generation and energy storage to ensure each home generates as much clean energy as it uses.

- The **Arizona Diamondbacks** have partnered with **Maricopa County Stadium District** and **APS** to construct a solar shade structure that will generate 75 kilowatts (kW) of power. APS will use the facility as a technical demonstration project, which will include charging stations and test a battery storage system.

## A Few More Details:

Valence Technology received a favorable ruling in its patent infringement lawsuit against Phostech Lithium regarding its carbothermal reduction technology. The lawsuit against Phostech Lithium was filed in January 31, 2007 and pertains to Canadian patent, number 2,395,115. Pursuant to the judgment, Valence is entitled to an injunction, an election of either an accounting of profits or damages, reasonable compensation and costs. The determination of damages and costs will be dealt with in a separate Court proceeding

*Source: Valence Technology*

Altair Nanotechnologies announced the signing of a binding contract with Inversiones Energeticas, S.A. de C.V. (INE). The \$18 million contract with the El Salvador utility is to provide a 10 MW li-ion battery system for frequency control. The agreement requires Altairnano to provide a complete installation at INE's Talnique power station, including all phases of site preparation, system installation, testing and commissioning.

*Source: Altair Nanotechnologies*

DesignLine and Liberty Automotive announced a joint hybrid/electric bus venture in the United Arab Emirates (UAE). The two companies are planning to invest \$30 million in a new production facility in Abu Dhabi with an annual output of 300 buses that will specialize in DesignLine's zero emission all-electric bus designs (as shown in **Exhibit 1**). The facility is projected to have \$80 million of annual revenue capacity.

### Exhibit 1: DesignLine All-Electric Bus



*Source: DesignLine Corporation*

Electrovaya has started delivering battery packs to a second Plug-In-Hybrid vehicle platform to a North American automotive OEM. In March 2010, the company had begun delivering batteries for another EV platform. Electrovaya uses a non-toxic li-ion manufacturing process.

*Source: Electrovaya*

AeroVironment has begun shipping and installing its UL-listed single-family and multi-unit residential Smart Charging Dock (model EVSE-RS+). The product is designed with an open architecture to ensure interoperability with the thousands of individual utilities nationwide. The charging system enables communication with the utility to allow for easy monitoring of energy use, troubleshooting and data analysis to help optimize the grid.

*Source: AeroVironment*

Schneider Electric has launched a portfolio of residential and commercial EV charging solutions. The company's home EV charging package is the first of an extensive line of residential, commercial and fast-charging chargers. The level II basic indoor residential charger is now available. Schneider Electric will also rollout additional residential and commercial level II and III charging solutions this year.

Source: Schneider Electric

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The Austin City Council is considering charging drivers a \$50 annual fee to charge their batteries from any Austin Energy plug-in. The rate would enable city residents to use Austin Energy's "Plug-in Everywhere" program for a \$25 6-month subscription for unlimited service. Without a subscription, the cost would be about \$2 per hour. Austin Energy is planning to install Coulomb Technologies stations throughout the city.

Source: AltTransport

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Transport for London (TfL) has begun installing 1,300 charging points across the capital. TfL has contracted Siemens manage the EV network. Siemens will run the Source London operations, including the registration of drivers and the network of charging points, which will be strategically located across the capital. By the end of 2013, the number of charging points should have grown from the current 250 to at least 1300 in public locations, installed by over 40 partners ranging from supermarket chains Sainsburys and Asda, to Scottish and Southern Energy and London boroughs.

Source: Energy Efficiency News

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Toyota is expected to launch the first prototype of an EV based on its iQ supermini (as shown in **Exhibit 2**) at the Geneva Motor Show. The iQ will begin European road tests later this year. The electric iQ is powered solely by a li-ion battery, which the automaker says can deliver a range of up to 65 miles (105 km).

#### **Exhibit 2: The All-Electric iQ**



Source: The Independent

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Saft will supply renewable energy storage for 2500 R Street, California's first micro-grid, distributed energy community housing project. The homes will use smart grid, solar generation and energy storage to ensure each home generates as much clean energy as it uses. Pacific Housing is developing the 2500 R Street project as a sustainable and efficient 34-home community in Sacramento.

Source: Saft

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The Arizona Diamondbacks have partnered with Maricopa County Stadium District and APS to construct a solar shade structure (as shown in **Exhibit 3**) that will generate 75 kilowatts (kW) of power. The structure will cover 17,280 square feet above the plaza area near the ballpark's western entrances and ticket booths and is expected to be complete by May. APS will use the facility as a technical demonstration project, which will include charging stations and test a battery storage system. HKS is the architect for the project

Source: Arizona Diamondbacks

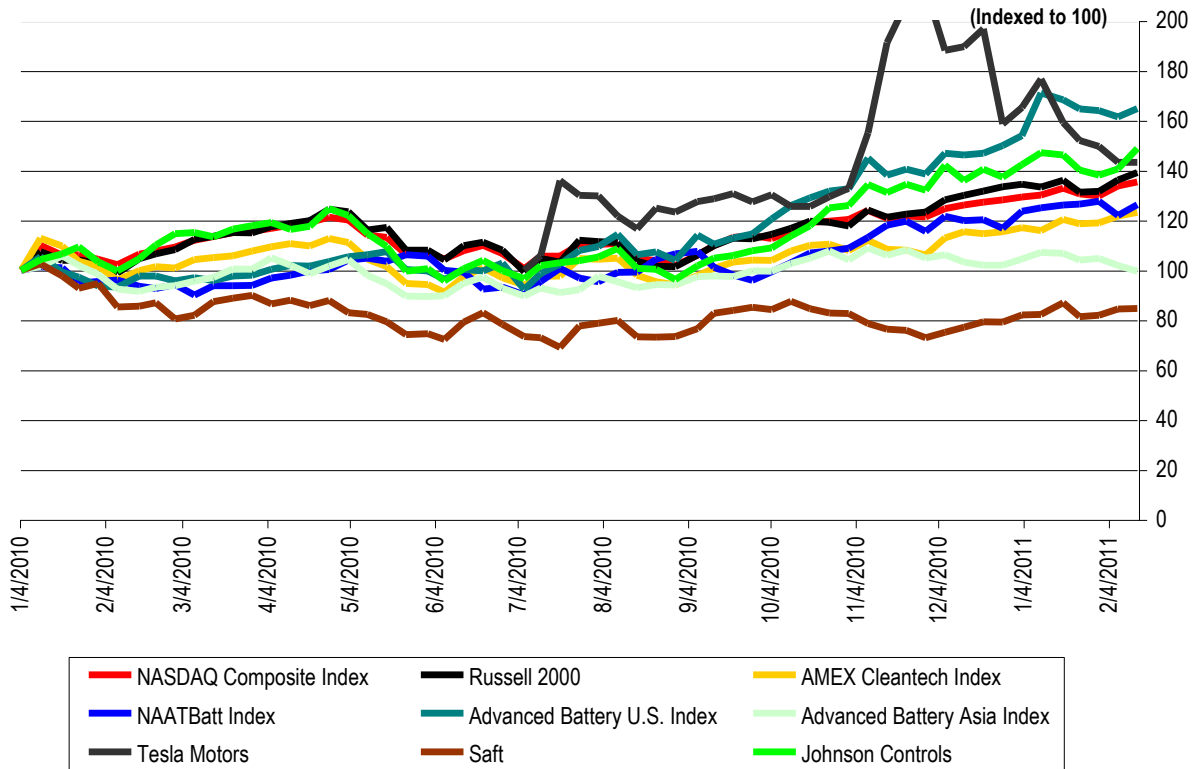
### Exhibit 3: Schematic of Solar Array



Source: HKS

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**Exhibit 4: Indices Performance**  
(From January 4, 2010)

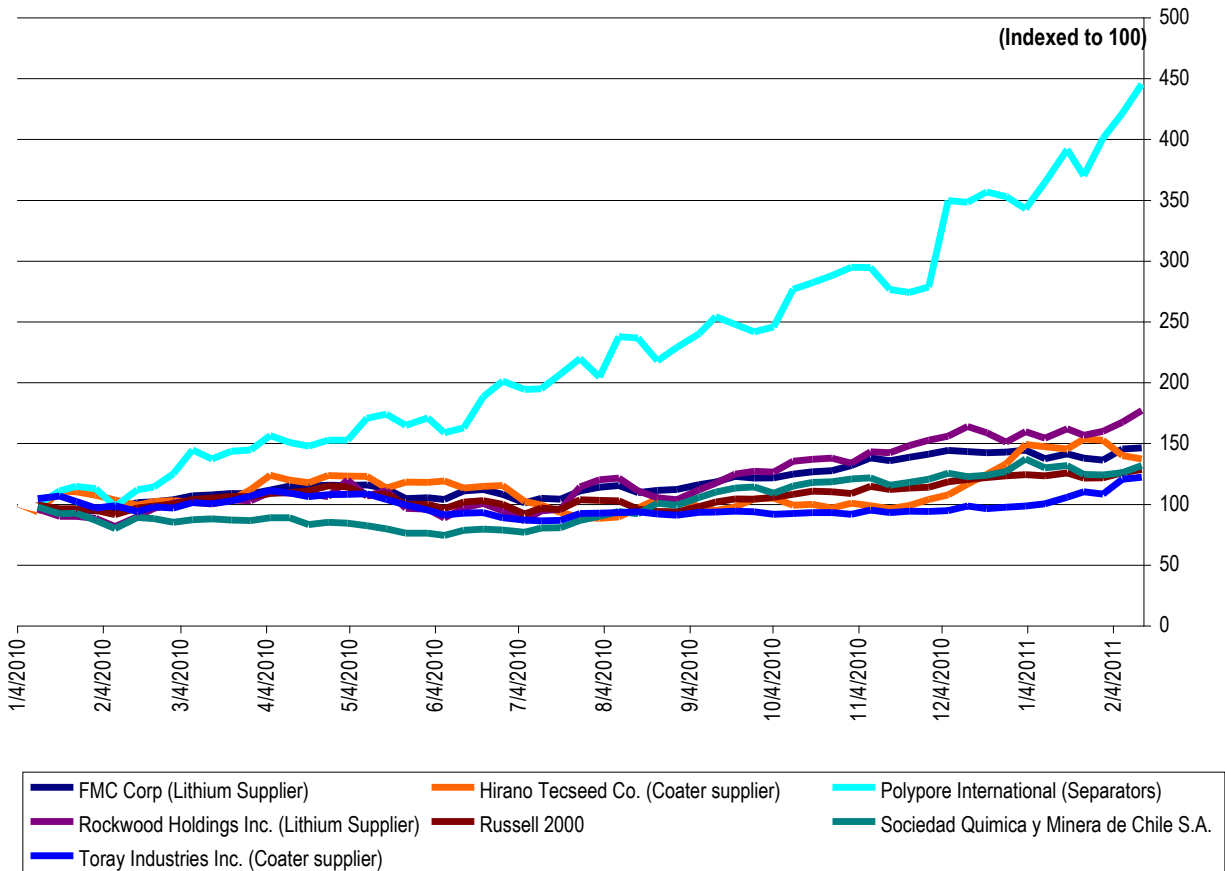


Index	Close on 2/14/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	12,268.2	12,357.5	99.3%	21.5%	5.1%	0.9%
S&P 500	1,332.3	1,341.5	99.3%	23.5%	4.8%	1.0%
NASDAQ	2,817.2	2,835.2	99.4%	28.0%	4.7%	1.2%
Russell 2000	825.9	835.5	98.8%	34.6%	3.4%	2.2%
AMEX Cleantech Index	1,208.1	1,236.8	97.7%	25.5%	5.2%	1.1%

Source: Bloomberg and ThomsonOne

Note: The select NAATBatt Index is a market-value-weighted average and includes ALTI, BASF, COP, ENS and XIDE. The Advanced Battery U.S. Index is a market-value-weighted average and includes HEV, MGA, MXWL, UQM and VLNC. The Advanced Battery China Index is a market-value-weighted average and includes BYD, CBAK, GS Yuasa, LG Chem and Panasonic.

**Exhibit 5: Supplier Performance**  
(From January 4, 2010)



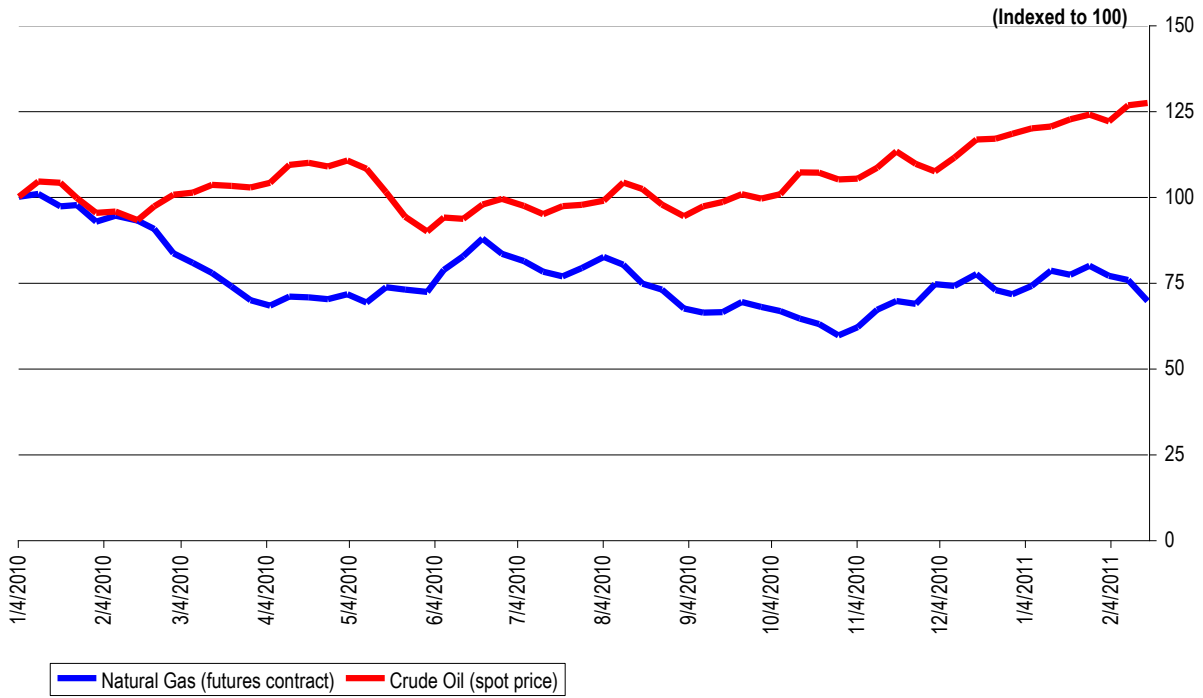
Source: Bloomberg

**Exhibit 6: Commodity Prices**

Commodity	Price on 2/14/2011	Price on 2/7/2011	Price on 1/14/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	10,148	10,145	9,590	0.0%	5.8%
LME Lead (cash, \$ per tonne)	2,630	2,643	2,651	(0.5%)	(0.8%)
LME Nickel (cash, \$ per tonne)	28,760	28,700	25,460	0.2%	13.0%

Source: LME

**Exhibit 7: Natural Gas and Crude Oil**  
**(From January 4, 2010)**



Source: EIA

## Executive Director's Notes



### **THE PROMISE AND THE CHALLENGE OF DISTRIBUTED ENERGY STORAGE**

On April 21, 2011, NAATBatt and the U.S. Department of Energy will hold a workshop for industry stakeholders on one of the most revolutionary if underappreciated technologies in the cleantech/smart grid field: distributed energy storage. Distributed energy storage, or DES, describes the practice of locating stationary batteries, generally 25-50 kW in size, on the premises of electricity customers or immediately proximate to them. Residential energy storage, community energy storage and vehicle-to-grid systems are all examples of DES systems. DES systems can use the same types of batteries that power plug-in electric vehicles.

Adding the ability to store electricity to the grid is an important part of making the grid smarter. Stored electricity can be used to provide the load following reserves necessary to balance and integrate variable renewable energy onto the grid. It can also provide other ancillary services to grid operators, such as voltage support and spinning reserve. DES is one of several energy storage technologies that can provide these benefits. Other technologies include hydro storage, compressed air energy storage, flywheels, and large scale flow and sodium sulfur batteries.

What distinguishes DES from other storage technologies, and what makes DES so potentially important to the smart grid, is its ability to provide a virtual form of demand side management. Demand side management, or DMS, is the central function of many smart grid systems. The goal of DMS is to encourage consumers to use less electricity during peak hours, or to move their time of energy use to off peak hours, such as evening or weekends. By leveling electricity demand, or matching it more closely to the times that renewable energy is generated, the grid becomes cleaner and more efficient.

DES provides virtual DMS by effectively replacing the electricity consumer with a battery. A grid operator wheels power to the DES battery when it is convenient for the grid operator to do so. This will generally be during off-peak hours when the wind is blowing or the sun is shining. The traditional electricity consumer no longer has a relationship with the grid, other than as a source of back-up power. The consumer's relationship is with the DES battery, which provides the consumer with power when the consumer wants it from a source that is at its farthest right next door.

The elegance of the DES solution becomes particularly clear when contrasted with other forms of smart grid technology that provide DMS. Some of those technologies garner the lion's share of attention and smart grid funding. The federal government spends billions of dollars subsidizing smart meters, new utility billing systems, and the creation innovative electricity rate structures. The funding is provided in the hope—and it is only a hope—that retail consumers will change their electricity consumption patterns in

response to relatively mild price signals. DES changes consumption patterns more certainly, and can shape them with precision, simply by dispensing with the traditional electricity consumer and replacing it with a battery.

The ability of DES systems to provide virtual DMS is only part of the story. DES systems also provide consumers with a useful form of back-up power, an easy way to put electricity produced by distributed generators (e.g., solar rooftops) onto the grid, a way to reduce the privacy concerns to which smart meters give rise, and a huge potential market for lithium-ion batteries, which could create economies of scale for advanced battery manufacturers and dramatically reduce the cost of plug-in electric vehicles.

So with billions of dollars being invested in smart grid technologies, why does DES technology live in relative obscurity and appear to have been consigned by government and industry to Death by Demonstration Project? Clearly the guy who said that the world will beat a path to the guy who invents a better mousetrap never worked in the power industry. It is frustrating to see DES developers, who have answered the call to think outside the box with respect to the grid, sitting on the sidelines while other, more challenged technologies get funded and deployed.

The reasons why the game-changing potential of DES systems is being overlooked are difficult to identify. The complexity of deploying DES systems onto the highly and disparately regulated distribution portion of the grid is certainly one factor. The traditional conservatism of the utility industry is probably another. More insidiously, the fact that DES systems might make smart metering retail consumers less urgent, and threaten the ability of some to capture and sell consumer data, may account for some of the lack of enthusiasm.

The workshop in Chicago on April 21 will try to identify the challenges to DES system deployment and propose a way forward. More information about the April 21 workshop can be found a [www.naatbatt.org](http://www.naatbatt.org). Following the link for information about the DES Workshop.



James J. Greenberger  
Executive Director

February 18, 2011



## NAATBatt Membership Applications for 2011

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### **2011 Membership Applications and Dues Structure**

NAATBatt is now accepting applications for membership for the 2011 calendar year. Membership dues for 2011 are \$10,000 for Corporate Members, \$10,000 for OEM Members, \$10,000 for Utility Members, \$5,000 for Associate Members, \$1,000 for Individual Members, and \$500 for Non-Profit/Government Members. Please click on <http://naatbatt.org/membership-inquiry/> and indicate that you are interested in a 2011 membership.

### **Why Join NAATBatt?**

NAATBatt's mission is to grow the market for advanced electrochemical energy storage technology in North America. NAATBatt provides regular educational programming on topics of interest to the advanced battery community, a weekly newsletter chronicling developments in the North American advanced battery market, networking opportunities for industry participants and their customers, including our recently concluded conference on PEV's and the grid, and public policy initiatives, such as the recent NAATBatt-sponsored meeting with Chairman Jon Wellinghoff of FERC and production of written comments to FERC in support of distributed energy storage technology.

NAATBatt recently concluded the highly successful meeting and conference entitled "The Impact of PEV's on T&D Systems: Challenges and Solutions", in Louisville, Kentucky. The conference was the largest cross-industry event to date focused on the impact of plug-in electric vehicles on the grid. The conference outlined the improvements and upgrades that utilities must make to the grid in order for it to accommodate mass-market electric vehicles. The conference emphasized the critical role that grid-connected energy storage can play in promoting vehicle electrification in the United States. Emphasizing the necessary relationship between grid-connected storage and electric vehicles is one of NAATBatt's primary missions.

NAATBatt is a not-for-profit trade association qualified under Section 501(c)(6) of the Internal Revenue Code that is working for the benefit of the entire industry. **Every dollar spent on NAATBatt memberships and programs goes to recouping program costs and to supporting activities intended to benefit the entire advanced battery industry.** At a time when it seems that the only people making money on advanced lithium-ion technology are professional conference organizers, the advanced battery industry should take control of its own market and its own future. NAATBatt exists to market for the industry, not to the industry. But NAATBatt needs your support to do it. Please join us.

## North American Industry Announcements and Calendar

**Get More Information!** **NAATBatt Workshop on Problems in Utility Deployment of Distributed Energy Storage Systems:** On **April 21, 2010**, NAATBatt and the U.S. Department of Energy will co-host in Chicago an interactive workshop examining the issues, problems and challenges that electric utilities face in deploying distributed energy storage systems on the grid. Although DES systems have many benefits, profitably deploying DES systems and adding them to rate base continues to be a major challenge for utilities. The NAATBatt/DOE workshop will encourage utility and battery executives to sit together and have a frank discussion about those challenges and how they might be addressed. The workshop is by invitation only. For more information about the workshop, please click [here](#).

**Save the Date!** **NAATBatt 2011 Annual Meeting and Conference:** NAATBatt has announced that its 2011 Annual Meeting and Conference will be held on **September 7-9, 2011** in Louisville, Kentucky. More information about the 2011 conference will be posted soon on the NAATBatt Web site at: [www.naatbatt.org](http://www.naatbatt.org). Visit the NAATBatt Web site for information about the 2010 conference. Please save the date for 2011!

**Speaker Presentations from the NAATBatt 2010 Annual Meeting and Conference are Now Available!** NAATBatt's 2010 Annual Meeting and Conference entitled "The Impact of PEV's on T&D Systems: Challenges and Solutions" was a great success. More than 40 industry experts presented and the conference on topics relating to how the grid was going to accommodate the new load that will be generated by plug-in electric vehicles. Copies of the speaker presentations are available on a secured portion of the conference Web site. Access to the Web site is free to NAATBatt members and conference attendees. Access to the presentations is now available to all other for the price of \$250. Please contact James Greenberger at [jgreenberger@naatbatt.org](mailto:jgreenberger@naatbatt.org) for more information about accessing the presentations.

**NAATBatt Membership Information.** NAATBatt is taking applications for membership from well qualified industry participants and supporters. Membership in NAATBatt is a great way to keep abreast of developments in advanced technology batteries and to support the growth of a market for products that could change the world. Your support for NAATBatt programs, newsletters, and committees is essential to the success of our organization and our industry. To inquire about membership, please complete the following inquiry form: <http://naatbatt.org/membership-inquiry/>. NAATBatt will respond with additional information about membership.

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- **ARPA-E Energy Innovation Summit:** The ARPA-E Energy Innovation Summit will be held on **February 28-March 2, 2010**, at the Gaylord National Resort & Convention Center in National Harbor, MD. The Summit will showcase the next generation of clean energy technologies and discuss the activities of the DOE's ARPA-E program. The Web site for the Summit may be viewed at: <http://www.ct-si.org/events/EnergyInnovation/about/>

- **Midwest Energy Forum:** The Midwest Energy Forum will be held at the University of Chicago Booth School of Business' Gleacher Center in downtown Chicago on **March 3, 2011**. The conference will highlight new energy technologies being developed in the Midwest region, including transportation-related technologies. The conference Web site can be found at: <http://www.chicagobooth.edu/mef/2011/>.
- **Cleantech Forum San Francisco:** Cleantech Forum San Francisco will be held on **March 14-16, 2011** at the Hyatt Regency San Francisco. The latest in the Cleantech Network's ongoing series of cleantech conferences, the Forum will focus on the growing role of information technology in the cleantech sector. The Forum's web site can be found at: <http://events.cleantech.com/sanfrancisco/event-overview>.
- **Advanced The 28<sup>th</sup> International Battery Seminar & Exhibit:** Power Source's annual International Battery Seminar & Exhibit will be held on **March 14-17, 2010**, at the Broward County Convention Center in Fort Lauderdale, Florida. A link to the conference Web site can be found at: <https://powersources.net/florida/28th.html>.
- **TREM11: Strategic Metals for National Security and Clean Energy:** The TREM11 conference on rare earth and strategic metals will be held on **March 22-23, 2010** at the Ritz-Carlton Pentagon City, in Arlington, Virginia. NAATBatt is a supporting organization of the conference. Information about the conference can be found at: <http://www.tremcenter.org/>.
- **4th Annual Energy Storage Summit:** The 4<sup>th</sup> Annual Energy Storage Summit will be on **March 28-30, 2011** in San Francisco, California. The Summit will focus on grid-connected energy storage technologies. The Summit's Web site can be found at: <http://www.energystoragesummit.com/Event.aspx?id=434682>.
- **Plug-In Electric Vehicle Infrastructure USA 2011:** The Plug-In Electric Vehicle Infrastructure USA 2011 conference will examine five key areas of interest to those working with PEV's and their supporting infrastructure. The conference will be held **March 31-April 1, 2011**, at the Hilton Mission Bay in San Diego California. The conference Web site is: <http://www.evupdate.com/electricvehicleusa/index.shtml>.
- **2011 Battery Conference:** The 2011 Battery Congress will be held at the University of Michigan – Michigan League in Ann Arbor, Michigan on **April 11-12, 2011**. Information about the Congress can be found at: <http://batterycongress.org/about-2/>
- **Electric Drive Vehicle Association 2011 Meeting and Annual Conference:** The EDVA 2011 Meeting and Annual Conference will be held on **April 19-21, 2011** in Washington, D.C. The Web site for the meeting can be viewed at: <http://www.edtaconference.org/ht/d/sp/i/18736/pid/18736>.
- **Workshop on Problems in Utility Deployment of Distributed Energy Storage Systems:** NAATBatt will sponsor a special workshop and roundtable discussion among utility and battery executives in Chicago on **April 21, 2011**. The purpose of the workshop is to identify the specific challenges that utilities face in evaluating, procuring, deploying and adding to their rate base advanced battery systems for storing electrical energy in the distribution portion of the grid. Attendance at the workshop is by invitation only. Please direct inquiries to: [igreenberger@naatbatt.org](mailto:igreenberger@naatbatt.org)
- **The Council for Chemical Research Annual Meeting:** The Council for Chemical Research will hold its annual meeting on **May 1-3, 2011** in Dearborn, Michigan. The title of the meeting is

“Advanced Materials: Driving Transformative Research in Transportation and Automobiles”. The conference Web site may be viewed at: <http://www.ccrhq.org/2011-annual-meeting>.

- **The Battcon™ International Stationary Battery Conference:** The Battcon™ International Stationary Battery Conference is a three day, noncommercial, technical event for storage battery users from a broad range of industries. The conference will be held from **May 16 to 18, 2011** at the Swan and Dolphin Resort, Orlando, Florida. The conference Web site is: <http://www.battcon.com/>
- **21<sup>st</sup> Annual ESA Meeting:** The 21<sup>st</sup> annual meeting of the Electricity Storage Association will be held on **June 6-8, 2011** at the Fairmont Hotel in San Jose, California. Information about the meeting can be found on the meeting Web site at: [http://www.electricitystorage.org/ESA/calendar/21st\\_esa\\_annual\\_meeting\\_-\\_save\\_the\\_date/](http://www.electricitystorage.org/ESA/calendar/21st_esa_annual_meeting_-_save_the_date/).
- **Plug-In 2011 Conference and Exhibition:** The Plug-In 2011 Conference and Exhibition will be held on **July 18-21, 2011** in Raleigh, North Carolina. The Conference Web site can be viewed at: <http://www.plugin2011.com/>.
- **NAATBatt 2011 Annual Meeting and Conference: September 9-11, 2011** in Louisville, Kentucky (see note above).
- **2<sup>nd</sup> Battery Safety Conference:** Knowledge Foundation will host the 2<sup>nd</sup> Battery Safety Conference on **November 7-8, 2011** in Boston, Massachusetts. The conference will discuss safety incidents and product recalls regarding lithium-ion batteries. The conference Web site can be accessed at: [http://www.knowledgefoundation.com/viewevents.php?event\\_id=253&act=evt](http://www.knowledgefoundation.com/viewevents.php?event_id=253&act=evt)
- **7<sup>th</sup> Lithium Mobile Power Conference:** Knowledge Foundation will host the 7<sup>th</sup> Lithium Mobile Power Conference on November 9-10, 2011 in Boston, Massachusetts immediately following the battery safety conference. The conference will provide a general survey of the lithium-ion battery industry. The conference Web site can be accessed at: [http://www.knowledgefoundation.com/viewevents.php?event\\_id=254&act=evt](http://www.knowledgefoundation.com/viewevents.php?event_id=254&act=evt).



## Contact Information:

### National Alliance for Advanced Technology Batteries

122 South Michigan Avenue, Suite 1700  
Chicago, Illinois 60603  
(312) 588-0477

[www.naatbatt.org](http://www.naatbatt.org)

### Officers

Randy Moore  
*Chairman*

[rmoore@naatbatt.org](mailto:rmoore@naatbatt.org)

Jim Greenberger  
*Executive Director*

[jgreenberger@naatbatt.org](mailto:jgreenberger@naatbatt.org)

Michael Lew  
*Head of Business Development*  
[mlew@naatbatt.org](mailto:mlew@naatbatt.org)

Ralph Brodd  
*Chief Technology Officer*  
[rbrodd@naatbatt.org](mailto:rbrodd@naatbatt.org)

Sandy Kane  
*Chief Financial Officer*  
[skane@naatbatt.org](mailto:skane@naatbatt.org)