

## Summary:

For the September 10th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt, U.S. and Asia Battery Indices increased 1.0%, 9.5% and 3.5%, respectively. The S&P 500 and Russell 2000 increased 4.1% and 4.6%, respectively.

NAATBatt announced its 2010 Annual Meeting and Conference, which will be held at the Seelbach Hilton Hotel in Louisville, Kentucky on **December 8-10, 2010**. The title of the Conference is "**Impact of PEV Recharging on the Reliability of T&D Systems.**" The conference will examine the likely impact of first generation PEV's on local electric distribution systems and how distributed energy storage technology can help reduce the risk of system disruptions. More information about the Annual Meeting and Conference will follow in coming weeks. Please save the date!

## Key Highlights:

- **PepsiCo's Frito-Lay North America** division will be deploying 21 electric trucks this year and potentially 155 more in 2011. The lithium-ion (li-ion) battery packs are currently being supplied by **Valence Technology**.
- **ECotality** has signed an agreement with **Bovis Lend Lease (BLL)** in North America to oversee project management services for the installation of electric vehicle service equipment (EVSE) for The EV Project in Tennessee. BLL will also lead the installation of ECotality's DC fast-charging stations in all EV Project markets.
- **Valence Technology** has signed a 6 year supply agreement with **Wrightbus**. The company expects the initial contract to generate between \$19 million to \$24 million in revenues.
- **Hyundai Motor** unveiled Korea's first electric car, the "**BlueOn**". The EV uses a 16.4 kilowatt-hour (kWh) li-ion polymer battery developed by **SK Energy**.
- **Peugeot** is targeting its **iOn** EV at local governments and transport firms such as leasing and car sharing companies. The company is ramping production up to 50,000 iOns annually by 2015.
- **Peugeot Citroen** will be using leasing programs to drive demand for EVs. The programs will include gasoline loaners for trips beyond the reach of a single battery charge.
- **SunPower** is planning to research large scale energy storage technologies. The company is partnering with **Ice Energy**, **Xtreme Power** and **ZBB Energy** to develop a pilot program for commercial customers.
- **Maxwell Technologies** has delivered ultracapacitor cells and modules to over 1,000 hybrid transit bus drive systems this year. The ultracapacitor-based energy storage systems are efficient for absorbing recuperative braking energy and re-using it to accelerate EVs.
- The **Internal Revenue Service (IRS)** has determined the **ZAPTRUCKXL** and **ZAPVAN** Shuttle qualify under the **American Recovery and Reinvestment Act** for a 10% tax credit – up to a maximum of \$2,500. The fleet EVs can achieve the equivalent of over 100 miles per gallon.

- **AeroVironment** has received a **Underwriters Laboratories (UL)** listing for its EV home charging station. **UL 2594** addresses safety and reliability aspects of AC cord sets and charging docks.
- The **State of Tennessee** will offer a \$2,500 rebate on the first 1,000 EVs sold in the state. The state rebate will be in addition to a \$7,500 federal tax credit for EVs.
- The **Manitoba Infrastructure and Transportation** issued a tender for a low-speed EV. The plan is to use the EV as an errand-running service vehicle at the **University of Winnipeg**.

## A Few More Details:

PepsiCo's Frito-Lay North America division is beginning to rollout a fleet of commercial all-electric trucks (etrucks) in North America. Frito-Lay will be deploying 21 etrucks this year and potentially roll out 155 more in 2011. The trucks are designed by Smith Electric Vehicles (as shown in **Exhibit 1**) and can operate for up to 100 miles before a recharge is required. The lithium-ion (li-ion) battery packs are currently being supplied by Valence Technology.

*Source: Frito-Lay North America*

### Exhibit 1: The Smith Newton Electric Truck



*Source: Smith Electric Vehicles US*

ECotality has signed an agreement with Bovis Lend Lease (BLL) in North America to oversee project management services for the installation of electric vehicle service equipment (EVSE) for The EV Project in Tennessee. BLL is the project management and construction arm of the Australian property company Lend Lease. ECotality is planning to deploy about 2,500 residential, commercial and DC fast charging stations. The EV Project will provide nearly 425 miles of connected EV infrastructure in Tennessee. BLL will also lead the installation of ECotality's DC fast-charging stations in all EV Project markets.

*Source: ECotality*

Valence Technology has signed a 6 year supply agreement with Wrightbus. The agreement secures the relationship between the two companies through 2016. Valence expects the initial contract to generate between \$19 million to \$24 million in revenues. Wrightbus is the United Kingdom's leading independent supplier of hybrid buses for public transportation systems.

*Source: Valence Technology.*

Hyundai Motor unveiled Korea's first electric car, the "BlueOn" (as shown in **Exhibit 2**). The EV is based on Hyundai's conventional i10 hatchback compact and uses a 16.4 kilowatt-hour (kWh) lithium-ion polymer battery developed by SK Energy. The EV's maximum speed is 130 kilometers per hour (81 miles per hour), and it can reach 100 kilometers per hour in 13.1 seconds. The company's plan is to produce 2,500 BlueOns by 2012.

**Exhibit 2: Hyundai BlueOn**



Source: JoongAng Daily

Peugeot is targeting its iOn electric vehicle (EV) at local governments and transport firms such as leasing and car sharing companies. The company is ramping production up to 50,000 iOns (as shown in **Exhibit 3**) annually by 2015. The EV has a range of 150 kilometers (km) or 93 miles and running costs of between €1.50 and €2.00 per 100 km (or \$0.03 to \$0.04 per mile).

Source: The Independent

**Exhibit 3: The Peugeot iOn**



Source: Peugeot

Peugeot Citroen will be using leasing programs to drive demand for EVs. The programs will include gasoline loaners for trips beyond the reach of a single battery charge. The leasing plan will be available for the C-Zero EV as well as combustion-engine models. Mitsubishi Motors manufactures the iOn and C-Zero (based on the i-Miev) for Peugeot Citroen.

Source: Bloomberg

SunPower is planning to research large scale energy storage technologies. The company has received a \$1.8 million grant from the State of California to support this effort. SunPower is partnering with Ice Energy, Xtreme Power and ZBB Energy to develop a pilot program for commercial customers.

Source: Reuters

Maxwell Technologies has delivered BOOSTCAP(R) ultracapacitor cells and multi-cell modules to over 1,000 hybrid transit bus drive systems this year. The ultracapacitor-based energy storage systems are efficient for absorbing recuperative braking energy and re-using it to accelerate EVs. Ultracapacitors

operate at temperatures as low as -40 C, and are designed to perform reliably through 1 million or more deep discharge cycles, or about 10 years of operational life for most vehicles.

*Source: Maxwell Technologies*

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The Internal Revenue Service (IRS) has determined the ZAPTRUCKXL (as shown in **Exhibit 4**) and ZAPVAN Shuttle qualify under the American Recovery and Reinvestment Act for a 10% tax credit – up to a maximum of \$2,500. The ZAP EVs (trucks and vans) are suited for fixed route deliveries, utilities and material handling applications. The fleet EVs can achieve the equivalent of over 100 miles per gallon, at a cost of \$0.02 per mile.

#### **Exhibit 4: The ZAPTRUCK XL**



*Source: ZAP Jonway*

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AeroVironment has received a Underwriters Laboratories (UL) listing for its EV home charging station (EVSE-RS). The station is UL listed under Subject 2594, soon to be the standard for AC power supplies and connectors for EV charging. UL 2594 addresses safety and reliability aspects of AC cord sets and charging docks.

*Source: AeroVironment*

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The State of Tennessee will offer a \$2,500 rebate on the first 1,000 EVs sold in the state. The \$2.5 million for the rebate program will be drawn from the state's petroleum violation escrow account, which is collected from oil companies by the federal government. That money is limited to federally approved energy programs. The state rebate will be in addition to a \$7,500 federal tax credit for electric vehicles.

*Source: Business Week*

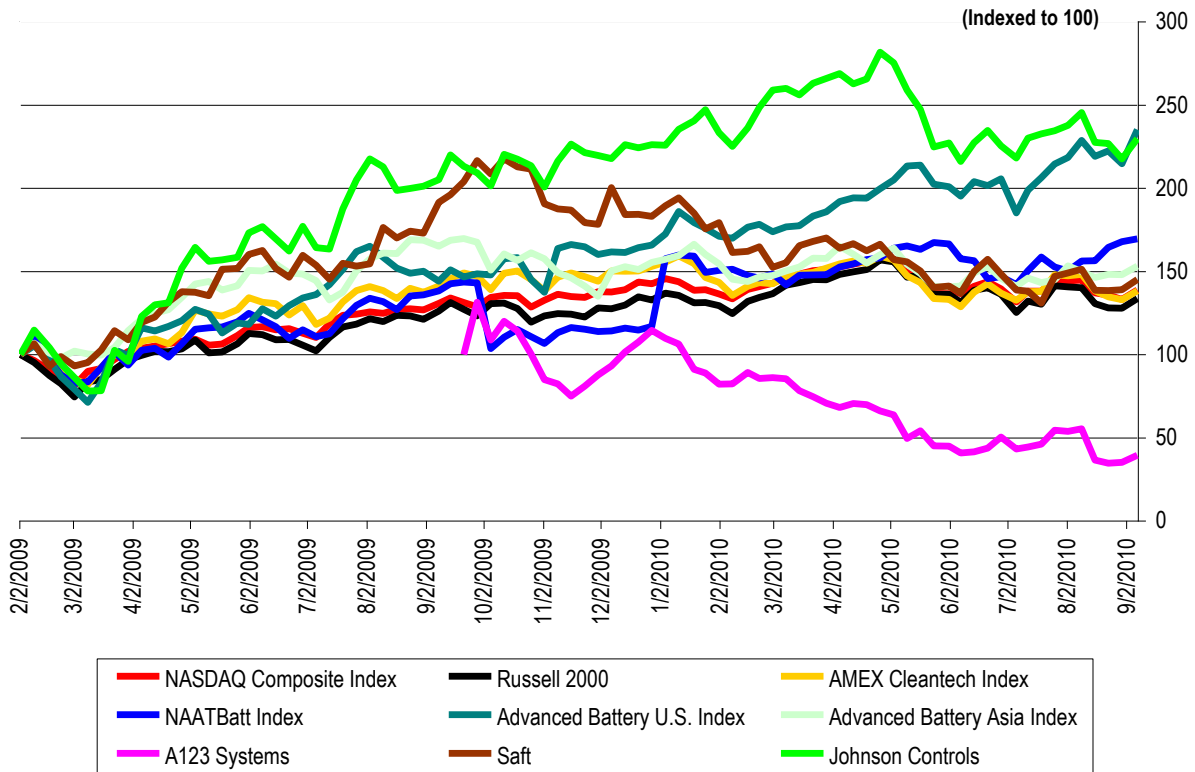
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The Manitoba Infrastructure and Transportation issued a tender for a low-speed EV. The low-speed vehicles are unable to reach speeds greater than 40 kilometers per-hour (25 miles per-hour) and have a maximum gross weight doesn't exceed 1,361 kilograms (2,994 pounds). The plan is to use the EV as an errand-running service vehicle at the University of Winnipeg.

*Source: Toronto Sun*

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**Exhibit 5: Indices Performance**  
(From February 2, 2009)

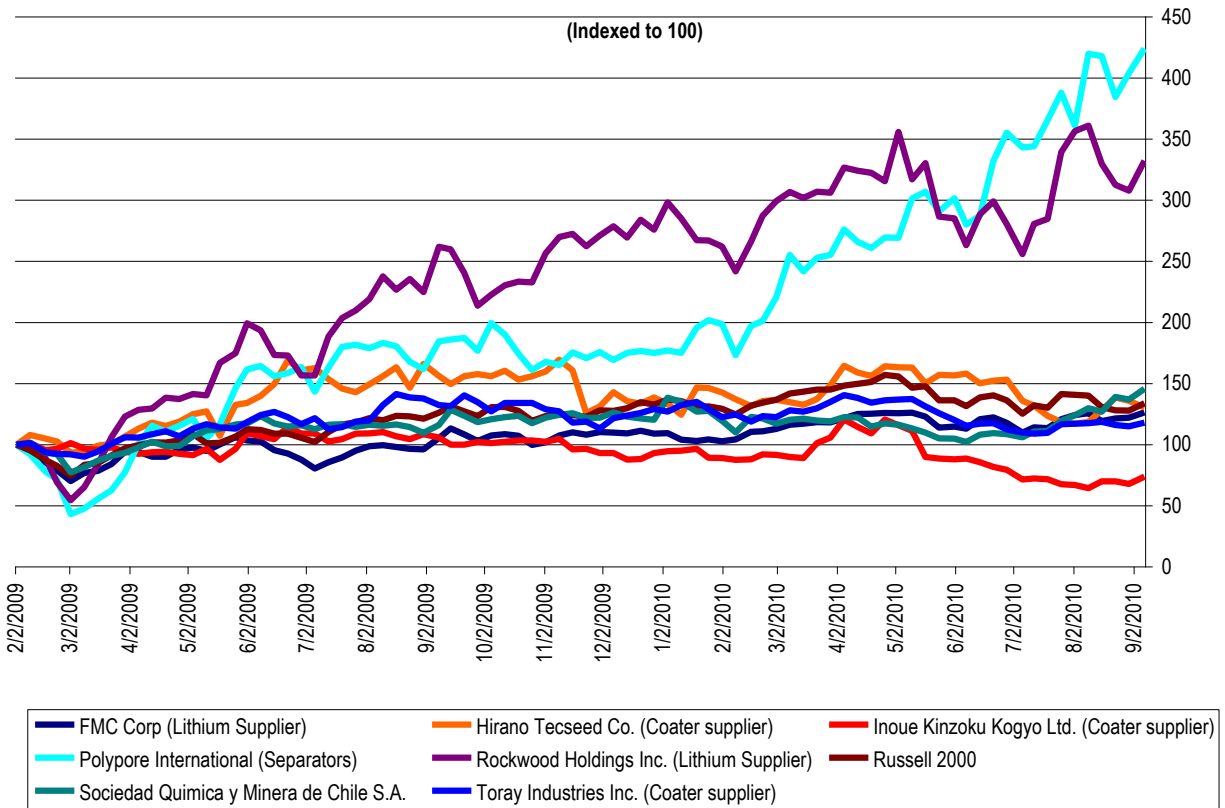


Index	Close on 9/7/2010	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	10,340.7	11,309.0	91.4%	9.5%	(0.9%)	3.3%
S&P 500	1,091.8	1,219.8	89.5%	7.2%	(2.2%)	4.1%
NASDAQ	2,208.9	2,535.3	87.1%	8.6%	(3.7%)	4.2%
Russell 2000	629.5	746.0	84.4%	9.9%	0.2%	4.6%
AMEX Cleantech Index	960.5	1,112.5	86.3%	(1.3%)	(10.0%)	4.0%

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 6: Supplier Performance**  
(From February 2, 2009)



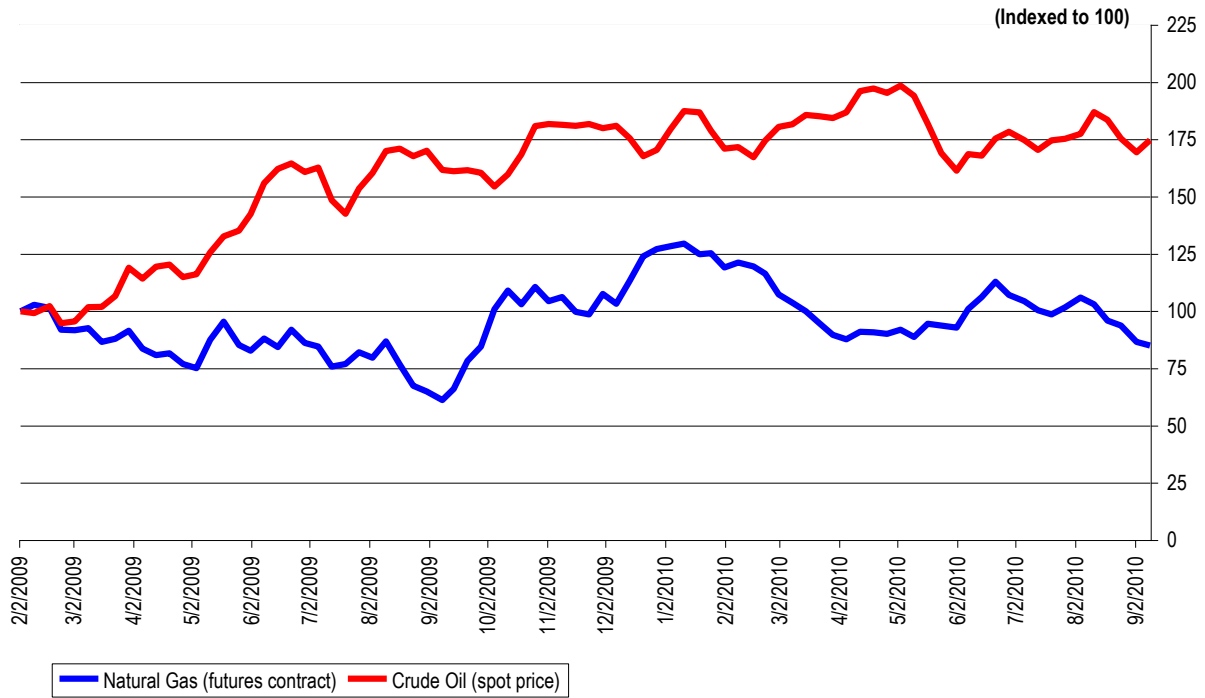
Source: Bloomberg

**Exhibit 7: Commodity Prices**

Commodity	Price on 9/7/2010	Price on 8/31/2010	Price on 8/9/2010	1 Week Change	1 Month Change
LME Nickel (Cash, \$ per tonne)	21,630	20,705	22,560	4.5%	(4.1%)
LME Lead (cash, \$ per tonne)	2,126	2,010	2,170	5.7%	(2.1%)

Source: LME

**Exhibit 8: Natural Gas and Crude Oil**  
(From February 2, 2009)



Source: EIA

## Executive Director's Notes



### **NAATBATT ANNOUNCES ANNUAL MEETING AND PROGRAM ON PEV'S AND GRID RELIABILITY**

NAATBatt will hold its 2010 Annual Meeting and conference in Louisville, Kentucky on **December 8-10, 2010**. The meeting will kick off a two-day program focusing on the impact of PEV recharging on the reliability of electric transmission and distribution systems. The program will focus on the possible risks posed to grid stability by large scale recharging of PEV's. Not surprisingly, the program will highlight the critical role that distributed energy storage technologies, such as community energy storage, residential storage and vehicle-to-grid systems, can play in ensuring that the grid can handle the substantial, new demands about to be placed upon it by mass market electric vehicles.

The possible adverse impact of electric vehicles on the reliability of electric transmission and distribution systems is a problem that has been keeping many in the power industry awake at night ever since the widespread deployment of such vehicles was first seen as a possibility. That day of reckoning is now upon us. General Motors and Nissan are about to sell their first PEV's into the mass consumer market and other car and truck makers will follow shortly.

The scary part is that no one really knows what is going to happen. The demands on the grid—and more particularly on certain parts of the grid—are impossible to predict without knowing exactly how many PEV's are going to be sold, precisely where those PEV's are going to be deployed, and how and when their owners are going to recharge them. No one knows, of course. This is all new territory. Although the utility industry is renowned for its long term planning and conservatism, for many utilities the approach to PEV's seems to be cross-your-fingers and wait-and-see.

The wait-and-see approach is, of course, a huge gamble. While many T&D systems will hold up fine, Murphy's Law dictates that in a many locations more consumers will buy PEV's than anticipated and that those consumers will all come home and plug them in at the same time. Exactly where this will happen, which substations may blow and which systems will fail cannot be accurately predicted before the fact. But even the most junior member of the American Trial Lawyers Association will be able to make a persuasive argument to a jury that those failures were clearly foreseeable.

The utility industry needs to be proactive in heading off this problem. While there are many possible solutions, rapidly deploying distributed energy systems to absorb the new, unpredictable, variable load of PEV's on the grid is among the most obvious. Those systems are ready to be deployed today. I hope you will come to Louisville this December, see some of the systems that our member companies are offering to address the PEV problem, and learn more about the new, uncharted territory that utilities are heading into thanks to the imminent deployment of mass market PEV's.



More information about the Annual Meeting will be available soon on the NAATBatt Website. But please save the date!

A handwritten signature in black ink, which appears to read "James J. Greenberger".

James J. Greenberger  
Executive Director

September 10, 2010

## NAATBatt Board Approves New Member Incentives 2011 Membership Drive Underway

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

The NAATBatt Board of Directors has authorized NAATBatt to begin accepting applications for membership for the 2011 calendar year. Membership dues for 2011 will remain at \$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. Payment of 2011 dues in 2010 will entitle new members to all benefits of membership for the balance of 2010 as well as 2011, including free admission to NAATBatt Webinar programs, discounted admission to the NAATBatt Annual Meeting and Conference in Louisville, Kentucky on December 8-10, 2010, preferred locations and discounts on display space at the Annual Meeting and Conference, discounts at other industry conferences for which NAATBatt is a supporting organization, and recognition in the industry as a member of NAATBatt. Please click on <http://naatbatt.org/membership-inquiry/> and indicate that you are interested in a 2011 membership.

### **Discount Offered on 2010 Membership**

The NAATBatt Board of Directors has authorized the institution of a 70% discount on Corporate, OEM, Utility and Associate 2010 Memberships for new members for the balance of the 2010 calendar year. Purchasing a discounted 2010 membership in NAATBatt is a great way for companies interested in NAATBatt to try out a membership and determine whether it brings value to their organizations. A membership for 2010 will entitle companies to all benefits of membership for the balance of this calendar year, including free admission to NAATBatt Webinar programs, discounted admission to the NAATBatt Annual Meeting and Conference in Louisville, Kentucky on December 8-10, 2010, preferred locations and discounts on display space at the 2010 Annual Meeting and Conference, discounts at other industry conferences for which NAATBatt is a supporting organization during 2010, and recognition in the industry as a member of NAATBatt. Please click on <http://naatbatt.org/membership-inquiry/> and indicate that you are interested in a discounted 2010 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, 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.

Most importantly, 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, it is time for the advanced battery industry to take control of its own market and its own future. NAATBatt exists to market for the industry, not to the industry. But we need your support to do it. Please join soon.

North American Industry  
Announcements and Calendar

**SAVE  
THE  
DATE!**

- NAATBatt Annual Meeting and Conference on PEV Impacts on T&D Reliability:** The 2010 Annual Meeting of the NAATBatt membership will be held on **December 8-10, 2010** at the Seelbach Hilton Hotel in Louisville, Kentucky. The annual meeting will kick off a two-day conference entitled: “**Impact of PEV Recharging on the Reliability of T&D Systems**”. The program will discuss the possible adverse consequences that large scale recharging of mass market electric vehicles may have on portions of the power grid as well as the possible legal consequences for utilities and OEM’s that may arise from system failures. The program will highlight the important role that distributed energy storage systems could play in stabilizing local distribution systems and accommodating large scale PEV deployment. Member companies will be invited to display their stationary storage products and solutions and will be entitled to discounted admission to the conference. More information about the Annual Meeting and Conference will be available soon in this newsletter and on the NAATBatt Web site. Please note the terms of NAATBatt’s new membership drive, discussed in the preceding section of this newsletter, and click on <http://naatbatt.org/membership-inquiry/> to receive additional information about membership.
- **NiChE Workshop on Materials for Large-Scale Energy Storage:** The Council for Chemical Research will host a NiChE Workshop on Materials for Large-Scale Energy Storage on **September 16-17** at the National Institute for Standards and Technology (NIST) in Gaithersburg, MD. The workshop will delve into the end-use applications and market drivers for large-scale storage, the R&D efforts that are pushing the boundaries, as well as highlighting some near-deployment technologies. Additional information about the program may be found at: <http://www.ccrhq.org/articles/niche-workshop-materials-large-scale-energy-storage>
  - **Battery Show 2010:** The Battery Show, a conference and exposition focused on multiple battery chemistries and applications will be held in San Jose, California on **October 5-7, 2010**. Information about the show can be found at: <http://www.thebatteryshow.com/index.php>
  - **218<sup>th</sup> Meeting of the Electrochemical Society:** The next biannual ECS meeting will take place on **October 10-15**, in Las Vegas, Nevada. The meeting will feature a wide range of experts throughout the fields of solid-state and electrochemical science and technology, getting together to communicate with both colleagues and a vital market. More information can be found at <http://www.electrochem.org/meetings/biannual/218/218.htm>
  - **Advanced Energy Storage 2010:** FullPower, Inc. will be leading a series of exhibits on **October 12-14**, in San Diego, California to showcase the technological capabilities of leading suppliers of advanced batteries, energy storage systems, and ultracapacitors. Seminars will discuss the insights and impacts on these various technologies. Additional information may be found at <http://www.fullpowerinc.com/AES2010/AESHome.html>
  - **Battery Power 2010 Conference:** Battery Power 2010, an international conference highlighting the latest developments and technologies in the battery industry, will be held **October 19-20** in Dallas, Texas. The conference, which is in its eighth year, will feature more than 35 presentations on portable, stationary and automotive battery technology, as well as battery manufacturing, materials and research & development. NAATBatt is a supporting organization of the conference and NAATBatt members in good standing are entitled to register for the conference at the discounted rate of \$495.00. Please contact [jgreenberger@naatbatt.org](mailto:jgreenberger@naatbatt.org) for

information about how to receive this discount. Information about the conference and registration for it may be found at: [http://www.batterypoweronline.com/bppt-conf10/bp10\\_index.php](http://www.batterypoweronline.com/bppt-conf10/bp10_index.php).

- **U.S. National Electric Vehicles Safety Standards Summit:** On **October 21-22**, in Detroit, Michigan, the National Fire Protection Association (NFPA) will be holding a safety summit along with co-sponsor SAE International in order to ensure standards on electric cars. The summit will focus on how to implement such standards on a rapidly growing industry, in which technology is swiftly improving. To find out more about the summit visit [http://www.nfpa.org/newsReleaseDetails.asp?categoryId=488&itemId=46997&cookie\\_test=1](http://www.nfpa.org/newsReleaseDetails.asp?categoryId=488&itemId=46997&cookie_test=1)
- **Rare Earth Metals Summit III:** Infocast's Rare Earth Metals Summit III will be held in Washington, D.C. on **October 25-27**, 2010. The conference will examine the supply and value chains for rare and strategic metals, including lithium. NAATBatt is a supporting organization of the conference and NAATBatt members will be entitled to a 10% discount on registration. Additional details will follow.
- **Annual DOE Program Update Conference – Energy Storage R&D Programs:** Sandia National Laboratory's U.S. DOE Energy Storage Systems Research Program (ESS) will be held on **November 2-4**, in Washington D.C. The program will review the latest DOE sponsored research in advanced battery technology, power conditioning and others topics relating to advanced energy storage. Registration for the conference can be found here: <http://www.sandia.gov/ess/About/newsevents.html#conf>
- **Battery Safety 2010:** Knowledge Foundation will hold a conference focusing on advancements in systems design, integration and testing for lithium-ion battery safety and reliability in Boston, MA on **November 3**, 2010. Additional information about the conference can be found at: <http://www.knowledgefoundation.com>
- **Battery Lithium Mobile Power 2010:** Knowledge Foundation will hold a conference focusing on new lithium-ion battery chemistries, novel electrode and electrolyte materials, and system integration for a vast array of mobile and portable applications in Boston, MA on **November 4-5**, 2010 in conjunction with the Battery Safety 2010 Conference referenced above. Additional information about the conference can be found at: <http://www.knowledgefoundation.com>
- **Future of Electric Vehicles Conference:** The Future of Electric Vehicles Conference will be held in San Jose, California on **December 7-8**, 2010. The conference will have representatives for all electric vehicle types, components, and uses. The conference will permit attendees to learn more about electric vehicles in each and every form. Information and registration for the conference can be found on the website at: <http://www.idtechex.com/electric-vehicles-usa-10/>
- **Advanced Automotive Batteries Conference & Symposium 2011:** The Advanced Automotive Batteries 2011 Conference (AABC) will be held on **January 24-28 2011**, in Pasadena, California. This is the next domestic program in the series of conferences on automotive batteries sponsored by Dr. Menahem Anderman and Total Battery Consulting. The conference Web site can be found at: <http://www.advancedautobat.com/automotive-battery-conference-2011/index.html>.
- **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, committees and the upcoming roadmap project 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.



## 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)