NAATBatt
Advanced Battery Weekly

Summary:

For the April 8th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt and U.S. Indices were flat, while the Asia Index increased 1.5%. The Russell 2000 and S&P 500 increased 3.4% and 1.7%, respectively.

Executive Director James Greenberger discusses President Obama's proposal for a Clean Energy Standard and suggests that any such standard must include a component that rewards grid operators for leveling peak electricity loads. Read "***A Clean Energy Standard Must Address Peak Load Reduction***" in the Executive Director's Notes portion of this newsletter below.

Key Highlights:

- **LG Chem** has completed the world's largest battery plant for electric vehicles (EVs). The factory is located in **Ochang**, **South Korea** and has enough capacity to produce lithium-ion (li-ion) batteries for 100,000 EVs annually.

- **Maxwell Technologies** announced that **ShinMaywa Industries** has designed **BOOSTCAP®** ultracapacitors into an all-electric loading mechanism for garbage trucks that eliminates fuel consumption, CO2 emissions and noise during loading and unloading. Each truck's loading mechanism incorporates ultracapacitors that charge from regenerative braking and stores enough energy to power all-electric loading and unloading with the truck in an engine-off mode.

- **AeroVironment** is teaming with **NRG Energy** to expand the privately funded, comprehensive **eVgo**[sm] EV charging "ecosystem" into the **Dallas/Fort Worth** market. The company will also provide the integrated data collection, communication and analysis systems that will power the eVgo network.

- **Microsoft** and **Toyota** announced a joint venture to create a system for energy management of plug-in cars. The creation of **Toyota Media Service**, a Toyota subsidiary will provide the data service to drivers.

- The **City of Industry** is planning to construct 1,000 solar carports at a commuter rail station to produce electricity and charge EVs. The carports at the **Metrolink** station will have photovoltaic solar roof panels to provide about 2 megawatts (MW) of power for **Southern California Edison**.

- The **European Commission** has asked **Formula One's** governing body to set up a racing championship series for electric cars. An **F1-style** electric car championship could take place on the **Grand Prix** circuits by 2013.

- **Canada Post** has added four all-electric step vans to its fleet. The **Navistar eStar**™ is a Class 2c-3 electric truck and has a range of 160 kilometers (100 miles) per charge and can be fully recharged within 6 to 8 hours.

- The world's first fast-charged hybrid bus, the '**Arctic Whisper'** has been unveiled in the city of **Umeå** (**Sweden**). The **BÅ¯sbaar** bus charging station is provided by **Opbrid SL** (**Spain-based**) and will be located at one end of the route and can fast charge the bus for a few minutes at the end of each trip.

- **The Hartford** has installed charging stations at their headquarters in **Hartford**, **CT** and other locations in **Simsbury** and **Windsor**. The stations were provided by **Coulomb Technologies**.

- **EnerG2** announced a new energy storage application research platform. The proprietary **EnerG2 Carbon Technology Platform** could rapidly advance the speed with which carbon technologies are developed and applied to energy storage applications.

- **ZBB Energy** was awarded a contract by **Eaton** to install a 500-kilowatt-hour (kWh) **Zinc Bromide** energy storage system at a **U.S. Army** facility in **Fort Sill**, **Oklahoma**. The companies will work to "define operational standards for advanced energy storage system on micro-grids such as this project and for use at future **U.S. Department of Defense** facilities.

- The **Florida Mall** has installed a charging station near its food-court entrance. The mall is the first retail property in the country to offer self-service charging free for a short time.

A Few More Details:

LG Chem has completed the world's largest battery plant for electric vehicles. The factory is located in Ochang and has enough capacity to produce lithium-ion (li-ion) batteries for 100,000 EVs annually. The company is planning to spend two trillion won ($1.84 billion) to construct another plant in South Korea and another in the United States over the next 2 years. The goal is to have enough capacity to produce batteries for 350,000 vehicles a year. The firm is targeting EV battery market share of over 25% by 2015.
Source: AFP

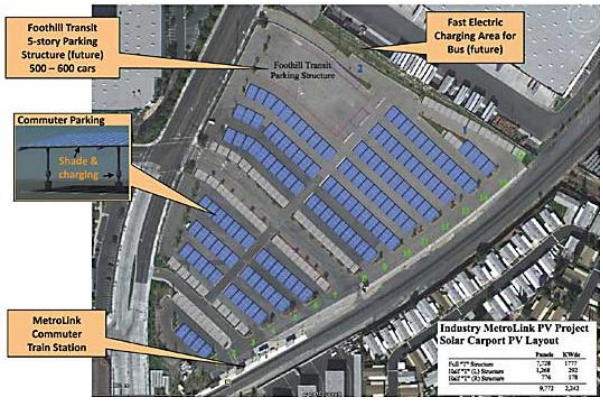
Maxwell Technologies announced that ShinMaywa Industries has designed BOOSTCAP® ultracapacitors into an all-electric loading mechanism for garbage trucks that eliminates fuel consumption, CO2 emissions and noise during loading and unloading. Each truck's loading mechanism incorporates ultracapacitors that charge from regenerative braking and stores enough energy to power all-electric loading and unloading with the truck in an engine-off mode. ShinMaywa has over 30% market share in refuse collection Japan.
Source: Maxwell Technologies and ShinMaywa Industries

AeroVironment is teaming with NRG Energy to expand the privately funded, comprehensive eVgo^{sm} electric vehicle (EV) charging "ecosystem" into the Dallas/Fort Worth market. In addition, AeroVironment will also provide the integrated data collection, communication and analysis systems that will power NRG's eVgo network. NRG Energy plans to install a total of 70 Freedom Stations in the DFW area by the end of 2012, 35 of which are scheduled for installation by the end of 2011.
Source: AeroVironment

Microsoft and Toyota announced a joint venture to create a system for energy management of plug-in cars. The creation of Toyota Media Service, a Toyota subsidiary will provide the data service to drivers. The two companies will invest about $12 million in the venture. The first application of the system (based on the Windows Azure cloud computing platform) will be to manage energy use for the plug-in version of the Prius due in 1H12.
Source: USA Today

The City of Industry is planning to construct 1,000 solar carports (as shown in **Exhibit 1**) at a commuter rail station to produce electricity and charge EVs. The carports at the Metrolink station will have photovoltaic solar roof panels to provide about 2 megawatts (MW) of power for Southern California Edison. Construction of the $1.2 million project is set to begin this summer with an intended completion date in 1Q12.

Exhibit 1: Layout For PV-EV Carports



Source: San Gabriel Valley Tribune

The European Commission has asked Formula One's governing body to set up a racing championship series for electric cars. An F1-style (as shown in **Exhibit 2**) electric car championship on the Grand Prix circuits could potentially take place by 2013. The objective is to showcase and increase the public's use of electric vehicles among EU member countries.
Source: Herald Sun

Exhibit 2: A Formula One Going Electric?

Source: AFP

Canada Post has added four all-electric step vans to its fleet. The Navistar eStar™ is a Class 2c-3 electric truck and has a range of 160 kilometers (100 miles) per charge and can be fully recharged within 6 to 8 hours. Canada Post has the largest delivery fleet in Canada with over 7,300 vehicles more than 79 million kilometers (over 49 million miles) annually.
Source: Canada Post

The world's first fast-charged hybrid bus, the "Arctic Whisper" (as shown in **Exhibit 3**) has been unveiled in the city of Umeå (Sweden). The BÅ¯sbaar bus charging station is provided by Opbrid SL (Spain-based) and will be located at one end of the route and can fast charge the bus for a few minutes at the end of each trip. This will extend the all-electric range of the hybrid bus from 2 hours to 18 hours.

Exhibit 3: Fast Charging Bus

Source: IB Times

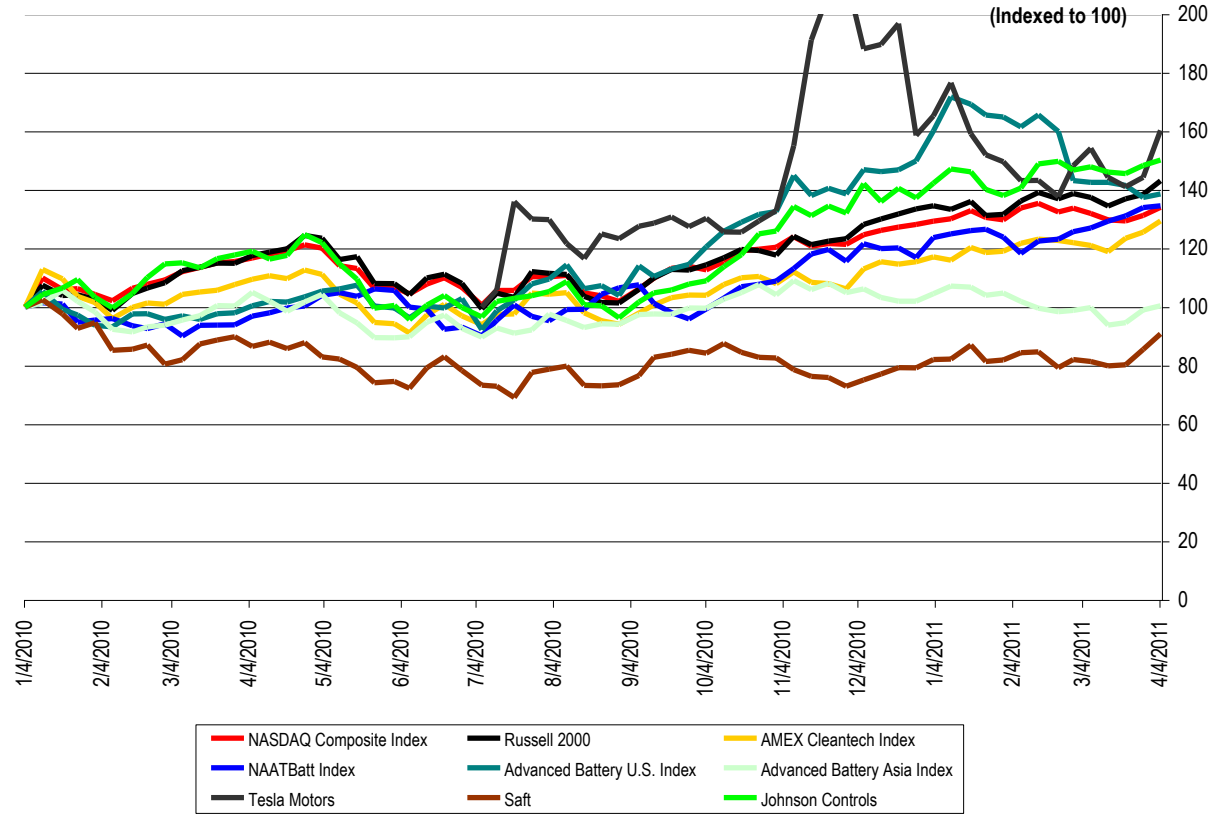
The Hartford has installed charging stations at their headquarters in Hartford and other locations in Simsbury and Windsor. Employees or visitors with EVs charge up for free. The stations were provided by Coulomb Technologies.
Source: Coulomb Technologies

EnerG2 announced a new energy storage application research platform. The proprietary EnerG2 Carbon Technology Platform could rapidly advance the speed with which carbon technologies are developed and applied to energy storage applications. The company has already produced advanced carbon properties tailored for lead acid electrochemistry that avoids the negative impact from metallic impurities in traditional produced carbons. In addition, the company is also working with partners to develop a high performance lithium-air battery.
Source: EnerG2

ZBB Energy was awarded a contract by Eaton to install a 500-kilowatt-hour (kWh) Zinc Bromide energy storage system at a U.S. Army facility in Fort Sill, Oklahoma. The companies will work to "define operational standards for advanced energy storage system on micro-grids such as this project and for use at future U.S. Department of Defense facilities. The company has also signed another contract for a 500 kWh ZESS V3 battery.
Source: The Business Journal

The Florida Mall has installed a charging station near its food-court entrance. The mall is the first retail property in the country to offer self-service charging free for a short time. Eventually, Simon Property will charge customers a nominal fee charging up.
Source: Orlando Sentinel

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

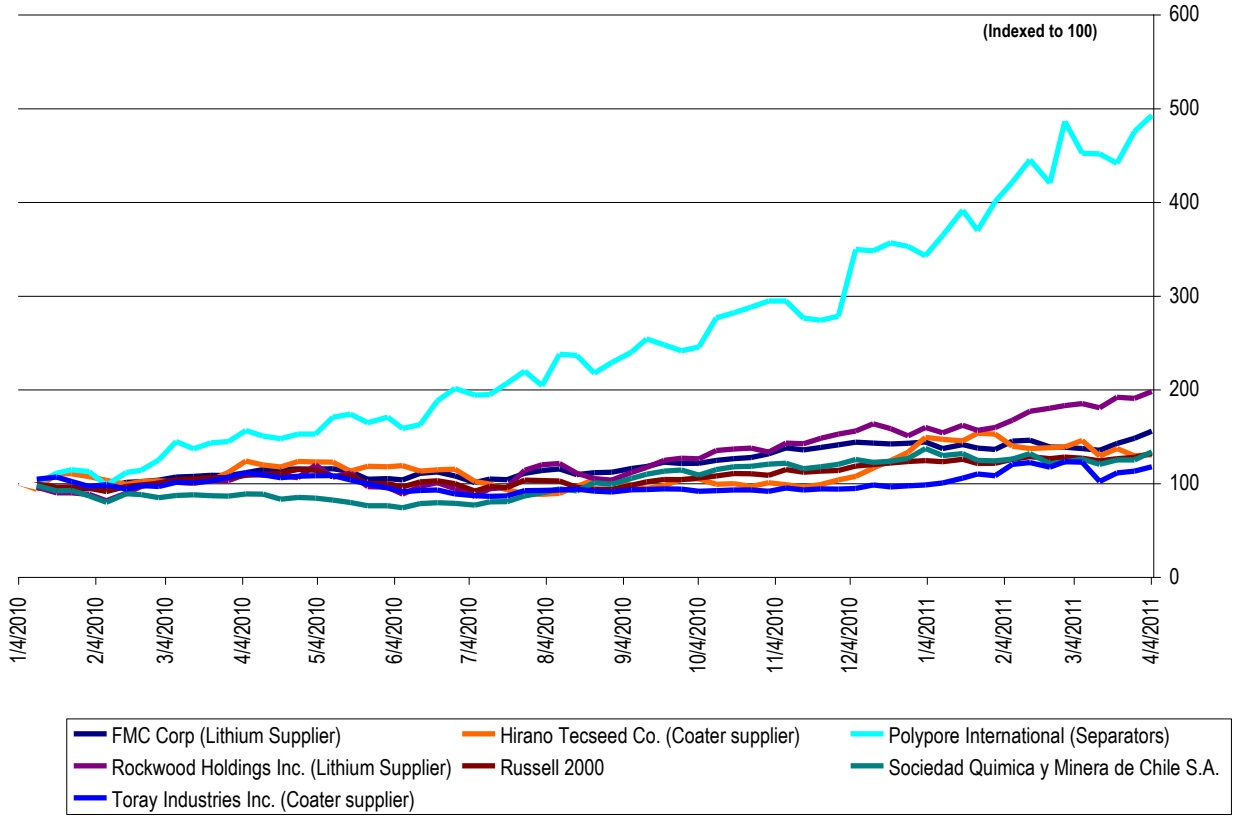


Index	Close on 4/4/2011	52-Wk High	% of 52-Wk High	Performance LTM	YTD	Week
Dow	12,400.0	12,454.5	99.6%	13.5%	6.2%	1.7%
S&P 500	1,332.9	1,344.1	99.2%	13.1%	4.8%	1.7%
NASDAQ	2,789.2	2,840.5	98.2%	15.8%	3.6%	2.1%
Russell 2000	849.4	850.7	99.8%	23.8%	6.4%	3.4%
AMEX Cleantech Index	1,269.2	1,271.0	99.9%	19.2%	10.5%	3.1%

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)



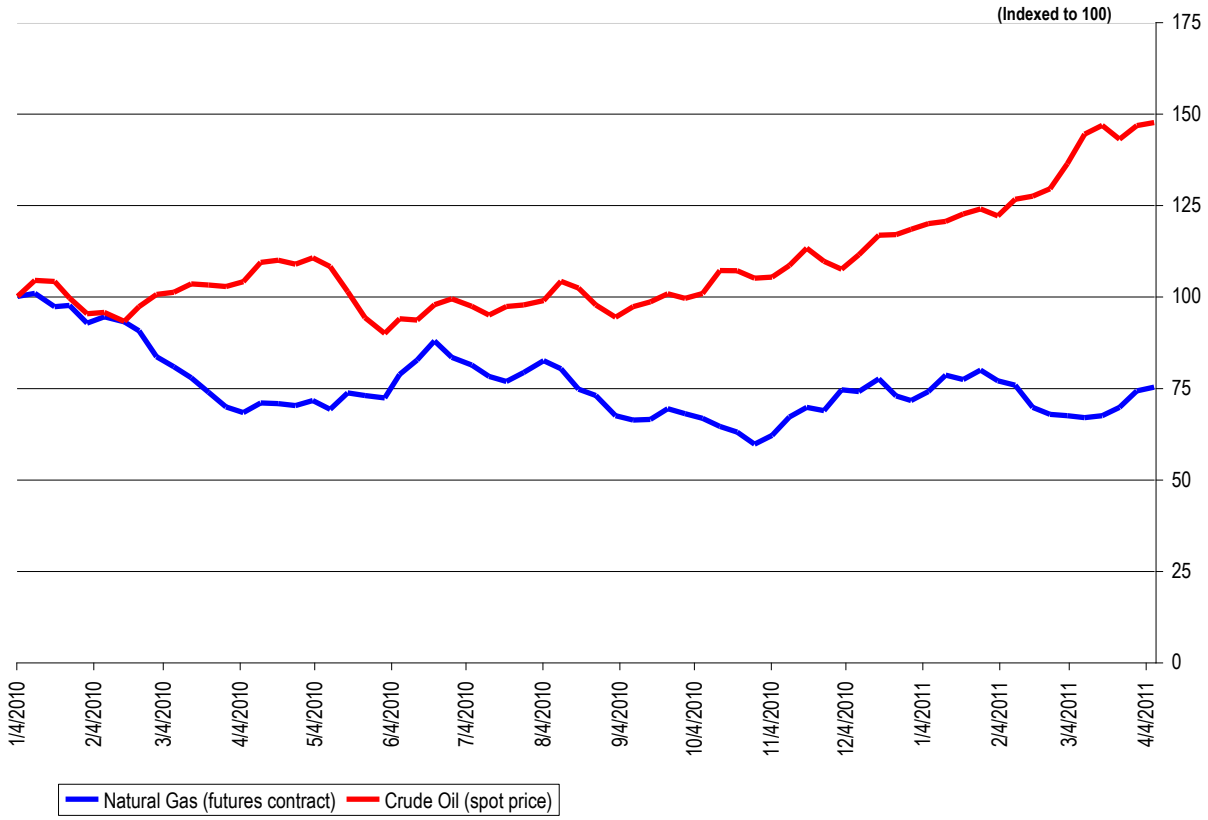
Source: Bloomberg

Exhibit 6: Commodity Prices

Commodity	Price on 4/4/2011	Price on 3/28/2011	Price on 3/4/2011	1 Week Change	1 Month Change
LME Copper (Cash, $ per tonne)	9,419	9,545	9,970	(1.3%)	(5.5%)
LME Lead (cash, $ per tonne)	2,840	2,678	2,670	6.0%	6.3%
LME Nickel (cash, $ per tonne)	25,600	26,575	28,925	(3.7%)	(11.5%)

Source: LME

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



Source: EIA

NAATBatt
Advanced Battery Weekly

Executive Director's Notes

A CLEAN ENERGY STANDARD MUST ADDRESS PEAK LOAD REDUCTION

Last January President Obama in his State of the Union Address called for a Clean Energy Standard (CES) that would require that 80 percent of the nation's electricity come from clean energy technologies by 2035. The goal of a CES is to reduce greenhouse gas emissions and other environmental hazards that are created by the generation of electricity.

A CES will not, however, reduce the environmental hazards of electricity generation by itself. If all a CES does is incent the construction of new, cleaner generation assets and the deployment of additional transmission and distribution infrastructure, it will fail in its essential purpose, as it will create more environmental degradation rather than reduce it. An effective CES must be part of a broader scheme to retire older generation plants and reduce the amount of infrastructure necessary to generate and transmit the electricity needed by consumers. In short, a CES must be coupled with an energy efficiency standard.

As I have previously noted, existing environmental efficiency standards are largely deficient because they do not recognize the difference between reducing electricity use at peak and reducing total electricity usage. An electron that does not have to be generated and transmitted at 6:00 p.m. on a hot August afternoon is a far more valuable savings than one that is saved at 2:00 a.m. on a spring morning. Any electricity efficiency standard enacted as part of a CES must recognize this distinction. Utilities should receive credit for reducing their peak ratios in the same way that they are proposed to get credit under a national CES for increasing their ratio of clean to less clean electricity generation.

Electricity storage, of course, will be key to helping utilities reduce their peak ratios. By leveling load, electricity storage (and in particular distributed energy storage) can help grid operators retire less clean generation assets earlier and reduce the need for deployment of additional transmission and distribution assets.

Energy storage will be one of the most promising and important parts of the smart grid. Let's hope that the President's CES initiative, properly implemented, will give it the attention it deserves.

NAATBatt
Advanced Battery Weekly

James J. Greenberger
Executive Director

April 8, 2011

NAATBatt
Advanced Battery Weekly

NAATBatt Membership Applications for 2011

2011 Membership Applications and Dues Structure

NAATBatt is 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.

NAATBatt
Advanced Battery Weekly

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. The annual meeting will feature a Battery Industry-Academic Summit and a survey of the next five years of advanced battery technology development. More information about the 2011 conference will be posted soon on the NAATBatt Web site at: 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 20101 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 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.

- ***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: jgreenberger@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/

- ***21st Annual ESA Meeting***: The 21st 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/.

- ***4th Symposium on Beyond Lithium-Ion***: Beyond Lithium-Ion IV will be held **June 7-9, 2011**, at Pacific Northwest National Laboratory in Richland, Washington. The goal of the Symposium is to advance understanding on the directions and challenges in present-day vehicle batteries and the future of storage technologies. The meeting is one of a series of Symposia organized by a consortium of IBM Research and U.S. National Laboratories. The meeting website is http://beyondli-ioniv.labworks.org/.

- ***Storage Week 2011***: Infocast will host Storage Week 2011 in San Diego on **July 11-14, 2011**. The program, now in its third year, will cover a range of storage policies, markets, project applications and technologies involved in the integration of storage onto the grid. NAATBatt is a Supporting Organization of the program and NAATBatt members will be entitled to a 15% discount on admission.

- ***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 7-9, 2011** in Louisville, Kentucky (see note above).

- ***2nd Battery Safety Conference***: Knowledge Foundation will host the 2nd 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

- ***7th Lithium Mobile Power Conference***: Knowledge Foundation will host the 7th 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.

Contact Information:

NAATBatt
Advanced Battery Weekly

National Alliance for Advanced Technology Batteries
122 South Michigan Avenue, Suite 1700
Chicago, Illinois 60603
(312) 588-0477

www.naatbatt.org

Officers

Randy Moore
Chairman
rmoore@naatbatt.org

Jim Greenberger
Executive Director
jgreenberger@naatbatt.org

Ralph Brodd
Chief Technology Officer
rbrodd@naatbatt.org

Michael Lew
Head of Business Development
mlew@naatbatt.org

Sandy Kane
Chief Financial Officer
skane@naatbatt.org