

Summary:

For the August 5th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt and Asia Battery Indices were up 5.2% and 4.4%, respectively. The U.S. Index was down 5.6%. The S&P500 and Russell 2000 declined 3.8% and 4.6%, respectively.

Executive Director James Greenberger writes about the growing importance of mandates, such as CAFE standards, to U.S. energy policy and suggests that CAFE standards need to be revised to focus in part on fuel diversity rather than exclusively on fuel economy. Read "**Do EV's and CAFE's Mix?**" in the Executive Director's Note portion of this newsletter below.

Key Highlights:

- **General Motors (G.M.)** has signed commercial agreements with **Sunlogics** for the installation of solar charging canopies at **Chevrolet** dealerships and its facilities. The company has committed to double solar output globally to 60 megawatts (MW) from 30 MW by the end of 2015.
- **MEGA Graphite** has signed a definitive agreement, in the form of an Implementation Deed with **Strategic Energy Resources (SER)** of **Australia**. Under the terms of the agreement MEGA will acquire the **Uley Graphite Project**, located on the **Eyre Peninsula** in South Australia.
- The **German** government agreed to increase investment in clean-energy technology research by about 75% as it prepares to exit nuclear generation by 2022. The government will invest \$4.9 billion into areas including energy storage and grid-technology research in the next three years.
- **BMW** introduced two concept cars for the first generation of EVs to be launched under its new sub-brand **i** starting in 2013. The company will initially launch the vehicles under the new sub-brand, the **BMW i3** and the **BMW i8** in 2013 and 2014.
- **Juhl Wind** announced it has signed a Letter of Intent (LOI) with **Zinc Air** for the installation of a one MW energy storage system. Zinc Air is the developer of a Zinc Redox flow battery.
- **Balqon** announced the **Mule M100** electric truck (etruck). The battery pack is 220 kilowatt-hours and uses a 50 kilowatts 3 phase AC charging system (for comparison, the Nissan LEAF has a 3.3 kilowatt charger) with a recharge time of 5 hours.
- Demand for electric bikes (ebikes) in **Germany** tripled in 2010 and is set to grow by 50% to 300,000 this year, according to bicycle industry association **ZIV**. Ebikes are likely to take 10% to 15% of the 630 million euro German bicycle market, up from 5% the prior year.
- **Australia's Civil Aviation Safety Authority (CASA)** has warned passengers not to put battery power packs in their checked luggage because of the danger of fire. Their preference is to have spare batteries carried in the cabin with their terminals appropriately insulated.
- **Toyota Motor** has chosen to assemble the electric version of the **RAV4** at its plant in **Woodstock, Ontario**. **Toyota Motor Manufacturing Canada** has received a \$71-million loan from **Ottawa** and a matching grant from **Ontario**, representing about 26% of the investment the company is making in its plants in **Woodbridge** and **Cambridge**.

- Researchers at **Rice University** have built a li-ion ion energy storage device in a single nanowire. The scientists' described two versions of their battery/supercapacitor hybrid. The first is a sandwich with **nickel/tin** anode, **polyethylene oxide** (PEO) electrolyte and **polyaniline** cathode layers. The second is based on a single nanowire.

A Few More Details:

General Motors has signed commercial agreements with Sunlogics for the installation of solar charging canopies (as shown in **Exhibit 1**) at Chevrolet dealerships and its facilities. There is also an agreement for a power purchase agreement to install large-scale solar arrays at G.M. facilities and purchase the energy produced by these arrays. The company is committed to double solar output globally – to 60 MW (from 30 MW) by the end of 2015.

Exhibit 1: A Solar Charging Canopy



Source: SunLogics

MEGA Graphite has signed a definitive agreement, in the form of an Implementation Deed with Strategic Energy Resources (SER) of Australia. Under the terms of the agreement MEGA will acquire the Uley Graphite Project, located on the Eyre Peninsula in South Australia. The mineralisation within Uley is near surface, which will permit the use of traditional open-pit methods. The *JORC compliant resource currently stands at 6.6 million tonnes with a total graphitic carbon content of 8.7%. The existing plant and metallurgical test-work provide a strong platform to undertake a bankable feasibility study for a 25,000 metric tonnes per year initial operation, which would re-establish Uley as one of the largest producing mines in the world.

Source: MEGA Graphite

The German government agreed to increase investment in clean-energy technology research by about 75% as it prepares to exit nuclear generation by 2022. The government will pump 3.4 billion Euros (\$4.9 billion) into renewables, energy efficiency, energy storage and grid-technology research in the next three years. The plan is to replace Germany's 17 reactors with a combination of renewable sources and fossil-fuel-based power plants.

Source: Bloomberg

BMW introduced two concept cars for the first generation of EVs to be launched under its new sub-brand i starting in 2013. The company will initially launch the vehicles under the new sub-brand, the BMW i3 and the BMW i8, which will be launched in 2013 and 2014. The EVs will be built at BMW's German plant in Leipzig.

Source: WSJ

Juhl Wind announced it has signed an LOI with Zinc Air for the installation of a one MW energy storage system. Zinc Air is the developer of a Zinc Redox flow battery. The first phase of the project will provide for the development and installation of the grid storage system based on securing a revenue arrangement from a utility buyer or within the MISO marketplace.

Source: Zinc Air

Balqon announced the Mule M100 electric truck (etruck) (as shown in **Exhibit 2**). The etruck has a 194 inch long truck bed on which to mount customer equipment like cargo containers and can carry a maximum load of 4 tons. The battery pack is 220 kilowatt-hours (for comparison, the pack in a Nissan LEAF is 24 kilowatt-hours) and uses a 50 kilowatts 3 phase AC charging system (for comparison, the Nissan LEAF has a 3.3 kilowatt charger) with a recharge time of 5 hours.

Source: Green Transportation Examiner

Exhibit 2: The M100 Mule



Source: Balqon

Demand for electric bikes (ebikes) in Germany tripled in 2010 and is set to grow by 50% to 300,000 this year, according to bicycle industry association ZIV. Early E-bike models were bigger, heavier and unappealing. The newer models are more attractive and some product lines have already sold out in the first four months of this year. Ebikes are likely to take 10% to 15% of the 630 million euro German bicycle market, up from 5% the prior year.

Source: Reuters

Australia's Civil Aviation Safety Authority (CASA) has warned passengers not to put battery power packs in their checked luggage because of the danger of fire. The CASA stated the batteries have a potential to short-circuit and burn under certain conditions. Their preference is to have spare batteries carried in the cabin with their terminals appropriately insulated. The organization has received reports of singed batteries in Australia, although airlines say there has not been a major incident.

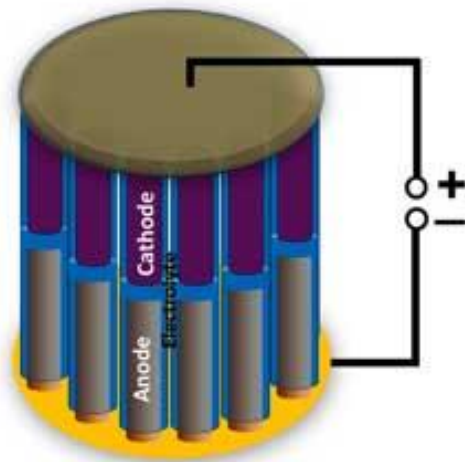
Source: The Australian

Toyota Motor has chosen to assemble the electric version of the RAV4 at its plant in Woodstock, Ontario. The company assembles the RAV4 crossover utility vehicle in Woodstock for the North American market. Toyota Motor Manufacturing Canada has received a \$71-million loan from Ottawa and a matching grant from Ontario, representing about 26% of the investment the company is making in its plants in Woodbridge and Cambridge to finance production improvements and green initiatives.

Source: *The Globe & Mail*

Researchers at Rice University have built a li-ion ion energy storage device in a single nanowire. The scientists' described two versions of their battery/supercapacitor hybrid (as shown in **Exhibit 3**). The first is a sandwich with nickel/tin anode, polyethylene oxide (PEO) electrolyte and polyaniline cathode layers to prove that li-ions could move efficiently through the anode to the electrolyte and then to the supercapacitor-like cathode, which stores the ions in bulk and gives the device the ability to charge and discharge quickly. The second packs the same capabilities into a single nanowire. The researchers built centimeter-scale arrays containing thousands of nanowire devices, each about 150 nanometers wide.

Exhibit 3: A Schematic of the Hybrid Device

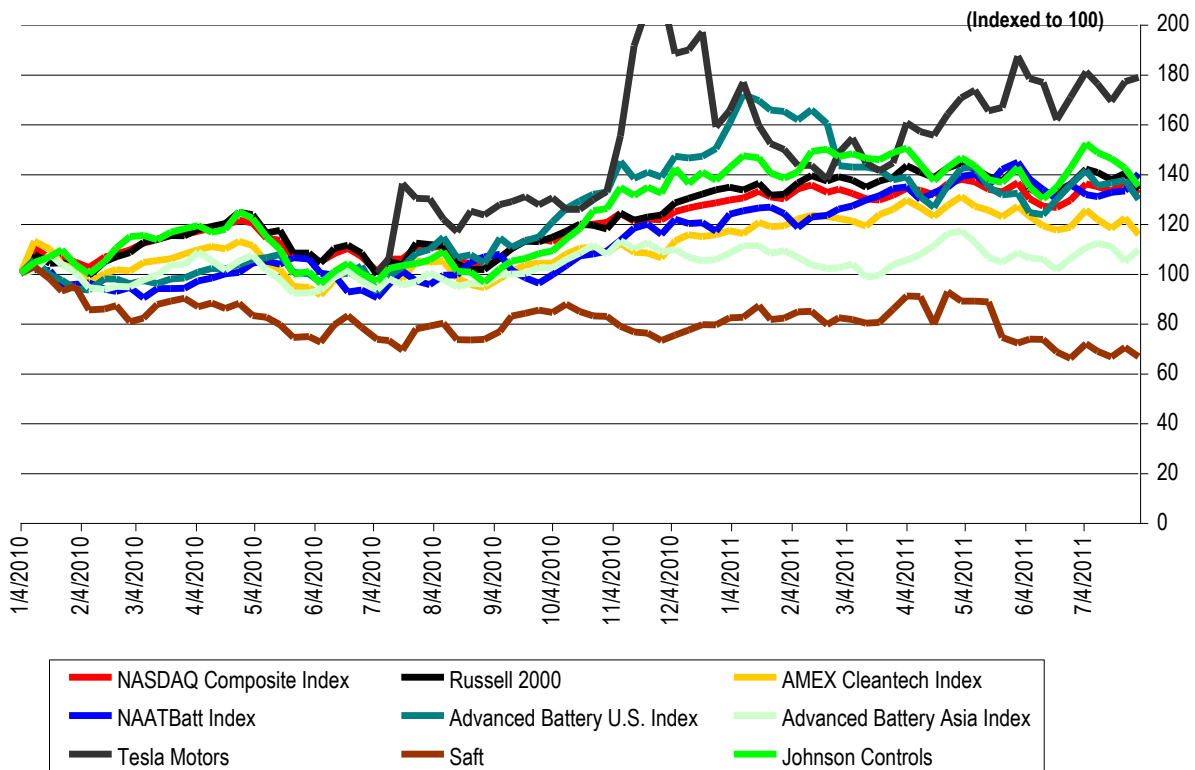


Source: *Rice University*

Members News:

- MEGA Graphite Inc. (MEGA), a global graphite company which owns natural crystalline flake properties, announced on August 3, that it has signed a Definitive Agreement with Strategic Energy Resources to Acquire 100% of Uley Graphite Project. The Company believes the project's large flake products would be welcomed by customers and create opportunities within both traditional and emerging markets. For complete details visit: <http://www.megagraphite.com/pressrelease>

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

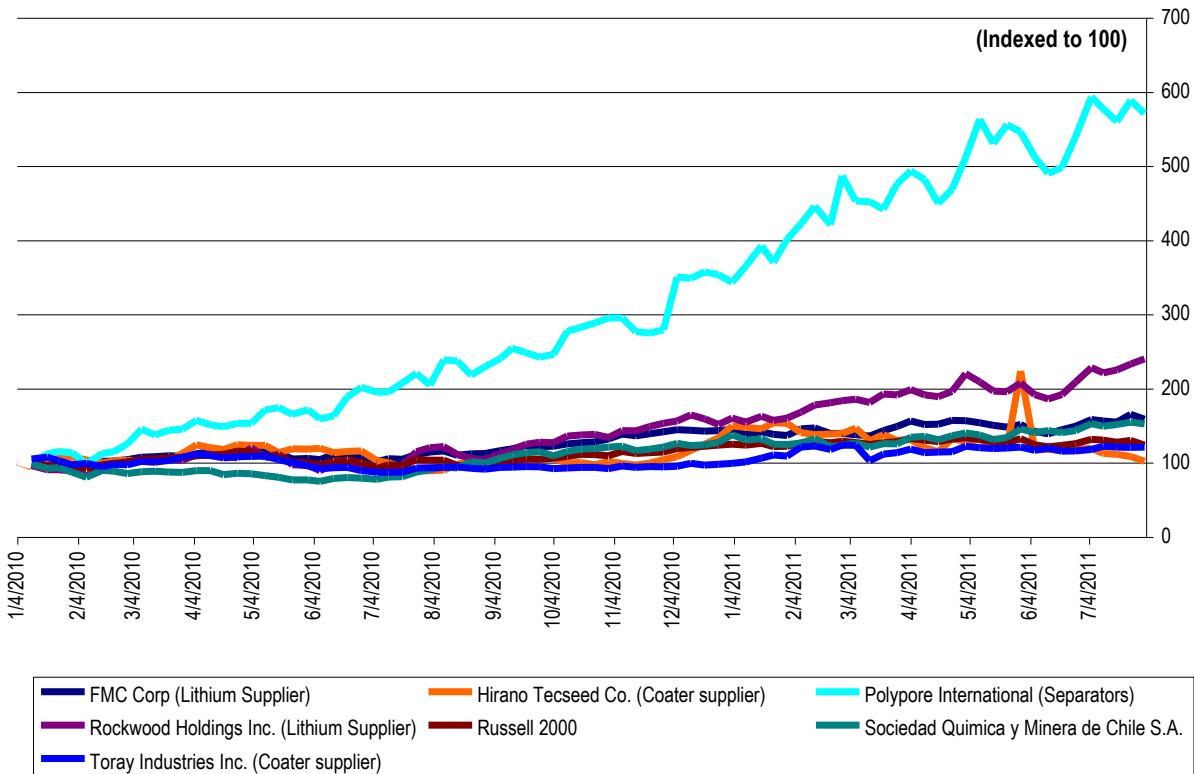


Index	Close on 8/1/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	12,132.5	12,928.5	93.8%	15.9%	4.0%	(3.7%)
S&P 500	1,286.5	1,370.6	93.9%	16.2%	1.1%	(3.8%)
NASDAQ	2,744.6	2,887.8	95.0%	20.2%	2.0%	(3.5%)
Russell 2000	792.9	868.6	91.3%	20.6%	(0.7%)	(2.8%)
AMEX Cleantech Index	1,132.1	1,292.4	87.6%	10.5%	(1.4%)	(5.5%)

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)



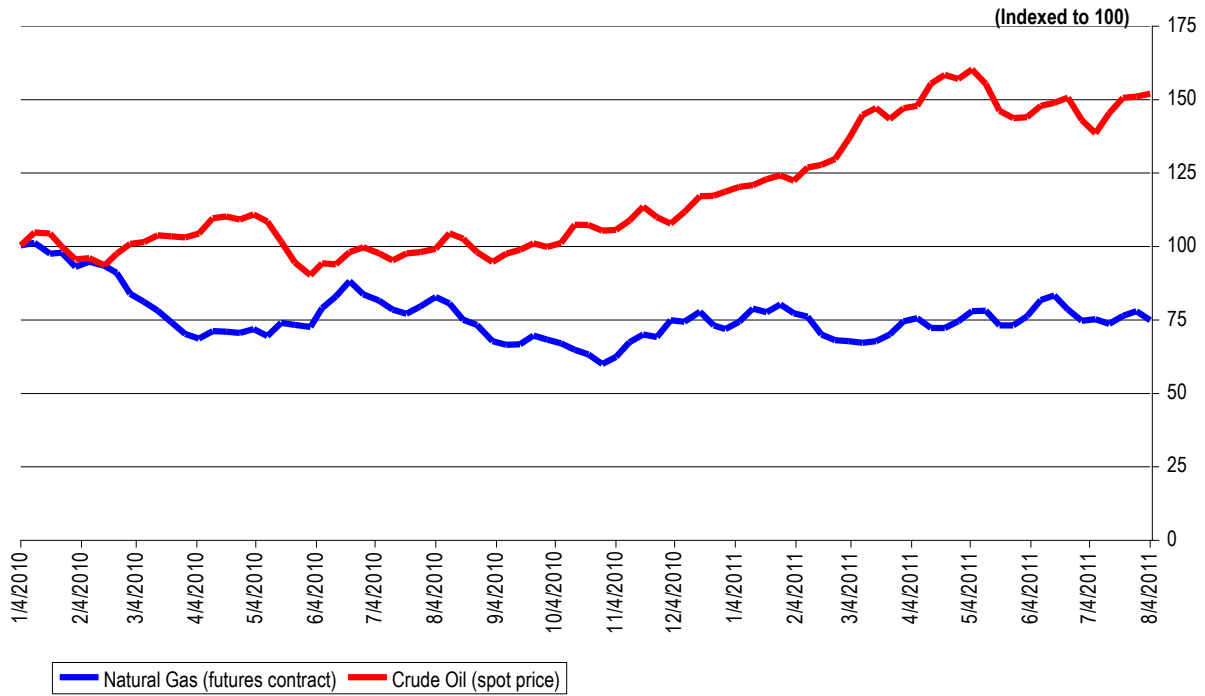
Source: Bloomberg

Exhibit 6: Commodity Prices

Commodity	Price on 8/1/2011	Price on 7/25/2011	Price on 7/1/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	9,827	9,615	9,405	2.2%	4.5%
LME Lead (cash, \$ per tonne)	2,627	2,665	2,636	(1.4%)	(0.3%)
LME Nickel (cash, \$ per tonne)	25,060	23,775	23,110	5.4%	8.4%

Source: LME

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



Source: EIA

Executive Director's Notes



DO EV'S AND CAFE'S MIX?

Two events occurred this week which, if not an insight into the future of U.S. energy policy, are certainly an insight into the tools that will be available to implement that policy in the future. The first was the budget debt ceiling agreement, which promises \$2.5 trillion dollars of savings over ten years--a promise that will impact every aspect of government spending, including spending on energy policy initiatives. The second was the agreement on new, tighter CAFE standards. CAFE standards are a mandate and do not involve government spending. The new CAFE standards show signs of moving quickly through Congress and will probably do more to shape the future of American motor vehicles than any other government initiative.

Given the growing relative importance of CAFE standards to energy policy, it is a shame that energy security and vehicle electrification supporters were not more involved in their negotiation. This was a function of the curious history of CAFE standards. Enacted in the wake of the first Oil Embargo, Congress intended CAFE standards to protect U.S. energy security by decreasing petroleum consumption. Over the years, however, CAFE standards have come to focus more on reducing automotive emissions. Properly understood, the new standards are designed primarily to reduce greenhouse gas emissions, not to promote energy security. While reducing emissions is an important goal, it is a far cry from the energy security concerns that underlay the intent of the original CAFE legislation.

What this emphasis on emissions reductions means for vehicle electrification is unclear. Deploying a larger number of heavy electric vehicles (pure EV's and PHEV-40+'s) will reduce overall vehicle emissions. But on a bang for the buck basis, heavy vehicle electrification is probably not the most cost effective way of doing so or, for that matter, the most cost effective way of reducing overall petroleum consumption. The real benefit of vehicle electrification lies in its ability to diversify the fuel supply of the national vehicle fleet. For this purpose electric vehicles are the most cost effective tool in the shed.

As I have previously noted in this column, energy efficiency and energy diversity are different goals. The goal of energy efficiency addresses a need to reduce emissions and total gasoline use. The goal of energy diversity, however, addresses more fundamental strategic and economic concerns. Reducing total gasoline consumption would be beneficial for many reasons. But until the pricing monopoly that petroleum producers enjoy on the U.S. transportation sector is broken, no amount of fuel efficiency will break the strategic trap in which the United States is caught or relieve consumers from the financial burden of ever higher petroleum costs. As long as petroleum producers hold a monopoly on vehicle fuel,

they will simply raise prices as we become more fuel efficient and use less petroleum. Fuel efficiency without more brings little strategic or economic advantage.

Focusing CAFE standards solely on emissions-focused fuel economy, to the exclusion of fuel diversity, is unwise and is not consistent with their original legislative purpose. Recognizing this fact, the National Highway Traffic Safety Administration and the Environmental Protection Agency (EPA) published a Supplemental Notice of Intent on July 29, 2011 in which the EPA proposed to give an incentive multiplier for pure EV's and fuel cell vehicles (FCV's), permitting manufacturers to count each such vehicle as two vehicles in 2017, phasing down to 1.5 vehicles by 2021. PHEV's would start with an incentive multiplier of 1.6 vehicles in 2017, phasing down to 1.3 vehicles in 2021. Each EV, PHEV and FCV would be counted as having no tailpipe emissions. The purpose of the incentive multipliers is to incent manufacturers to produce EV's, PHEV's and FCV's by giving them some measure of relief from their CAFE obligations in exchange for doing so.

The incentive multipliers for EV's, PHEV's and FCV's have been criticized by many who view CAFE standards primarily as a means for reducing vehicle emissions. But that criticism is wrong for two reasons. First, it is wrong because CAFE standards are also an important tool for achieving fuel diversity. And second, it is wrong because it is not clear what the ultimate effect of the incentive multipliers will be. Since there is no separate reward for fuel diversity, manufacturers may well decide, notwithstanding the incentive multiplier, that it is still more efficient to reduce emissions by selling more fuel efficient internal combustion engine (ICE) cars than by producing EV's, PHEV's and FCV's.

The problem with the new CAFE standard is that it tries to compare apples to oranges, which rarely makes for good policy. EV's/PHEV's/FCV's, on one hand, and efficient ICE's, on the other hand, play important but different roles in an effective national energy strategy. The first primarily addresses fuel diversity, the second fuel economy. Achieving both goals through a policy based solely on reducing greenhouse gas emissions might work. But if it does, it will work by accident.

The structure of CAFE standards needs to be rethought. CAFE standards should address separately the two energy policy goals that they were designed to achieve: energy efficiency and energy diversity. One goal should not be a trade-off for the other. As CAFE standards and other mandates become increasingly important policy tools in a budget-constrained environment, energy security and electrification supporters must be careful that their interests are not subordinated and forgotten in the battle against greenhouse gas emissions.



James J. Greenberger
Executive Director

August 5, 2011



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.

North American Industry Announcements and Calendar

**EARLY BIRD
REGISTRATION
CLOSES
AUGUST 7**

NAATBatt 2011 Annual Meeting and Conference: NAATBatt's 2011 Annual Meeting and Conference will be held on **September 7-8, 2011** in Louisville, Kentucky. The title of the program is "**New Markets, New Innovations: The Next 5 Years in Advanced Batteries.**" The program will take a hard look at near-term market opportunities for U.S. advanced battery manufacturers. The annual meeting will also feature the **Industry-Academic Advanced Battery Summit** with presentations by some of the top university battery research programs in the United States. Attendees will learn who is working on what in advanced battery research programs in the United States. There is more going on than you think. Information about the 2011 conference, including an updated agenda, is posted on the NAATBatt Web site at: www.naatbatt.org.

Presentations and Materials from the Workshop on Distributed Energy Storage Posted: Presentation materials, handbooks, attendee lists and working group discussion summaries from the recently concluded April 21 DOE/NAATBatt Workshop on Issues in Distributed Energy Storage have been posted on the NAATBatt Web site at: www.naatbatt.org. The materials are available for review to all Workshop registrants and to all NAATBatt members. If you have lost or never received your password to access these materials, please contact Jim Greenberger at jgreenberger@naatbatt.org.

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 Jim 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.

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- **NAATBatt 2011 Annual Meeting and Conference: September 7-8, 2011** in Louisville, Kentucky Registration is now open for the 2011 Annual Meeting and Conference, which will include the 1st Industry-Academic Advanced Battery Summit. See the note above for more details, or click [here](#).

- **Battery Power 2011:** Battery Power 2011 will be held on **September 20-21, 2011** in Nashville, Tennessee. The show will highlight the latest capabilities, design issues, trends and market forecasts in batteries and battery-powered products and systems. The conference Web site can be viewed at: http://www.batterypoweronline.com/bppt-conf11/bp11_index.php.
- **4th International EV Battery Tech USA: Global Cost Reduction Initiative:** EV Battery Tech USA will be held on **September 21-22, 2011**, in Detroit, Michigan. The leading automotive OEM's will attend the conference and discuss how to reduce the cost of EV batteries by specifically evaluating near-term advances in energy density, battery life extension, preventative methods for cell degradation and failure, battery safety improvement and testing. NAATBatt is a supporting organization of the conference and NAATBatt members are entitled to a 15% discount on registration. The conference Web site may be viewed at: <http://www.ev-battery-tech.com/>.
- **Developing Grid Storage Projects:** Infocast will produce the Developing Grid Storage Projects conference in Dallas, Texas on **October 5-6, 2011**. The conference will discuss the regulatory drivers and business models for grid storage projects in the United States. NAATBatt will be a supporting organization of the conference.
- **The Business of Plugging In:** The Center for Automotive Research will host The Business of Plugging In conference at the Hyatt Regency in Dearborn, Michigan on **October 11-13, 2011**. The conference will examine the challenges of moving EV's from early adoption to mass market acceptance and will feature a ride-and-drive event highlighting the newest EV's. More information can be found at: www.bpiconference.com.
- **EESAT 2011:** The biannual international Electrical Energy Storage Applications and Technologies conference (EESAT) will be held at the San Diego Marriott Hotel and Marina in San Diego, California on **October 16-19, 2011**. The conference will highlight specific electrical energy storage applications and technologies, especially as they relate to the electricity grid. More information about EESAT 2011 can be found at: <http://www.sandia.gov/eesat/index.html>.
- **The Battery Show:** The Battery Show conference and exposition will be held in Novi, Michigan on **October 25-27, 2011**. The conference will include a business and a technology track as well as a wide range of exhibits by battery makers and suppliers. Information about the show can be found at: <http://www.thebatteryshow.com/conference-program-2011>.
- **Lithium Battery Power:** Knowledge Foundation will host the 7th Annual International Conference on Lithium Battery Power on **November 7-8, 2011** in Las Vegas, Nevada. The conference will examine advances in lithium-ion battery technology. The conference Web site can be accessed at: http://www.knowledgefoundation.com/viewevents.php?event_id=254&act=evt
- **7th Lithium Mobile Power Conference:** Knowledge Foundation will host the 7th Lithium Mobile Power Conference on **November 7-8, 2011** in Las Vegas, Nevada 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.
- **2nd Battery Safety Conference:** Knowledge Foundation will host the 2nd Battery Safety Conference on **November 9-10, 2011** in Las Vegas, Nevada. 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

- **1st North American & Asian Lithium-Ion Technology Conference:** The North American & Asian Lithium-Ion Technology Conference will be held on **January 12, 2012** at the University of Nevada Las Vegas in Las Vegas, Nevada. The conference is co-sponsored by UNLV and an affiliate of the Lion Battery Industry Association of South China. More information about the conference can be found at: <http://lbiana.org/industry-events/>
- **International Electric Vehicle Symposium:** The Electric Drive Transportation Association will produce the 26th international Electric Vehicle Symposium and exposition (EVS26) on **May 6-9, 2012** in Los Angeles, California. Information about EVS26 can be found at www.EVS26.org.
- **IEEE PES Transmission and Distribution Conference and Exposition:** The IEEE PES Transmission and Distribution Conference will be held in Orlando, Florida on **May 7-10, 2012**. The conference will focus on innovation in power delivery systems, including storage systems. Information about the conference can be viewed at: <http://www.ieeet-d.org/>.



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