

Summary:

For the March 4th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt increased 2.1%, while the Advanced U.S. Index declined 10.6%. The Asia Index was flat. The S&P 500 and Russell 2000 increased modestly 0.9% and 1.3%, respectively.

Executive James Greenberger suggests that the need to electrify vehicles and make the grid smarter should cause us to rethink how energy efficiency portfolio standards (which exist today in 28 states) are structured. Read "**Rethinking Energy Efficiency Portfolio Standards**" in the Executive Director's Notes section of this newsletter below.

Key Highlights:

- **Valence Technology** announced it will supply the lithium-ion (li-ion) batteries for an electric vehicle (EV) designed by **Courb**. The **C-ZEN** be legally driven in many European countries and is targeted at urban commuters.
- **EnerSys** acquired **ABSL Power Solutions** (from **CIP Industries**). ABSL has been supplying li-ion cells and batteries for defense and aerospace applications in Europe and the U.S. (since 2000).
- **Coda Automotive** reaffirmed plans to begin selling its EV during 2H11 this year in California. The EV can travel as far as 120 miles (193 kilometers) on a full charge and uses an electric motor from **UQM Technologies**.
- **Xerox's Palo Alto Research Center (PARC)** has developed a new printing technology that could pack more energy into batteries for EVs. The technology could increase battery storage capacity by up to 30% and costs little more to manufacture.
- **Genovation Cars** announced that it will be partnering with **K2 Energy Solutions** for the use of its battery packs in its line of EVs. **Tata Technologies** is the prime contractor for the designing the Genovation's G2 model.
- **Sumitomo Electric Industries** developed a rechargeable battery that could potentially end up costing about 10% of the li-ion batteries used in the consumer electronics industry. The company could commercialize the **molten-salt** battery around 2015.
- **Hertz** has signed a letter of intent to add **Renault's** EVs to its European fleet. The company will rent Renault's electric **Twizy**, **ZOE**, **Fluence Z.E.** and **Kangoo Z.E.** models.
- **EnergyOne Technologies** has signed a letter of intent with a private party to construct a 0.25 megawatt (MW) solar station in **Frazer Park, California**. The company plans to use its patented **Photovoltaic-Capacitive Battery Storage (PCBS)** solar panels that integrate a thin film solar cell with a thin film ultra-capacitor and a thin film nickel-zinc storage battery all in a single multi-layered unit.
- **BYD** plans to begin selling EVs in **Europe** next year. The company is planning to launch the **e6** and **S6DM** models by the end of 2012.

- **Talison Lithium** is planning to double capacity at its **Greenbushes** lithium mine and processing facility in **Australia** due to increasing demand. Greenbushes will be expanded to process 740,000 tonnes of lithium carbonate annually (up from 315,000 tonnes per year).
- **Toyota Motor** will price the li-ion battery version of its **Prius** hybrid wagon at 3 million yen (or \$36,437). The EV is due out in late April.
- **Prudent Energy** has completed the installation of a 1 MWh **Vanadium Redox Battery (VRB)** energy storage system for the **China Electric Power Research Institute** in **Zhangbei, Hebei Province** in **Northern China**. The project is part of the **National Wind Power Integration Research and Test Center of China (NWIC)**, owned by **State Grid Corporation of China (SGCC)**.
- The **Department of Defense** is planning to collaborate with the **Energy Department's Advanced Research Projects Agency-Energy (ARPA-E)** to develop power storage technologies that could also have civilian applications. ARPA-E fosters the development of technologies that private companies consider too risky.
- The **Holland Board of Public Works** has approved a contract with **ChargePoint America** for 17 charging stations from to the area. The effort is in conjunction with the two battery plants now under construction in Holland.
- The **City of Chandler** announced plans to begin installation of 900 residential charging stations. The stations will be provided by **ECotality**.
- **Estonia** is planning to sell 10 million carbon credits to **Mitsubishi** and use the proceeds to set up a nationwide network of charge-points for EVs. About 500 **i-MiEVs** will be provided to local authorities for use by social workers.
- Eight new electric vehicle charging stations have been installed in **Southern Ontario** as part of a demonstration project backed by the provincial government. The **Ontario** government contributed \$1 million toward the charging stations and an EV education and demonstration center at **Evergreen Brick Works** in **Toronto**.
- **Nissan Motor** unveiled the electric **Esflow** at the **Geneva Motor Show**. The style is similar to the **Z-series** two-seater.
- A subsidiary of the **SB LiMotive** joint venture (JV) between Samsung SDI and **Bosch** has been selected to develop advanced batteries for EVs with a U.S. consortium that includes **GM, Ford Motor** and **Chrysler Group**. The subsidiary will contribute half of the \$8.4 million investment for development.

A Few More Details:

Valence Technology announced it will supply the lithium-ion (li-ion) batteries for an electric vehicle (EV) designed by Courb (as shown in **Exhibit 1**). The C-ZEN be legally driven in many European countries and is targeted at urban commuters. The EV has a range of up to 205 kilometers (125 miles) with a top speed of 110 km/hour (68 mph) and is powered by a 15kW electric motor.

Exhibit 1: The Courb C-ZEN



Source: Valence Technology

EnerSys acquired ABSL Power Solutions (from CIP Industries). ABSL has been supplying li-ion cells and batteries for defense and aerospace applications in Europe and the U.S. (since 2000). The company has annual revenues in excess of \$30 million. ABSL batteries are used by soldiers around the world in portable communication systems. ABSL has operations in Longmont, Colorado; Thurso, Scotland and Culham, England.

Source: EnerSys

Coda Automotive reaffirmed plans to begin selling its EV during 2H11 this year in California. The EV can travel as far as 120 miles (193 kilometers) on a full charge and uses an electric motor from UQM Technologies. The vehicle is based on a Mitsubishi Motors chassis and is manufactured in Harbin, China, through a partnership with Hafei Motor. Final assembly takes place in CA. Lishen Miles Power Battery Systems (a joint venture between Coda and Tianjin Lishen Battery) will supply the lithium cells for the sedan's batteries.

Source: Bloomberg

Xerox's Palo Alto Research Center (PARC) has developed a new printing technology that could pack more energy into batteries for EVs. Researchers are printing a striped pattern of energy storage materials and manufacturing electrodes that are much thicker than those in conventional batteries. The technology could increase battery storage capacity by up to 30% and costs little more to manufacture.

Source: Technology Review

Genovation Cars announced that it will be partnering with K2 Energy Solutions for the use of its battery packs in its line of EVs (as shown in **Exhibit 2**). Tata Technologies is the prime contractor for the designing the Genovation's G2 model. K2's battery systems are based on a cathode material whose inherent safety and low cost makes them ideal for the large format systems.

Exhibit 2: The Genovation G2



Source: Genovation Cars

Sumitomo Electric Industries developed a rechargeable battery that could potentially end up costing about 10% of the li-ion batteries used in the consumer electronics industry. The company could commercialize the molten-salt battery around 2015.

Source: Marketwatch and Nikkei

Hertz has signed a letter of intent to add Renault's EVs to its European fleet. The company will add 500 Renault electric cars to its European fleet over two years. Hertz will rent Renault's electric Twizy, ZOE, Fluence Z.E. and Kangoo Z.E. models. The new Renault vehicles will be used by Hertz and car-sharing club Connect across Europe. The agreement is part of Hertz's Global Electric Vehicle Program and also plans to offer the electric version of the tiny fortwo, made by the Smart division of German automaker Daimler AG.

Source: Hertz Corporation

EnergyOne Technologies has signed a letter of intent with a private party to construct a 0.25 megawatt (MW) solar station in Frazer Park, California. The company plans to use its patented Photovoltaic-Capacitive Battery Storage (PCBS) solar panels that integrate a thin film solar cell with a thin film ultra-capacitor and a thin film Nickel Zinc storage battery all in a single multi-layered unit. EnergyOne plans to install up to 2MW of Nickel Zinc-Battery energy storage systems that will be charged with power from the grid at night and sold back to the utility during peak demand hours. The company anticipates construction to commence by end of 2011.

Source: Energy Business Review

BYD plans to begin selling EVs in Europe next year. The company is planning to launch the e6 and S6DM models by the end of 2012. A jointly produced EV by BYD and Daimler is scheduled to be launched in China in 2013. BYD plans to launch the e6 in the US in 1Q12.

Source: Financial Times

Talison Lithium is planning to double capacity at its Greenbushes lithium mine and processing facility in Australia due to increasing demand. Greenbushes will be expanded to process 740,000 tonnes (or 1,631 million lbs) of lithium carbonate annually up from 315,000 tonnes (or 694 million lbs) per year. The expansion will cost A\$65 million to A\$70 million (\$65.9 million to \$71 million). The company expects to ramp up production in 1Q12.

Source: Reuters

Toyota Motor Corp will price the li-ion battery version of its Prius hybrid wagon at 3 million yen (or \$36,437). The EV is due out in late April. The Prius wagon using a nickel-metal hydride battery will start at 2.35 million yen (or \$28,542).

Source: Reuters and Nikkei

Prudent Energy has completed the installation of a 1 MWh Vanadium Redox Battery (VRB) energy storage system for the China Electric Power Research Institute in Zhangbei, Hebei province in northern China. The project is part of the National Wind Power Integration Research and Test Center of China (NWIC), owned by State Grid Corporation of China (SGCC), using 30 wind turbines with at least 78 MW of generating capacity, 640 kW of solar photovoltaic capacity and 2.5 MW of energy storage .

Source: *Renew Grid*

The Department of Defense is planning to collaborate with the Energy Department's Advanced Research Projects Agency-Energy (ARPA-E) to develop power storage technologies that could also have civilian applications. ARPA-E fosters the development of technologies that private companies consider too risky. The entity was created in 2007 and is wholly funded by the government's 2009 stimulus package.

Source: *Reuters*

The Holland Board of Public Works has approved a contract with ChargePoint America for 17 charging stations from to the area. The effort is in conjunction with the two battery plants now under construction in Holland. Local officials hope that adding electric vehicle charging station will help Holland look like a hub for the battery industry.

Source: *The Holland Sentinel*

The city of Chandler announced plans to begin installation of 900 residential charging stations, The stations will be provided by ECOtality. Phoenix and Tucson are among two areas in 17 states where ECOtality has partnered with the Department of Energy for a \$230 million project to install charging stations for electric vehicles.

Source: *The Republic*

Estonia is planning to sell 10 million carbon credits to Mitsubishi and use the proceeds to set up a nationwide network of charge-points for EVs. About 500 i-MiEVs will be provided to local authorities for use by social workers. The government has approved the sale of the unused credits -- tradeable allowances granted by Brussels to European Union members in a drive to limit greenhouse gas emissions by industry.

Source: *AFP*

Eight new electric vehicle charging stations have been installed in southern Ontario as part of a demonstration project backed by the provincial government. Corporate fleets from Ontario's largest municipally owned electric utilities, PowerStream and Veridian Connections will use the stations in Toronto, Markham, Vaughan, Barrie, Bowmanville and Ajax during a one-year pilot project. Each spot can charge two vehicles at once. The Ontario government contributed \$1 million toward the charging stations and an EV education and demonstration center at Evergreen Brick Works in Toronto.

Source: *Toronto Sun*

Nissan Motor unveiled the electric Esflow (as shown in **Exhibit 3**) at the Geneva Motor Show. The style is similar to the Z-series two-seater. The EV has two electric motors driving the rear wheels that can propel the vehicle from zero to 62 miles per hour (100 kilometers per hour) in less than 5 seconds and can travel about 150 miles on a charge.

Source: *WSJ*

Exhibit 3: All-Electric Nissan Esflow

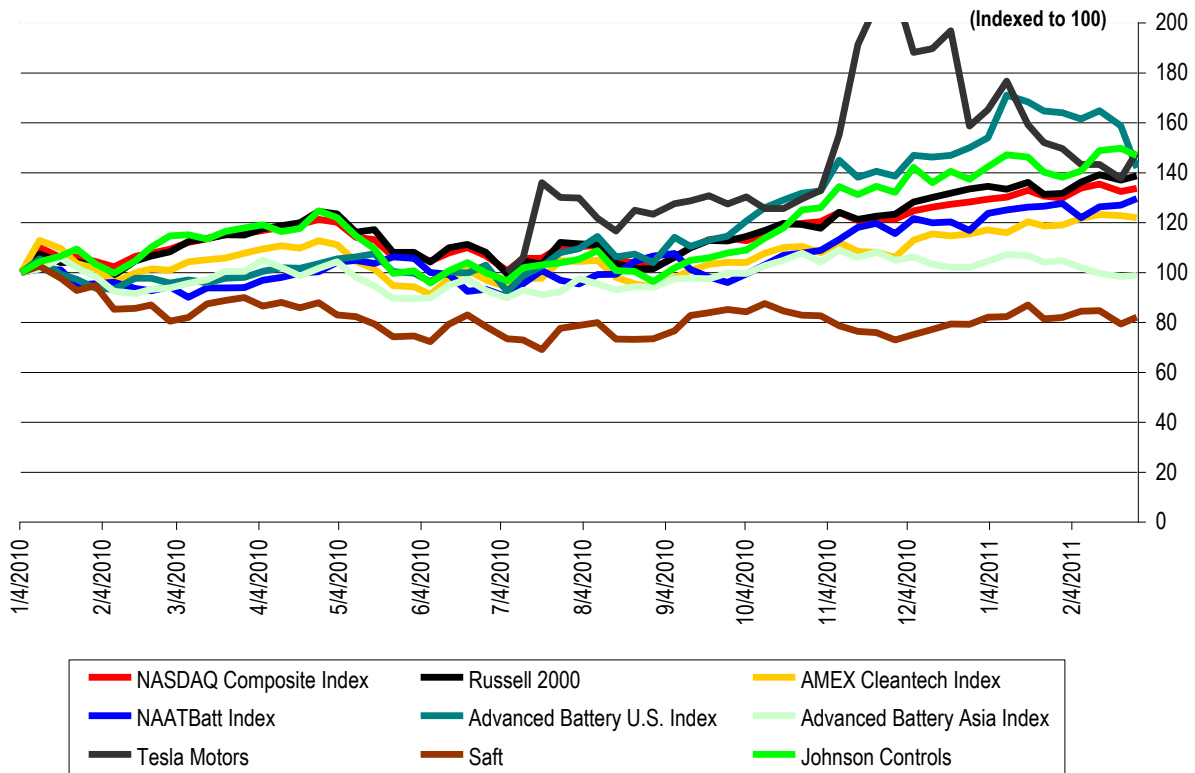


Source: Nissan Motor Co.

A subsidiary of the SB LiMotive joint venture (JV) between Samsung SDI and Bosch has been selected to develop advanced batteries for EVs with a U.S. consortium that includes GM, Ford Motor and Chrysler Group. The United States Advanced Battery Consortium (USABC) will jointly develop high-energy li-ion batteries. The subsidiary will contribute half of the \$8.4 million investment for development.

Source: Reuters

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

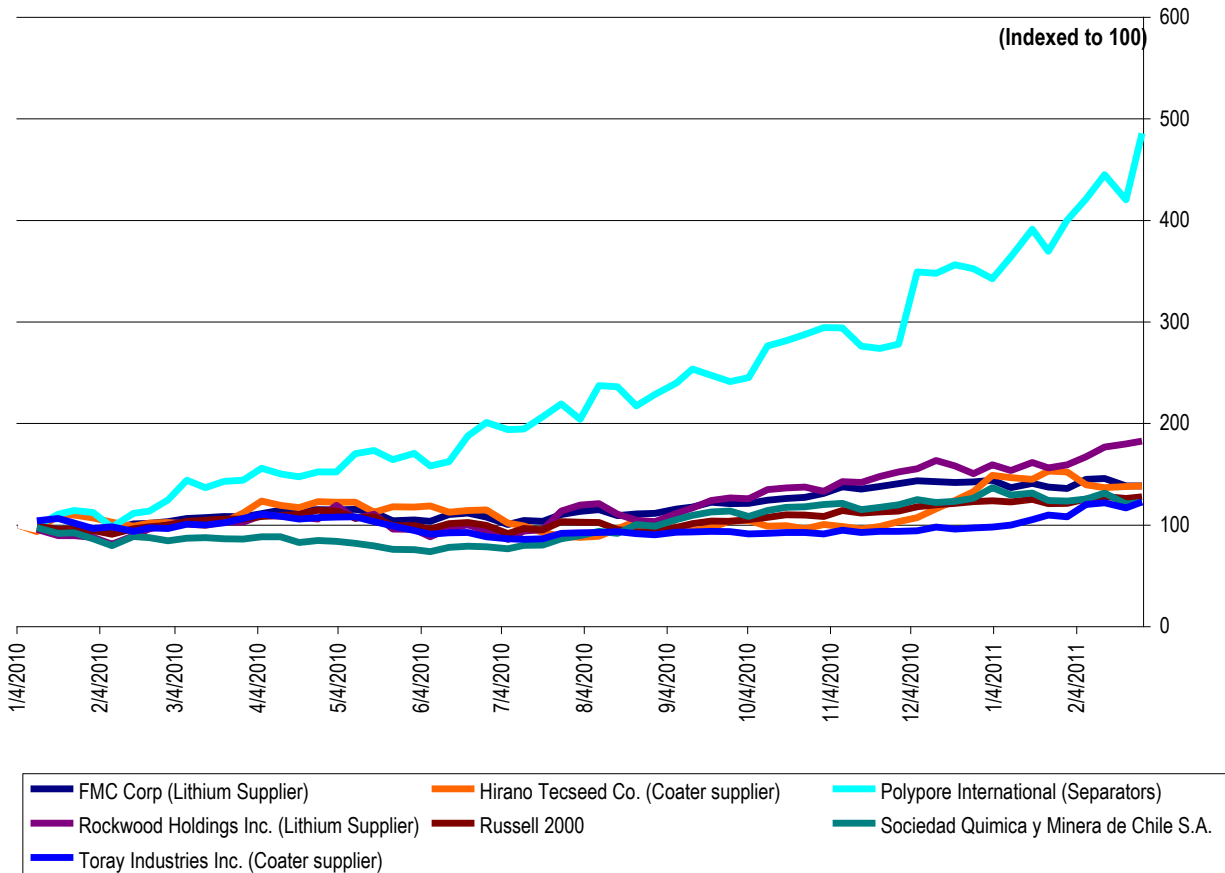


Index	Close on 2/28/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	12,226.3	12,418.0	98.5%	18.4%	4.8%	0.1%
S&P 500	1,327.2	1,344.1	98.7%	20.1%	4.4%	0.9%
NASDAQ	2,782.3	2,840.5	97.9%	23.8%	3.4%	0.9%
Russell 2000	823.5	838.0	98.3%	30.6%	3.1%	1.3%
AMEX Cleantech Index	1,196.5	1,236.8	96.7%	20.1%	4.2%	(0.6%)

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)



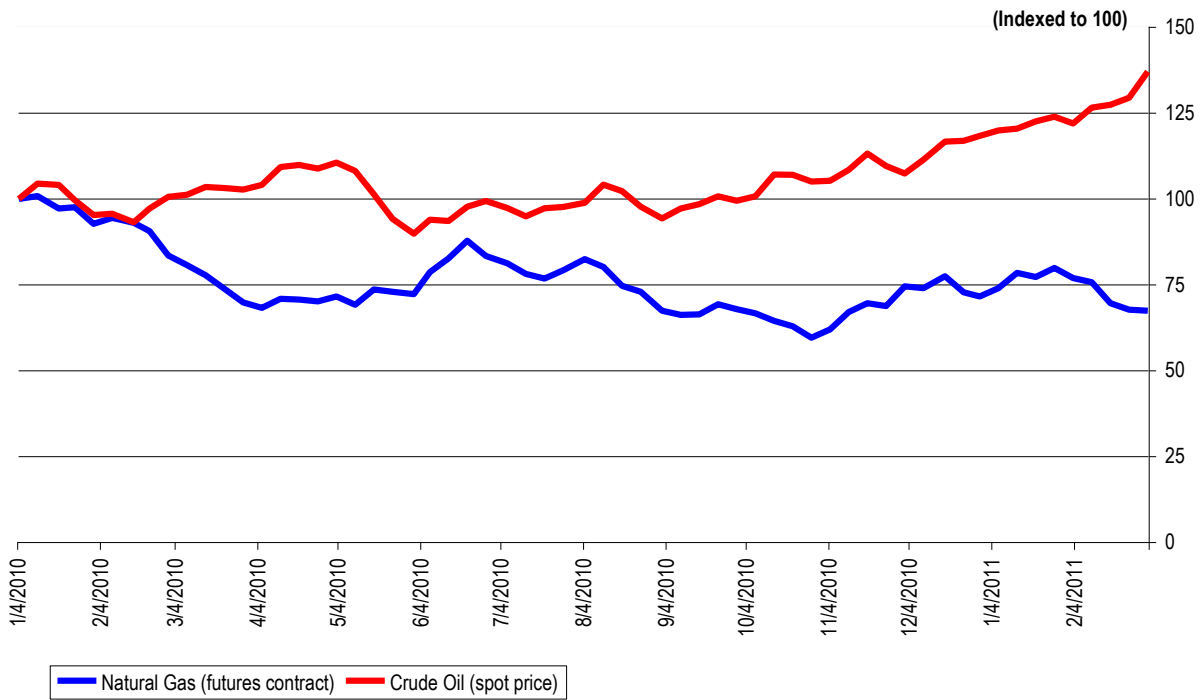
Source: Bloomberg

Exhibit 6: Commodity Prices

Commodity	Price on 2/28/2011	Price on 2/22/2011	Price on 1/28/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	9,857	9,653	9,585	2.1%	2.8%
LME Lead (cash, \$ per tonne)	2,533	2,563	2,544	(1.2%)	(0.4%)
LME Nickel (cash, \$ per tonne)	28,830	28,860	26,820	(0.1%)	7.5%

Source: LME

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



Source: EIA

Executive Director's Notes



RETHINKING ENERGY EFFICIENCY PORTFOLIO STANDARDS

Over the past decade 28 states have adopted Energy Efficiency Portfolio Standards (EEPS) to encourage conservation and the more efficient use of electric energy. Although well-intentioned the wisdom of certain EEPS schemes is being called into question as the social desirability of using more clean and renewably generated electricity to displace fossil fuels becomes increasingly clear.

No social harm comes from using an electron. Electrons perform useful work and make life easier. Electrons that displace btu's generated by burning petroleum are particularly beneficial. The more petroleum we can replace with clean or renewably-generated electricity the better. Simply conserving electricity without reference to its source or time of use provides no particular benefit. Any benefit from general conservation comes by accident. The number of electrons used is not important; where they come from and at what times they are transmitted are the relevant questions and should be the measures of true electric efficiency.

EEPS schemes aimed at simply reducing total electricity usage need to be rethought and revised. Policies that restrict electricity supply and thereby increase the cost of electric vehicle fuel relative to gasoline are positively harmful and counterproductive. As the first mass market plug-in electric vehicles enter service, this counter productivity is no longer theoretical. It must be addressed and corrected immediately.

EEPS schemes that focus on efficiency must first define what efficiency really means in the context of electricity. It does not mean simply using less. Efficiency means generating electrons more cleanly and transmitting them more evenly throughout the course of the day, in order to reduce the strain on the grid. Distributed energy storage is the key enabling technology of true electric efficiency. States should promptly revise their EEPS standards to incentivize investment in the true efficiency represented by DES systems rather than in simplistic schemes to reduce total electricity usage, which have at best accidental utility.



James J. Greenberger
Executive Director

March 4, 2011

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March 4, 2011
Vol. 2 No. 9





NAATBatt Membership Applications for 2011

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. 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 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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- **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 28th 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 4th 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: 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/.

- **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).
- **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.



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