

Summary:

For the December 23rd issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt, U.S. and Asia Indices dropped 4.6%, 10.4% and 5.2%, respectively. The S&P500 and Russell 2000 Indices were also down 2.5% and 3.4%, respectively.

Executive Director James Greenberger discusses SDG&E's recent request to levy a network use charge on its solar-owning customer and the issues that request raises for both the solar and energy storage industries. Read "***Allocating the Costs of Distributed Energy Systems***" in the Executive Director's Notes portion of this newsletter below.

Key Highlights:

- A new diesel-electric hybrid bus has been officially launched in **London** and will go into service next year. The lithium-ion (li-ion) battery pack is being supplied by **Valence Technology**.
- **Dow Chemical** and **Turkish** synthetic fiber maker **Aksa Akrilik Kimya Sanayii AS** will set up a 50-50 joint venture (JV) to invest \$1 billion in carbon fiber production within five years. The JV will offer integrated carbon fiber composite solutions to global energy, transportation and infrastructure markets.
- The **Opel Ampera**, **Europe's** version of the **Chevrolet Volt**, will sit in showrooms until the li-ion battery issue is resolved. The manufacturer is targeting to sell up to 10,000 Amperas next year.
- **A123 Systems** announced that it will supply an 11 megawatt (MW) Grid Battery System (GBS) to **Sempra Generation** for the **Auwahi Wind** project in **Maui, Hawaii**. The **Hawaii Public Utilities Commission** has approved a 20-year contract for **Maui Electric Company** to purchase the electricity produced at **Auwahi**.
- A **Switchable Electric Car Experience Centre** has officially opened in **China's** third largest city – the **Pearl River New Town of Guangzhou**. The center is a joint project between **Better Place** and **China Southern Grid**.
- **Kia Motors** has introduced **Korea's** first electric vehicle (EV) with the launch of the new **Kia Ray EV**. It is a "city car" with an 86-mile range between charges.
- **Car Charging Group** and **Federal Realty Investment Trust** announced a partnership to install charging stations across Federal Realty's portfolio of 18.6 million square feet of high quality retail assets in strategically selected metropolitan markets in the **Northeast, Mid-Atlantic** and **California**.
- **A123 Systems** announced it has shipped a GBS to **Maui Electric Company (MECO)**. The system will be installed at MECO's **Wailea** substation on Maui.
- **A123 Systems** announced a pilot project with **NSTAR** to study the performance and reliability benefits of implementing a GBS within a suburban electric grid. The system is proposed for installation at a substation in **Medway, Mass.** and is expected to be operational in 2012.

- **Lubbock Citibus** announced the addition of two new eco-friendly hybrid electric buses. This is the second step Citibus has taken toward its goal of changing the entire fleet to alternative fuel buses as Citibus received six e-Hybrid buses in November 2009.

A Few More Details:

A new diesel-electric hybrid bus (as shown in **Exhibit 1**) has been officially launched in London and will go into service next year. The New Bus for London offers zero tailpipe emissions (and silent) electric-only running so long as the batteries are topped up. The battery pack is being supplied by Valence Technology.

Exhibit 1: New Diesel Electric Hybrid Going into Service



Source: MSNBC

Dow Chemical and Turkish synthetic fiber maker Aksa Akrilik Kimya Sanayii AS will set up a 50-50 joint venture (JV) to invest \$1 billion in carbon fiber production within five years. The JV will offer integrated carbon fiber composite solutions to global energy, transportation and infrastructure markets. Dow views the carbon fiber composites industry to be worth an estimated \$10 billion, and projected it to reach a value of \$40 billion by 2022.

Source: The Saginaw News

The Opel Ampera, Europe's version of the Chevrolet Volt, will sit in showrooms pending resolution by American investigators of a battery fire question related to crash tests of the Volt. Several hundred Amperas built in Hamtramck, Mich., along with the Volt began arriving late last month at dealerships in France, Germany, Switzerland, Belgium and the Netherlands. The manufacturer is targeting to sell up to 10,000 Amperas next year. Opel/Vauxhall plans to have three separate product introductions for the Ampera. The price for the EV starts at 42,900 Euros (or \$56,000).

Source: The New York Times

A123 Systems announced that it will supply an 11 megawatt (MW) Grid Battery System (GBS) to Sempra Generation for the Auwahi Wind project in Maui, Hawaii. The advanced energy storage solution is designed to smooth variable wind power generation, which is expected to help maintain the stability to Maui's electric grid. When fully operational, the 21MW Auwahi Wind project is expected to be capable of generating enough energy to power the equivalent of 10,000 homes, and the Hawaii Public Utilities Commission has approved a 20-year contract for Maui Electric Company to purchase the electricity produced at Auwahi.

Source: A123 Systems

A Switchable Electric Car Experience Centre has officially opened in China's third largest city – the Pearl River New Town of Guangzhou. The center is a joint project between Better Place and China Southern Grid – the country's 2nd largest utility and the 8th largest utility worldwide. CSG serves 230 million people and if only 1% of the population switch to an EV, that's worth 2.3 million sales -- a figure is twice the size of the entire annual new car market in Australia.

Source: *Business Spectator*

Kia Motors has introduced Korea's first electric vehicle (EV) with the launch of the new Kia Ray EV (as shown in **Exhibit 2**). It is a "city car" with an 86-mile range between charges. Top speed is about 130 mph. Recharging times are six hours using a 220-volt household current and 25 minutes in fast-charge mode. The batteries are designed to last 10 years.

Source: *USA Today*

Exhibit 2: The Ray EV



Source: *Kia*

Car Charging Group and Federal Realty Investment Trust announced a partnership to install charging stations across Federal Realty's portfolio of 18.6 million square feet of high quality retail assets in strategically selected metropolitan markets in the Northeast, Mid-Atlantic and California. During the first phase of the program, stations will be installed at the following Federal Realty Investment Trust properties:

- Santana Row in San Jose, California
- Bethesda Row in Bethesda, Maryland
- Congressional Plaza and Rockville Town Square in Rockville Maryland
- Pentagon Row and The Village at Shirlington in Arlington, Virginia

Source: *Car Charging Group*

A123 Systems announced it has shipped a GBS to Maui Electric Company (MECO). The system will be installed at MECO's Wailea Substation on Maui. Led by MECO and the Hawaii Natural Energy Institute, the Maui Smart Grid Project is designed to help MECO demonstrate and evaluate new technologies for operating the electric grid more efficiently.

Source: *A123 Systems*

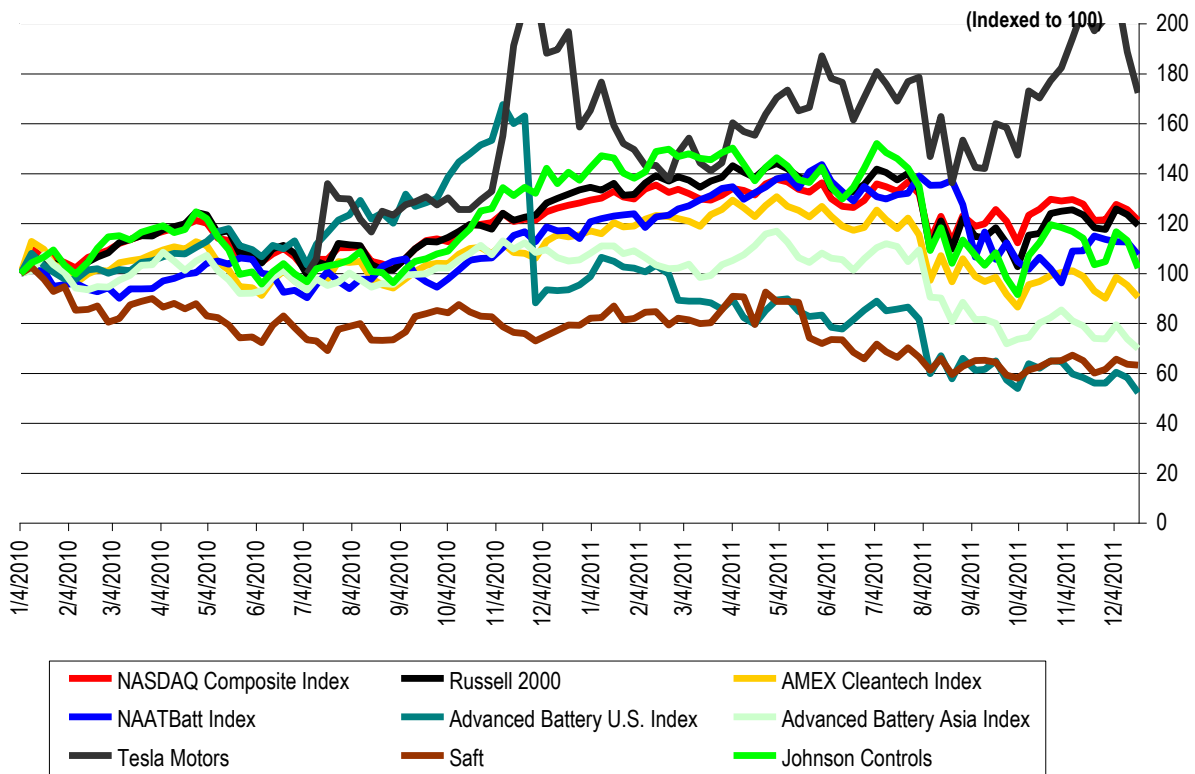
A123 Systems announced a pilot project with NSTAR to study the performance and reliability benefits of implementing a GBS within a suburban electric grid. The system is proposed for installation at a substation in Medway, Mass. and is expected to be operational in 2012. Under the terms of the agreement, one of A123's two-megawatt (2MW) GBS solutions is proposed to be interconnected to the power grid at NSTAR's substation in Medway.

Source: *A123 Systems*

Lubbock Citibus announced the addition of two new eco-friendly hybrid electric buses. This is the second step Citibus has taken toward its goal of changing the entire fleet to alternative fuel buses as Citibus

received six e-Hybrid buses in November 2009. The buses have proven cost effective in consuming almost half the amount of diesel of other buses, saving about \$75 a day per bus. The Allison Electric Drive transmission regenerates the electricity as the driver slows the bus down in drive mode,
Source: Lubbock Avalanche-Journal

Exhibit 3: Indices Performance
 (From January 4, 2010)

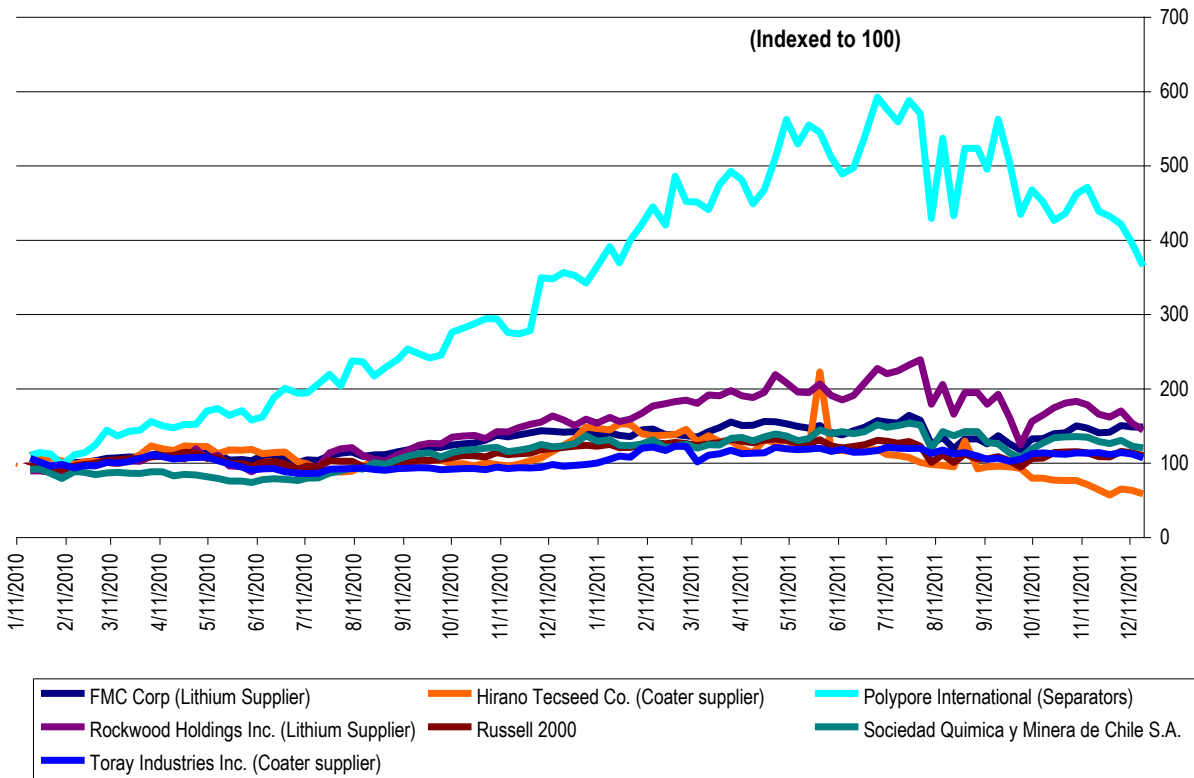


Index	Close on 12/19/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	11,766.3	12,928.5	91.0%	2.4%	0.8%	(2.1%)
S&P 500	1,205.4	1,370.6	87.9%	(3.2%)	(5.2%)	(2.5%)
NASDAQ	2,523.1	2,887.8	87.4%	(4.9%)	(6.3%)	(3.4%)
Russell 2000	708.6	868.6	81.6%	(9.1%)	(11.3%)	(3.4%)
AMEX Cleantech Index	887.8	1,298.6	68.4%	(21.3%)	(22.7%)	(5.0%)

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 4: Supplier Performance
(From January 4, 2010)



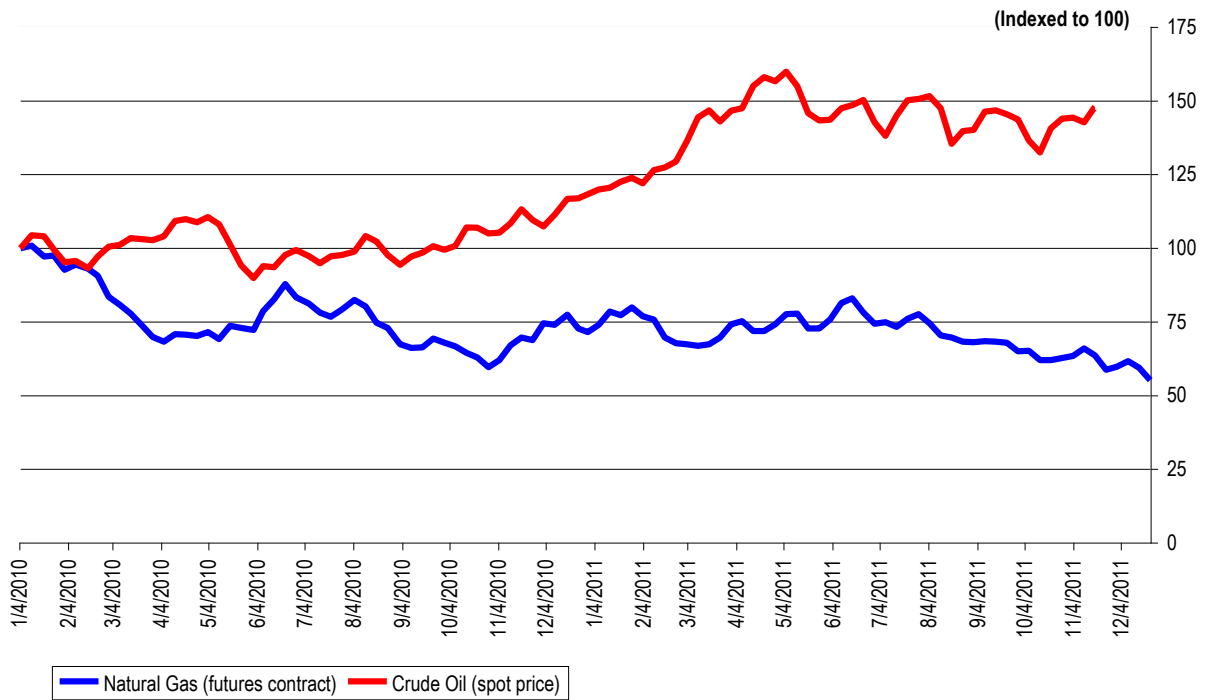
Source: Bloomberg

Exhibit 5: Commodity Prices

Commodity	Price on 12/19/2011	Price on 12/12/2011	Price on 11/18/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	7,286	7,611	7,582	(4.3%)	(3.9%)
LME Lead (cash, \$ per tonne)	1,937	2,087	1,996	(7.2%)	(3.0%)
LME Nickel (cash, \$ per tonne)	18,345	18,260	17,925	0.5%	2.3%

Source: LME

Exhibit 6: Natural Gas and Crude Oil
 (From January 4, 2010)



Source: EIA

Executive Director's Notes



ALLOCATING THE COSTS OF DISTRIBUTED ENERGY SYSTEMS

This past October, San Diego Gas & Electric (SDG&E) requested that the California Public Utilities Commission (CPUC) approve a plan under which net-metered PV customers would be required to pay a “network use charge” designed to divide operational costs among solar-owning and non-solar-owning customers more equitably.

The proposal has raised howls of protests from PV solar installers in Southern California, who fear that the new charge will undermine the economics of distributed solar generation. This unfolding dispute should be of interest to the energy storage community because the operational costs at issue likely include the costs of distributed energy storage necessary to regulate power on parts of SDG&E’s distribution system impacted by high levels of distributed solar penetration.

NAATBatt takes no side in the dispute between SDG&E and the solar installers, as the dispute turns primarily on questions of California law. However, the controversy highlights a tension that will certainly be revisited in jurisdictions around the country as distributed solar generation systems and distributed energy storage systems are deployed.

The tension, of course, is between the longstanding principle in utility economics of “user pays” and the equally longstanding principle that, in order to provide a certain agreed-upon level of utility service to the general population, certain costs of providing that service must be socialized rather than borne by individually identified users.

Both distributed solar energy and distributed energy storage have attributes that make their deployment desirable to society as a whole in addition to the customers who benefit from them most directly. A strong argument can be made, therefore, that in setting things such as “network use charges”, utilities and utility regulators should not impose the full costs of such systems on the customers who benefit from the systems most directly, but should instead be socializing the costs of those systems (or at least a portion of the costs) among all electricity consumers.

One of the challenges that the solar industry and the energy storage industry share in common is the necessity of their advocating for socializing a significant portion of their system costs. Absent an ability to socialize a significant portion of their respective system costs, it is unlikely that distributed solar generation systems or distributed energy storage systems will ever be sufficiently cost-effective to individual users to result in their widespread deployment. Too often, however, advocating for the

socialization of costs pits our industries against utilities and consumer groups in a battle over subjective principles decided less by objective merit than by relative political leverage.

As we enter 2012, we need to develop a better approach to dealing with this inevitable tension between private and public benefit in the deployment of distributed solar and distributed energy storage systems. The solar industry and the energy storage industry need to develop a coherent theory for socializing a certain percentage of their system costs, which can be used in the jurisdictions around the country that will soon join the CPUC in having to address this issue.



James J. Greenberger
Executive Director

December 23, 2011

NAATBatt Membership Applications for 2012

2012 Membership Applications and Dues Structure

NAATBatt is now accepting applications for membership for the 2012 calendar year. Membership dues for 2012 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. Companies purchasing 2012 memberships will be entitled to the benefits of membership during the balance of the 2011 calendar year. Please click on <http://naatbatt.org/membership-inquiry/> and indicate that you are interested in a 2012 membership.

Why Join NAATBatt?

NAATBatt's mission is to grow the market for advanced electrochemical energy storage technology in North America. We concentrate primarily on two markets: electric drive for motor vehicles and distributed, grid-connected electricity storage.

NAATBatt members enjoy a variety of exclusive benefits including: discounted admission to NAATBatt conferences; admission to by invitation-only NAATBatt workshops, such as the Workshop on Distributed Energy Storage that NAATBatt co-sponsored last April in Chicago with the U.S. Department of Energy; admission to Members-Only Site Visits, at which one NAATBatt firm will host all other NAATBatt members for a tour of the host's facility; the opportunity to announce news and new product developments in the Member's News section of the widely read NAATBatt Advanced Battery Weekly; free access to speaker presentations made at NAATBatt programs and workshops; and invitations to attend private meetings with government leaders, such as the NAATBatt-sponsored trip to Washington last year to meet with Chairman Jon Wellinghoff of FERC.

NAATBatt membership also helps support the development of an important industry that could just change the world. NAATBatt provides 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 thought leadership on issues relating to energy storage markets and technology through the NAATBatt blog.

NAATBatt recently held its 2nd Annual Meeting and Conference in Louisville, Kentucky, which included the 1st Industry-Academic Advanced Battery Summit. The Summit is a new program that NAATBatt has started to encourage the more efficient transfer of advanced battery technology from leading U.S. research universities to industry. NAATBatt identified and brought to Louisville representatives from 15 of the top university advanced battery programs around the country to make flash presentations to industry about what those programs are working on and what technology they have available to license. In all there were 48 high quality presentations made at the Conference and the Summit, copies of which are available to conference attendees and NAATBatt members only.

NAATBatt will soon announce two other initiatives for the benefit of its members that will increase their access to capital and play an important role in growing the market for advanced electrochemical energy storage. Please stand by for some very interesting developments.



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

SAVE THE DATE!!! NAATBatt will hold a **workshop on thermal runaway in traction batteries** at the University Club in Chicago, Illinois on **April 3, 2012**. The workshop will permit industry leaders to hear from the top experts and researchers in North America about addressing thermal runaway issues through better design of electrolytes, cathode materials, anode material and battery cells. Admission will be open to NAATBatt members and special invitees only. More information about the workshop will be available soon on the workshop Web site, which can be accessed through www.naatbatt.org or by clicking [here](#).

Presentations from the NAATBatt 2011 Annual Meeting and Conference Now Available: Speaker presentations, speaker bios and attendee lists from the just concluded NAATBatt's 2011 Annual Meeting and Conference are now available on the NAATBatt Web site. Go to www.naatbatt.org and navigate to the 2011 Annual Meeting and Conference link to view them. The links are password protected, and the password is available to NAATBatt members and conference attendees for no charge. Others may purchase access to the presentations for \$250. Please contact Jim Greenberger at jgreenberger@naatbatt.org for your password. Photos from the conference will be posted shortly.

Presentations from the Workshop on Distributed Energy Storage Posted: Presentation materials, handbooks, attendee lists and working group discussion summaries from the April 21, 2011 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. Please contact Jim Greenberger at jgreenberger@naatbatt.org for your password.

Presentations from the NAATBatt 2010 Annual Meeting and Conference are 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.

- **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 Battery Association – Pacific Power Source Symposium Joint Meeting 2012:** The 2012 meeting of the International Battery Association and Pacific Power Source Symposium will be held on **January 9-13, 2012** at the Hilton Waikoloa Village in Hawaii. Information about the program may be viewed at: <http://www.soest.hawaii.edu/PPSS/index.htm>.
- **IEEE PES Conference on Innovative Smart Grid Technologies:** The IEEE PES Conference on Innovative Smart Grid Technologies will be held on **January 16-20, 2012** at the Washington Marriott Wardman Park hotel in Washington, D.C. The conference will examine a wide range of smart grid technologies, including energy storage. Information about the conference can be found at: <http://www.ieee-isgt.org/>
- **2nd Annual 10X Advanced Battery R&D:** The 10x Advanced Battery R&D conference: Breaking Barriers in Advanced Battery Performance and Value will be held on **January 23-24, 2012** in Santa Clara, California. The conference will examine next generation technologies that may dramatically reduce battery costs and/or increase battery energy density. NAATBatt is a supporting organization of the conference.
- **12 International Advanced Automotive Battery Conference:** The 2012 International Advanced Automotive Battery Conference (AABC) will be held on **February 6-10, 2012** in Orlando, Florida. The program will feature five days of intensive meetings, symposia and tutorials. Information about the program can be found at: <http://www.advancedautobat.com/>.
- **Electric Vehicle & Infrastructure Summit:** The Electric Vehicle & Infrastructure Summit will be held on **February 22-23, 2012** at the Double Tree Toronto Airport in Toronto, Canada. The Summit will focus on the collaboration necessary to implement electric cars in Canada. Information about the program can be found at: http://www.evehiclesummit.com/?utm_source=streamsend&utm_medium=email&utm_content=15056571&utm_campaign=EV%20Summit%202012.
- **The 29th International Battery Seminar & Exhibit:** Powersources.net will present the 29th International Battery Seminar & Exhibit at the Broward County Convention Center in Fort Lauderdale, Florida on **March 12-15, 2012**. The Seminar will discuss the state of the art of worldwide energy storage technology developments for portable products, power and vehicular applications. The Web site for the conference can be found at: <https://powersources.net/florida/frameset.html>.
- **TREM 12: Critical Energy & Defense Materials Policy Conference:** The IAGS Technology & Rare Earth Metals Center will hold the Critical Energy & Defense Materials Policy Conference in Arlington, Virginia on **March 13-14, 2012**. More information about the conference can be found at: http://tremcenter.org/index.php?option=com_content&view=category&layout=blog&id=118&Itemid=541.

- **NAATBatt Workshop on Thermal Runaway:** NAATBatt will hold a technical workshop on strategies for addressing thermal runaway in lithium-ion traction batteries. The workshop will be held in Chicago on **April 3, 2012**. More information about the program will be released shortly.
- **Advanced Lithium Ion Battery International Symposium:** Active Communications International will host the Advanced Lithium Ion Battery International Symposium on April 18-20, 2012 in Charlotte, NC focusing on R&D efforts aimed at lithium-ion batteries. The conference Web site may be viewed at: <http://www.wplgroup.com/aci/conferences/advanced-lithium-ion-battery-international-symposium.asp>
- **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/>.
- **5th Symposium on Energy Storage: Beyond Lithium Ion:** The 5th Symposium on Energy Storage: Beyond Lithium Ion will be held in Berkeley, California on **June 5-7, 2012**. The Symposium will focus on next generation battery technologies, such as silicon anode technology, lithium sulfur batteries and lithium air. More information can be found at: <http://bestar.lbl.gov/bli5/program/>.
- **Next Generation Batteries 2012:** Knowledge Foundation will host Next Generation Batteries 2012: New Battery Chemistries & System Designs - Lithium & Beyond in Las Vegas on **June 7-8, 2012**. More information about the program can be found at: http://www.knowledgefoundation.com/viewevents.php?event_id=275&act=evt
- **45th Power Sources Conference:** The 45th Power Sources Conference will be held at Bally's Las Vegas Hotel in Las Vegas on **June 11-14, 2012**. The meeting will focus on energy generation and storage technology (largely, but not exclusively, electrochemical), which is of interest to the U.S. Department of Defense, other government agencies, and to the civilian marketplace. More information can be found at: <http://www.powersourcesconference.com/>.
- **ITEC 2012:** The 2012 IEEE Transportation Electrification Conference and Expo will be held on **June 18-20, 2012** at the Hyatt Regency Dearborn, in Dearborn, Michigan. ITEC is focused on components, systems and standards for efficient power conversion for all types of electrified transportation. More information can be found at: <http://itec-conf.com/>
- **The Battery Show:** The Battery Show: The Expo for Advanced Batteries will return to Novi, Michigan on **November 13-15, 2012** and will be co-located with a new event, entitled "Charging Infrastructure Expo 2012." More information about the show and expo can be found at: <http://www.thebatteryshow.com/>.



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