NEW YORK BATTERY AND ENERGY STORAGE TECHNOLOGY CONSORTIUM

NEWSLETTER

July 24, 2019

Dear NY-BEST Members and Colleagues,

Last week, NY-BEST was proud to be on hand as Governor Cuomo made a series of important environmental announcements at Fordham University. The first was the signing of the landmark Climate Leadership and Community Protection Act, the most aggressive and comprehensive climate legislation in the nation. The new law sets out a pathway for achieving an 85 percent reduction in greenhouse gas emissions, from 1990 levels, economy-wide by 2050 and 100 percent carbon-free electricity by 2040. The

legislation includes a goal of deploying 3 GW of energy storage on the state's electric grid and envisions new efforts to reduce emissions in the transportation sector. Along with signing the climate legislation, Governor Cuomo announced the winners of the first offshore wind procurement in New York State. Ørsted, in partnership with Eversource Energy, and Equinor were selected as the winners of the offshore wind procurement and together will install 1,700 MW of capacity by 2024. This represents the single largest renewable energy procurement by any state and is an important step toward achieving the state's goals, which include 9,000 MW of offshore wind by 2035.

NY-BEST Energy Storage Technology and Innovation Conference

On October 2, 2019 NY-BEST will be hosting our annual Energy Storage Technology and Innovation Conference in Rochester, NY. We are currently accepting technical poster submissions, from companies, researchers, academics and students, for the conference. Students are invited to give a summary of their research during the "lightning round" session of the conference, and the top 3 presenters winning monetary prizes. Poster submissions must be submitted electronically to NY-BEST at weaver@ny-best.org **no later than 5:00 PM ET on Tuesday, September 10, 2019.** Please include "NY-BEST Technical Poster Submission" in the subject line of your submission.

Sponsorship opportunities are filling up quickly, so we encourage interested companies to reach out quickly to the NY-BEST team, at weaver@ny-best.org. Sponsorship opportunities start as low as $500, and we can tailor sponsorship opportunities to a company's specific needs. Reach out with any question you may have

NYISO Update

The NYISO has completed the 2017 Class Year Interconnection process, meaning that the 2019 class year will be underway soon. Registration to enter the 2019 class year is open from August 9 – August 16, so it is important to move quickly for projects that you wish to move forward.

The NYISO will be hosting a special session on the application of buyer-side mitigation rules to NYSERDA's energy storage incentive on Friday, July 26. NY-BEST requested this information session and are hopeful it will provide important information for determining the economics of wholesale energy storage projects over the next several years. Reach out to the NY-BEST Team for more information.

NY-BEST Services

NY-BEST is partnered with NYSERDA through its Soft Cost Reduction Program to offer technical assistance for any companies looking to develop energy storage projects in the state. Whether you are considering customer sited, distribution-level, or wholesale energy storage projects; our experts can provide helpful information to simplify the path forward. Contact us at info@ny-best.org for more information.

We'd like to remind energy storage start-ups that NY-BEST offers expert incubation services to qualifying New York based start-ups through our NY-BEST BRIDGE program. Applications for the program can be found on our website. If you have any questions, please contact us at info@ny-best.org.

For companies interested in battery and energy storage product development and testing services, remember that NY-BEST, together with our partners, offers a variety of services and resources that are available to members for discounted rates, including battery testing services at the BEST Test and Commercialization Center, and prototyping services at the Battery Prototyping Center at RIT.

We would like to welcome the newest members of NY-BEST:

Savion, LLC (New York, NY) - was formed as part of Green Investment Group's (GIG) acquisition of Tradewind Energy's solar and storage project development portfolios and team. Following closing of the transaction, two of Tradewind's former Principals will lead the Savion team that brings over 15 years of experience in solar and storage development. In partnership with GIG, Savion is one of the country's most experienced utility-scale solar and energy storage development teams, with a vision for the transformation of the country's electricity supply to renewable sources.

Best Regards,

William Acker
Executive Director

Upcoming Events

NY-BEST Energy Storage Innovation Conference

Oct 2, 2019 8:00 am - 6:30 pm

Clean Energy and Energy Storage Technologies: Growing a Clean Energy Economy

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NY-BEST Capture the Energy 2020

Apr 1 - 2, 2020

Save the date for NY-BEST's Annual Conference Capture the Energy, April 1-2, 2020

Member Spotlight: ForeFront Power

ForeFront Power is a solar and energy storage project developer based out of San Francisco, CA with satellite offices in New York, Colorado, and Mexico. ForeFront was established in January 2017, after the successful acquisition of SunEdison’s Commercial and Industrial division by Mitsui & Co....

Latest News

The Latest News From The Battery And Energy Storage Industry

Funding Opportunities

NY-BEST members received information in this newsletter about upcoming funding opportunities. Becoming a member is easy and economical. Visit http://www.ny-best.org/Join for more information.

If your organization is a NY-BEST member, simply login to access all funding opportunities.

No account? Click "Create New Account" from the login page.

NY-BEST Member News

State, PSEG, and LIPA Offer New Incentives for Installing Home Battery Systems

New York State, PSEG and LIPA are offering new incentives for Long Island homes and businesses to install energy-storage batteries as part of a $15 million plan to expand the nascent sector. The systems can provide a home or business with enough juice to operate critical functions during an outage, particularly when coupled with a solar-energy system to charge them. The state plans to spend $55 million on energy storage systems in the next few years as part of a plan to install some 3,000 megawatts of battery storage statewide by 2030. One new incentive from the New York State Energy Research and Development Authority would provide homeowners with upfront funding to help cover the cost of the battery systems, which for typical homes can run between $7,000 and $10,000. NYSERDA's offer would defray around $2,500 off the cost of a typical system rated at 10 kilowatt-hours, said Mike Voltz, director of energy efficiency and renewable programs at PSEG Long Island.

Stem Steps Into Grid-Scale Storage With Partnership in Massachusetts

Stem is jumping from behind-the-meter energy storage into the grid-connected battery realm. The decade-old startup, known for using batteries to help commercial customers manage demand charges, just stepped to the front of the meter market. Stem will build 28.2 megawatts/28.2 megawatt-hours of solar-paired energy storage across five sites in Massachusetts, working with private equity firm Syncarpha Capital, which develops, owns and operates solar plants. The partnership, announced Tuesday morning, reflects

two recent trends in Stem's evolution since the early days of commercial storage. After years of developing storage projects internally, and even building its own battery enclosures back in the early days, Stem shifted course recently to deliver more projects through partnerships with solar installers. The strategy takes advantage of growing interest in storage development among local and regional commercial solar installers, while reducing customer-acquisition costs for Stem.

Private Equity Investment in Storage Expected to Increase as ECP Buys Convergent

Investments in the energy storage sector have been sluggish, with big investments coming primarily from corporate venture capital, such as big oil companies. Therefore, the investment of private equity fund ECP, which has about $19 billion in capital commitments, is a "pretty big step for the industry," Wedding said. Citing data from analytics website AngelList, Wedding said the average valuation for an early stage energy storage company is roughly $6.2 million as of Thursday morning. "No private equity firm could possibly dip their toes in the water with a company with so little valuation," he said. "Being at a private equity firm for about a decade [myself], big dollars means you have to do big deals, and given the state of the energy storage market, most of the deals are not big."

EnelX Launches New Electric Mobility Business in North America

Enel X, the Enel Group’s advanced energy services business line, launched its new electric mobility unit in North America by integrating the company’s US-based electric vehicle (EV) charging solutions subsidiary, formerly known as eMotorWerks, into the Enel X brand. With the launch of this new unit, the company will add JuicePass, Enel X’s new EV charging app, as well as eMotorWerks’ smart charging products to its existing North American offering of energy solutions such as battery storage, demand response and energy advisory services.

Integrated Storage Technologies Closes $1.3 Million Seed Round Appoints James P. McDougall as Chairman

The Brooklyn headquartered company is known for its expertise in diverse energy storage & controls applications with a core focus of Front-of-the-Meter & commercial and industrial energy storage projects. IST can, for instance, help a building owner save money on their demand charges, or work with developers or utilities to design and manage the delivery of MW- scale energy storage power to relieve congestion on power lines, especially on hot summer months. The round was led by seed and early-stage investor Richard Klein, who specializes in investing with alternative energy technology

and service companies. He successfully guided start-up companies on advancing their technologies, identifying markets, and managing their growth. Richard is a seasoned early stage investor with numerous prominent successfully exits in the clean technology space. Richard's investment was followed by James P. McDougall, an energy storage veteran, CEO, angel investor, venture capitalist and startup professional with global experience in building high performing teams. James was previously the CEO of Younicos, a company similar to IST which he turned around and sold in a very successful transaction.

Storage Can Help Meet New York's Peak Power Needs

There is a notable new report, The Potential for Energy Storage to Repower or Replace Peaking Units in New York State, from the New York Department of Public Service Staff, in consultation with the New York State Energy Research and Development Authority (NYSERDA), the Long Island Power Authority (LIPA), the New York Independent System Operator (NYISO), the New York Department of Environmental Conservation (DEC), and Con Edison. The report, which was initiated as part of the storage order from the Public Service Commission in December 2018, show that there are a number of power plants in New York City and Long Island that are candidates to be fully replaced by the output of electricity storage batteries or batteries and solar because they run very infrequently (less than 10 percent of the time, and for very few hours each time each time they started) and have very heavy emissions (based on their operations in 2013, which had the most electric system peaks of recent years).

Sunrun Gets a Second Contract to Supply Capacity from Rooftop Solar + Batteries

Electricity experts have been talking for a long time about a future where the power grid runs largely on distributed resources including rooftop solar and batteries. And while behind-the-meter solar has been supplying energy for some time, it has not widely been recognized for its ability to provide capacity – in other words to meet the need for steady, predictable power when it is most needed. But this is changing, and fast. In February, Sunrun won a bid to provide 20 MW of capacity from the company's residential solar + storage systems to the grid operator in New England. And late yesterday, the company followed that by announcing that it has won a contract from East Bay Community Energy (EBCE) to supply capacity from 500 kW / 2 megawatt-hours of batteries paired with solar installations on low-income housing, under a 10-year contract.

Energy Stored in Underground Caverns Joins Megabatteries in South Australia

Canadian company Hydrostor has just received approval to build the first grid-scale

compressed air energy storage system in Australia. Hydrostor will deploy a 5MW / 10MWh system at a former zinc mine near Strathalbyn, South Australia. The advanced compressed air energy storage (A-CAES) project, expected to cost AU$30 million (US$21.09 million) in total, received development approval and has been welcomed in statements by local politicians including South Australia's energy and mining minister, Dan Van Holst Pellekaan.

SimpliPhi Power Again Increases Capacity Across Entire Energy Storage Product Line While Lowering Prices

For the second time in less than two years, SimpliPhi Power is increasing storage capacity and reducing prices across its entire line of energy storage and management solutions -- responding to escalating global demand for higher energy density batteries that are safer, more reliable and efficient at a greater value. The company's top selling PHI 3.5 and PHI 2.7 kWh battery models are now enhanced to offer greater energy capacity, increased to PHI 3.8 kWh and PHI 2.9 kWh respectively while maintaining the same compact size, low weight, scalability and high performance. The all-in-one AccESS, ExprESS and Genny product lines will also feature higher capacity PHI batteries and a lower up-front price per kWh.

Yonkers' alpha-en Corp Receives $1 M Grant for Battery Technology

Yonkers-based alpha-Encorp has received a $1 million technology development grant from the New York State Energy Research and Development Authority (NYSERDA) for its battery technology that can be used in diverse applications ranging from electric vehicles to portable electronics. The company stated that its patented electrodeposition method produces thin films of highly pure lithium on myriad substrates that can be used in the creation of next-generation batteries. Current lithium ion batteries require lithium graphite anodes, but a lower weight and higher efficiency alternative to the lithium graphite anode is being developed by alpha-Encorp with the goal of expanding the environmental benefits associated with electric vehicle batteries. Alpha-Encore stated that is aiming to automate its process for manufacturing purposes.

New York Awards 1.7 GW of Offshore Wind as Cuomo Signs State's Green New Deal

New York Governor Andrew Cuomo on Thursday announced 1.7 gigawatts of offshore wind deals with two development groups, as he signed into law the state's ambitious Green New Deal. Not only is it the largest offshore wind procurement to date in the U.S., topping New Jersey's recent 1.1-gigawatt solicitation, but state officials said it was the single largest renewables procurement in the country's history. The 880-megawatt

Sunrise Wind project will be built by Denmark's Ørsted and its utility partner Eversource Energy, feeding power onto densely populated Long Island. "Long Island needs that power, and it needs it today," Cuomo said in front of a packed audience in Manhattan.

NY Commits $55 Million to Long Island Energy Storage

New York Governor Andrew M. Cuomo recently announced $55 million for energy storage, including commercial and residential storage projects, on Long Island. This program will be launched with an initial rollout of nearly $15 million in incentives from the New York State Energy Research and Development Authority (NYSERDA). Energy storage projects supported by this Long Island initiative will advance progress toward achieving New York's target of 3,000MW of energy storage deployed by 2030 — the equivalent to powering 40% of New York's homes. The announcement supports Governor Cuomo's Green New Deal, a clean energy jobs agenda putting New York on a path to carbon neutrality.

Cryogenic Energy Storage Firm Teams With Tenaska to Develop US Projects

London-headquatered Highview Power has contracted with Nebraska-based Tenaska Power Services to help develop up to four gigawatt-hour scale cryogenic energy storage plants in the United States over two years, with the first project expected to be developed in the ERCOT market. Highview's technology uses electricity to chill and liquefy air at -320°F, stores the liquid air in insulated, low-pressure tanks, and later exposes the liquid air to ambient temperatures to rapidly re-gasify the air, expanding it to 700 times its liquid volume, to power turbines to generate electricity. The firm notes that its system can be configured to also use waste heat and cold.

Coal, Gas Sink As New York Sails Into Offshore Wind Power Mega-Deal

It's been another gloomy week on the fossil fuel front, but first things first: yesterday, New York Governor Andrew Cuomo committed his home state to the largest ever offshore wind power deal in US history. That's a pretty short history, considering that the US offshore wind industry only sank its first "steel in the water" almost exactly four years ago this month. Nevertheless, the news doesn't bode well for the nation's dwindling coal power fleet. It also coincides with a new study exploring the potential for battery energy storage to replace conventional power plants for grid reliability.

New York Climate Plan Sets 30-Year Goal For 100% Renewable Energy

Solar panels on every roof. Parking meters that double as car chargers. Wind turbines towering above farm fields and ocean waves. Cars, home furnaces and factories

converted to run on electricity from renewable sources. A new law signed by New York Gov. Andrew Cuomo sets the nation's most aggressive targets for reducing carbon emissions and is intended to drive dramatic changes over the next 30 years. It calls for all the state's electricity to come from renewable, carbon-free sources such as solar, wind and hydropower. Transportation and building heating systems would also run on clean electricity rather than oil and gas. But while the goals of the legislation signed Thursday are clear, details on how to achieve them are undetermined. It isn't clear how much all this change will cost, or even whether it is all technically feasible.

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News From Beyond New York

Grid-Scale Energy Storage: Innovations and Emerging Opportunities

Grid-Scale energy storage solutions involve electrochemical storage such as batteries, supercapacitors, electromechanical storage solutions such as flywheels, compressed air energy storage and thermal energy storage solutions like molten salt and ice energy storage. These storage solutions are used to support grid stability and predominantly the integration of renewables to the grid. The study focuses on the different utility-scale applications that can be supported by energy storage solutions. The study focuses on the recent innovations and product development aimed at improving the grid functionality. Each of the energy storage solutions has a different set of performance parameters that make them suitable for different applications. For instance, the ice energy storage is better suited for supporting grid through processes like demand response and behind the meter energy storage while the molten salt and other heat storage solutions are suited for direct grid support.

DOE, Lawmakers Looking at Energy Storage R&D, Funding

The U.S. Department of Energy (DOE) and members of Congress are looking at legislation concerning research and regulation of energy storage. Sen. Lisa Murkowski (R-Alaska), who chairs the Energy and Natural Resources committee, on July 9 said there is bipartisan interest in combining a handful of bills on energy storage, dealing with research and development (R&D) and funding, into one combined bill. Bruce Walker, assistant secretary for the Office of Electricity, said the DOE supports a number of research efforts into storage, which Walker said could "revolutionize the energy industry."

Opportunities Everywhere': NREL Study Shows Mass Potential for Storage to Provide Peaking Capacity

The booming U.S. battery storage market is showing no signs of slowing down, and a new government-funded report says its prospects could be even bigger than previously thought. "The Potential for Battery Energy Storage to Provide Peaking Capacity in the United States," published last month by the National Renewable Energy Laboratory (NREL), concluded that every region across the country offers the potential for peaking capacity needs to be met by short-duration, four-hour battery storage systems.

Tough to Build a Software-Only ESS Business, Battery System Integrators Argue

While software has been described by many as the single most important aspect of how an energy network integrates, manages and then uses energy storage, two industry heavyweights have said that selling software licensing alone was not a viable business model for them. Rolling out the controls and management software by itself is a perilous business proposition, according to Karim Wazni, MD of Aggreko Microgrids and Storage (formerly Younicos until it was bought out and became part of rental energy solutions group Aggreko). Having deployed 220MW of battery storage projects worldwide to date across nearly 50 projects, many of which it worked on as a full system integrator including hardware and software provision, Aggreko M&SS-Younicos had found that the value of the software alone could not be divorced from the overall aims of the project.

The Energy Storage Industry is Exploding

China is set to become the single biggest energy storage market in the Asia Pacific region by 2024, according to new reporting by British data analysis and consultancy group Wood Mackenzie. The company's July 9th report states in no uncertain terms that the country is poised to take over the energy storage market, as its "cumulative energy storage capacity is projected to skyrocket from 489 megawatts (MW) or 843 megawatt-hours (MWh) in 2017 to 12.5 gigawatts (GW) or 32.1GWh in 2024," an impressive increase "in the installed base of 25 times." Wood Mackenzie credits the Chinese government's assertive policy incentives in the energy storage arena as the primary reason for the sector's rapid growth. Thanks to the country's major push for storage deployments in the last year, deploying 580MW (1.14GWh) to reach a cumulative market size of 1.07GW (1.98GWh) in 2018, China has already secured its position as the second biggest energy storage market in the Asia Pacific region in terms of deployment, with South Korea coming in first place. "Front-of-the-meter (FTM) storage led growth," Wood

Mackenzie said of China's 2018 growth, "up five-fold in terms of installed power capacity compared to 2017."

How The New York City Blackout Could Have Been Prevented

New York City was sent into a frenzy on Saturday when a massive blackout struck much of Manhattan leaving millions without power exactly 42 years to the day since the last large-scale Manhattan outage. The power went out around 7 p.m. due to an alleged transformer fire affecting large parts of Midtown and the Upper West Side and trapping thousands in Subway trains and building elevators. While it seems that nobody saw the outage coming, it begs the question, could such an emergency have been avoided? Nicki Zvik, Founder of Green Solar Technologies, weighs in. "We saw one of the main and most dangerous issues with the world's reliance on utility companies this past Saturday," says Zvik. "When so many put all of their eggs in one basket, it only takes one slip up to cause chaos. But fortunately, we have options, and the best alternative by far happens to be solar energy."

To Green the Grid, Take a Lesson From the Auto Industry

Consider for a moment why hybrid cars are so efficient: most of the time, when you're cruising, the engine charges the battery. When you do need peak power, the battery and engine work together to move the car. This lets the car get away with a smaller engine, and lets the engine run at a more efficient speed most of the time. Scale this idea up, and it works for the power grid: add batteries to handle demands for peak power, and we can build fewer fossil fuel plants, or even get rid of some of the old dirty ones. As a bonus, the batteries let existing power plants run at more steady, efficient levels, since the batteries are very good at handling the ebb and surge of power demand. As an even bigger bonus, batteries make it much easier to manage greater amounts of wind and solar power.

Maine Enacts Beneficial Electrification Law; State to Issue RFP for Pilot Projects

Maine's governor has signed into law a bill that boosts beneficial electrification — the electrification of technologies that would otherwise use fossil fuels — in an effort to improve efficiency, reduce carbon dioxide emissions and cut consumer costs. Electrification of transportation and buildings is seen as a driver for microgrids, since it will increase demand for power and encourage more decentralization of energy production. Authored by Rep. Tina Riley and signed by Gov. Janet Mills in June, HP-1071 also requires that the Maine Public Utilities issue a request for proposals (RFP) seeking pilot projects for electrifying transportation in the state.

Blackrock Buys 80% Stake in GE's Distributed Solar and Storage Business

General Electric (GE) has sold a majority investment in its seven-year-old distributed solar and storage business to global asset manager BlackRock. BlackRock took an 80% stake in the new company, Distributed Solar Development (DSD). GE will retain a 20% stake. The financial terms of the deal were not disclosed. The giant global asset manager's backing is a positive sign for the solar segment, which has become increasingly attractive to big investors.

Solar + Wind + Storage Developers 'Gearing Up' as Hybrid Projects Edge to Market

Renewables are shedding their individual identities as wind and solar become clean energy MWhs. Though no full-scale hybrid projects co-locating both resources and energy storage have been built in the U.S. and few are online around the world, the U.S. renewables industries are taking on barriers such as interconnection, dispatch and compensation challenges, according to speakers at the 2019 American Wind Energy Association's Windpower conference. For the first time, the conference featured multiple sessions on the trials and opportunities of these hybrid renewables projects. In line with the ambitious resource partnerships among renewable energy groups, next year's conference will be rebranded Cleanpower 2020.

Silent, No Gears and Cheaper Every Day: Electric Cars Aren't So Hard to Get Used To

A few weeks ago in western Sydney, I fanged around the Eastern Creek racetrack looking to kick the wheels of the electric car revolution. A lot has been written on the viability of the electric car: the price, the availability, the range, the chargers. But this was solely about the driving experience, from the perspective of someone who has only ever driven petrol cars. I tested six cars – from pure electric, to hydrogen fuel-cell, to petrol-hybrids. From the Tesla X SUV, to the fully electric SEA truck, to the one-person, three-wheel Toyota iRoad (which we will never speak of again).

Taking Aim at PJM's 10-Hour Duration Capacity Rule for Energy Storage

Over the past year and a half, the U.S. energy storage industry has been getting into arguments with grid operators over their plans to implement Federal Energy Regulatory Commission Order 841, the mandate to integrate energy storage assets into the country’s wholesale energy markets. The biggest argument to date has been over PJM’s insistence on a 10-hour duration requirement for batteries to play in its capacity market. Storage advocates and clean energy groups say the proposal violates FERC Order 841’s call for open and equal access for energy storage assets, by effectively making it

impossible for lithium-ion batteries to economically compete against fossil-fuel-fired plants in the country's biggest capacity market.

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NY-BEST ™

New York Battery And Energy Storage Technology Consortium

www.ny-best.org

P: 518.694.8474

E: info@ny-best.org

230 Washington Avenue Extension, Suite 101

Albany, NY 12203