Florida Energy Systems Consortium

September 2015 Issue

Upcoming Events

Battery Show and Critical Power Expo | September 15 - 17 | Novi, MI
Click **here** for more.
Add to GoogleCalendar

ACEEE National Conference on Energy Efficiency| September 20 - 22, 2015|Little Rock, AR
Click **here** for more.
Add to GoogleCalendar

International Conference on Green Energy & Expo September| 21-23, 2015| Orlando, FL
Click **here** for more.
Add to GoogleCalendar

The Florida Energy Summit is a forum for the brightest minds from academic institutions and private industries, as well as public officials on the local, state and federal levels, to discuss the future of energy in Florida.

Click **here** for more information and registration!

WORLD NEWS

House Batteries Help the Grid & Consumers

Energy provider Ergon Retail is running a trial, with support from the Australian Renewable Energy Agency (ARENA), in 33 Queensland homes in Toowoomba in the south of the state and Townsville and Cannonvale in the north.

In recent months, about 30 country householders have joined a pilot project that provides a glimpse of the future of our energy grid.

For no up-front cost, these homes will get a state-of-the-art rooftop solar and battery system installed in their homes .

Participants will pay a monthly fee to use the battery system, with their electricity bills expected to be significantly reduced because about 75 per cent of their power will be generated by the sun. Their shiny new cabinet-sized battery will allow them to store

World Energy Engineering Congress| September 30 - October 2, 2015 || Orlando, FL | Click **here** for more.
Add to GoogleCalendar

The First International Symposium on Sustainable Human-Building Ecosystems | October 5 - 7 | Pittsburgh, PA Click **here** for more.
Add to GoogleCalendar

Florida Green School Awards: Celebrating and Recognizing Environmental Excellence in Florida's Schools and Districts| October 8, 2015| Streamsong Resort, Polk Co., Florida
Click **here** for more.
Add to GoogleCalendar

3rd Annual Go SOLAR & Renewable Energy Fest| October 9 - 10, 2015| Ft. Lauderdale, FL
Click **here** for more.
Add to GoogleCalendar

some of the energy from their solar panels that they then use during peak times – usually in the early evening.

For its part, Ergon will be able to remotely control and monitor these home batteries, and feed power back into the grid when the network is being stretched. The company talks about these in-home batteries as "virtual power plants" that will act to smooth out demand and strengthen the network.

With its twin mandates of helping to reduce the cost and increase the supply of renewable energy in Australia, the ARENA sees great potential in this kind of pilot to help accelerate the penetration of renewable energy into the market.

As we stand on the cusp of an electricity industry revolution in this country, enabled by rapid advances in solar, trials like Ergon's will be one of the main ways we can get ready. They will be essential in discovering which models work best for consumers and, just as importantly, for Australian grids.

It's difficult to overstate just how quickly things are moving in the energy-storage space. Ergon is just one provider eyeing storage as a way to improve its service to customers and find new markets for its products. AGL is offering a solar/battery system for homes (rival Origin also has plans to launch a similar product) and home battery vendors, such as Sunverge and Octillion, are quickly setting up shop in Australia. Within months, every major solar installer will also offer a storage product.

A recent AECOM study, commissioned by ARENA, foreshadows a looming battery "megashift", driven by technological advances and continued price improvements. It predicts that by 2020, the cost of home batteries will drop 40-60 per cent. This aligns with forecasts by Morgan Stanley (MS $32.94) that, during the same period, more than a million Australian households could install home battery systems.

With generous state-based solar feed-in tariffs starting to end next year, many of the 1 million-plus Australian households with solar are hungry for an option that lets them store and use the power they generate, rather than being forced to immediately sell it back to power companies for almost nothing.

The much-heralded arrival next year of Tesla's Powerwall home battery, with its sleek design and consumer appeal (some have dubbed it the "iPhone of energy storage"), will also be a significant chapter in this fast-moving story. Although Tesla is just one player in the battery market, it has certainly succeeded in providing price leadership (its announced price tag of $4000 for a 7kWh system was previously not considered achievable until 2020) and making battery storage a major talking point.

At ARENA we're excited by the potential benefits to consumers. But it's the other side of the equation – the upside for the network – that is our real focus. That's because advances in storage hold the promise of removing a key criticism of renewable electricity: its oft-discussed supply variability, driven by the simple reality that the sun isn't always shining and the wind is not always blowing.

Wind and solar power already rival fossil fuels as the lowest-cost forms of newly built electricity generation and comprise the fastest-growing segment of the global energy mix. Just last week the International Energy Agency announced that in 2014, renewables had overtaken natural gas to be the second-largest source of new electricity generation worldwide, in terms of capacity additions.

This onward march of renewables means the role of storage as not just an enabler of clean energy but a driver of jobs and economic growth.

2015 Florida Energy Summit| October 14 - 16, 2015| Jacksonville, FL
Click **here** for more.
Add to GoogleCalendar

BuildingEnergy NYC 2015| October 15, 2015| New York, NY
Click **here** for more.
Add to GoogleCalendar

BuildingEnergy NYC 2015| October 15, 2015| New York, NY
Click **here** for more.
Add to GoogleCalendar

National Advanced Biofuels Conference & Expo| October 26-28, 2015| Omaha, Nebraska
Click **here** for more.
Add to GoogleCalendar

SmartGridComm 2015| November 2 - 5 | Miami, FL
Click **here** for more.
Add to GoogleCalendar

Australia, with the highest rate of residential solar penetration in the world, as well as a large number of communities and industry sitting off the grid, is an ideal laboratory and test market for storage technology. Already, Australian companies are reaping the benefits, exporting off-grid renewable energy, storage and control systems internationally.

At ARENA, we saw this coming long before Tesla put home batteries in everyone's newsfeeds. The Ergon Energy trial is just one of many battery-related pilots we have supported, including a project in Western Australia looking at how centralised storage can reduce connection and energy costs for greenfield residential developments and two solar/battery projects at remote mines in WA and Queensland that will help the resource sector move away from expensive generation powered by trucked-in diesel.

ARENA is also supporting studies to address a lack of real-life data on the performance of energy storage systems on Australian networks and in Australian conditions. The University of Adelaide is building a mobile energy storage test platform and establishing an online database for Australian energy storage expertise. Meanwhile, Canberra-based IT Power is testing the real-world performance of a range of batteries, exposing them to simulated conditions that mirror those found within Australian networks.

The AECOM report stresses the need for industry players such as energy retailers, networks and technology suppliers to see these changes as an opportunity rather than a threat. They can undoubtedly play a role in minimising the cost of maintaining a reliable network and mitigate the gold plating that has occurred in the past.

Australian households with rooftop solar also need to be convinced their newly affordable home battery system shouldn't be seen as an enabler of them leaving the grid. Doing so would, in most situations, cost them and those who stay connected more money, and those who leave will run the risk of having a less reliable energy supply. We have to get the message out to consumers that participating in the grid makes it stronger and, in turn, helps further promote the uptake of renewables.

There is no doubt that, like any major economy-wide change, the storage megashift will carry with it risks and disruptions. The good news is Australia is ideally placed to account for these, and take full advantage of a battery boom that could rival the PV rooftop revolution.

Northern Finland Leads in Wind Energy Usage

According to data collected on a statistical portal Patchwork Barents, regions of Ostrobothnia and Lapland are the undisputed leaders in the production of electricity from wind power. Only the neighboring province of Vasterbotten in Sweden boasts higher production volumes, reports barentsobserver.com

In another northern Swedish

Power Up Energy Expo | Fall 2015 | South Walton, FL
Click **here** for more.
Add to GoogleCalendar

2016 Capitol Days | January 13, 2016 - January 15, 2016 |Tallahassee, FL
Click **here** for more.
Add to GoogleCalendar

19th Annual EUEC 2016| February 3 - 5, 2016| San Diego, CA
Click **here** for more.
Add to GoogleCalendar

province - Norrbotten - is planned to place the largest wind power project to build a wind farm Markbyugden.

In the northern province of Norway Nordland, Troms and Finnmark in 2014 did not show any significant changes in the volume of production of electricity from wind energy. Finnmark is the largest manufacturer in the north of Norway, with production capacity of 200 GW / h.

On the territory of the Russian part of the Barents region, wind energy is not yet developed, although the Murmansk region begins to build small wind turbines on the southern coast of the White Sea.

Brazil Gives Go-ahead to 29 New Power Plants

Brazil gave the green light on Friday for the construction of 29 new power generation facilities in the country, awarding licenses for windmills, small hydropower plants, biomass and gas-fueled installations expected to cost around 2.5 billion reais ($716 million).

According to the power sector regulator Aneel, 669.5 megawatts (MW) of capacity were auctioned off, resulting in an average price of 188 reais per megawatt-hour ($53.88 per MWh).

Wind farms will account for the bulk of the new supply expected to be added to the national grid in 2018, accounting for 538 MW of the new capacity.

Brazil has been licensing varied sources of power generation in the last two years, trying to diversify its power mix which is heavily dependent on large hydroelectric plants.

Below average rainfall in 2013 and 2014 depleted hydroelectric reservoirs, bringing the country to the brink of a power collapse, which has only recently started to appear less likely.

Power distributors that were most active in this round of the auction were Light, with 16.6 percent of total power auctioned, Copel (14.4 percent) and Celesc (9.2 percent).

Brazil's largest power distributor AES Eletropaulo , controlled by AES Corp, bought only 1.6 percent of the total power auctioned.

As expected, discounts to the maximum allowed prices were very small, at only 2.5 percent on average, reflecting a scenario of rising installation costs due to tight financing and to a weak currency that makes imported equipment more expensive.

DONG Becomes Lead Developer of UK's Offshore Wind Hornsea Zone

Denmark's DONG Energy has become the lead developer of Britain's Hornsea Zone offshore wind scheme after it bought the project rights to the second and third phases of the development Mainstream Renewable Power and Siemens Financial Services.

The Hornsea Zone, off the coast of northeast England, is being developed in phases to

ultimately provide 4 gigawatts (GW) of renewable wind energy and has the potential to meet 40 percent of Britain's electricity demand.

DONG acquired the first phase of the development, known as Hornsea Project One, earlier this year, which will have a capacity of 1.2 GW.

DONG bought the project rights to the second and third phases on Friday which will have a combined capacity of 2.8 GW when completed.

"We have already invested around 6 billion pounds in the UK and the Hornsea Zone provides us with new exciting development opportunities, not least because of the sheer size of the project in terms of acreage as well as the high generation potential," Samuel Leupold, executive vice president at DONG Energy, said in a statement.

FESC HIGHLIGHTS

UCF Professor Lands $1.1 Million Grant, Pioneers New Technology

The University of Central Florida is one of only two universities in the nation to land a federal grant that could revolutionize the technology used to run power plants.
The U.S. Department of Energy awarded UCF mechanical and aerospace engineering assistant professor Subith Vasu $1.1 million to investigate how power plants might be able to abandon the use of water to generate energy from steam and instead use supercritical CO2, a fluid state of carbon dioxide.

Supercritical carbon dioxide is an attractive alternative to government agencies and private companies for several reasons. If the technology can be developed to make the switch, it could mean less use of water – a natural resource in short supply in some parts of the nation. Commercial companies are also interested because supercritical CO2 is more efficient at transporting heat – a key principle, which power plants use to generate energy. Better efficiency equals less cost and potentially a bigger profit margin. In addition, it is possible to reduce the size of power-generating turbines by using sCO2 instead of steam. Using sCO2 as a working fluid enables carbon capture and storage) in certain cycle systems. In those systems, the power plant exhaust CO2 is stored underground instead of released into the atmosphere.

Georgia Tech was the only other university to earn money from the Department of Energy's University Turbine System Research Program for research in this field.

“There are not many universities conducting research in this area and we already have a head start in the world,” Vasu said. “We’re working diligently on turbine technology and Florida is a major hub for the industry. Our goal is to maximize power-generation efficiency, reduce emissions, and become leaders in this area.”

Siemens, Alstom, General Electric, Pratt & Whitney, and Mitsubishi Hitachi Power Systems among others are the key players in the industry, and UCF works with most of them on ongoing research through its Center for Advanced Turbomachinery and Energy Research. The center in the College of Engineering and Computer Science is headed by professor Jayanta Kapat.

Vasu is using the grant to develop a combustion computer model for the design of combustors, where fuel is burned at power plants. The model will provide insights into the processes that occur during the burning stage. Once a model is verified, he and his team will disseminate this tool to industry so they can design optimum sCO2 combustors.

Vasu’s broad areas of expertise include alternative fuels for propulsion and internal combustion engines, shock wave physics, laser diagnostics and sensor technology. He has a Ph.D. in mechanical engineering from Stanford University and has published multiple papers in each of his areas of expertise. He is also working with several international researchers on a variety of research aimed at everything from helping improve the efficiency of airplane engines to developing sensitive sensors that can detect toxic chemicals aboard commercial spacecraft.

Vasu’s team includes about a dozen graduate students including Owen Pryor who is working on this project. There are also several undergraduate students, many of whom have interned for engineering and space companies such as Space X, Siemens and others. His former graduate students are employed by major gas turbine companies.

UF Faculty Publishes Book: Handbook of Bioenergy, Bioenergy Supply Chain - Models and Applications

FESC faculty Sandra D. Eksioglu and Panos Pardalos, along with Steffen Rebennack, have published the Handbook of Bioenergy, a book that focuses on the bioenergy supply chain and its different models and applications. The authors present "cutting-edge research on bioenergy supply chain optimization".

In its description, the handbook "brings together recent advances in the areas of supply chain optimization, supply chain management, and life-cycle cost analysis of bioenergy. These topics are important for the development and long-term sustainability of the bioenergy industry."

The authors will be discussing their books in the ESCC 2016 Conference.

USF Research Collaboration Compares IXTOC Oil Spill to Deepwater Horizon Spill

Scientists from the University of South Florida's (USF) College of Marine Science, Universidad Nacional Autónoma de México (UNAM), and colleagues from several other universities have just returned from a two week trip three-and-a-half decades into the past aboard R/V (research vessel) Justo Sierra, a 162-foot, 821-ton ship outfitted for research. Their voyage took them to the site of the 1979-1980 IXTOC oil spill in the Gulf of Mexico, the impacts of which had not been studied for 35 years.

"The IXTOC oil spill poses an array of questions for researchers," said Dr. David Hollander, USF College of Marine Science associate professor in chemical oceanography and the chief scientist overseeing the IXTOC cruise. "We wanted to examine the long term environmental effects of major oil spills. By looking at IXTOC, we hope we will be able to better predict the long term effects of the 2010 Deepwater Horizon spill in terms of the chemical and biological consequences of oil that reached the sea bottom. The research will not only help us to better understand the impact of IXTOC, but also help to project what the Deepwater Horizon area will be like in terms of oil toxicity in 35 years."

After departing into the Gulf Coast of Mexico from Tuxpan, Mexico, near Veracruz, on July 30, and arriving at the research site, members of the international research team from USF, Penn State University, the University of Calgary, Florida State University, Texas A&M University-Corpus Christi, and UNAM, performed around the clock sampling of the biology, chemistry and geology of ocean bottom sediments and water samples. They were particularly interested in studying oil degrading bacteria, the organic chemistry of oil contaminants, microscopic shelled animals called “forams,” carbon isotopes, and burrowing worms.

The research aboard *R/V Justo Sierra* was carried out as part of the work being done by scientists from the Center for Integrated Modeling and Analysis of Gulf Ecosystems (C-IMAGE) and includes researchers from seven research institutions in six countries. Dr. Hollander is the Chief Science Officer of the C-IMAGE consortium, which has been funded by the Gulf of Mexico Research Initiative to study long-term ecosystem impacts of the 2010 Deepwater Horizon oil disaster.

“Bringing UNAM’s knowledge, expertise, and perspectives to the USF-hosted C-IMAGE consortium benefits not only our students and researchers, but the overall understanding of how human impacts affect our valuable shared seas,” said Dr. Elva Escobar, Director of the UNAM-Instituto de Ciencias del Mar y Limnologia (Institute of Marine Science and Limnology). “Studying the IXTOC oil spill in comparison to Deepwater Horizon allows us to better understand mechanisms that result in oil at the sea bottom, and to project what the Deepwater Horizon area will look like three decades from now.”

After 13 days at sea, *R/V Justo Sierra* docked August 10 in Brownsville, Texas. The samples collected on the voyage are now on their way back to the participating universities for analysis. The IXTOC voyage is the first of three major Gulf of Mexico research expeditions by C-IMAGE scientists this summer. Preliminary research results

will be presented at the 2016 Gulf of Mexico Oil Spill & Ecosystem Science Conference in Tampa, FL.

FIU Unveils Its New Tech Station

With a ribbon-cutting and an open house with executives from South Florida's largest technology companies and promising startups, Florida International University inaugurated its $3 million Tech Station on Wednesday.

The new 8,000-square-foot College of Engineering and Computing facility, 16 months in the making, includes high-tech classrooms , team rooms, advisory centers for mentoring, research and computer labs, a maker garage, event spaces for community events, workshops and hackathons, brightly colored co-working areas and a café.

The classrooms, where big data, cybersecurity, cloud computing and other subjects will be taught, include mobile desks and in-the-round instruction, and they are complemented with smaller team rooms decked out with 70-inch screens where four people can hook up their laptops and collaborate on projects, said Steve Luis, director of technology and business relations for the School of Computing and Information Sciences. He spearheaded the Tech Station project, located in the first floor of Parking Lot 6.

“We know that this community and state need our talent,” FIU President Mark Rosenberg said in remarks at the event, attended by more than 150 community members, FIU faculty and students. “We also know FIU graduates have the highest starting salaries of any university in the state. Let’s keep the momentum going.”

Much of the talk during a panel discussion involving executives from IBM, Citrix, Ultimate Software, Game Changer Tec, Alta Systems, Refresh Miami and Rokk3r Labs was about how corporations can collaborate with universities to help turn out talented students not only for big companies located here, but who also will create their own companies as part of South Florida’s startup ecosystem.

“Citrix, quite frankly, has had to import a lot of our talent. We have to look here first — the talent is right here,” said Chris Fleck, vice president of emerging solutions for Citrix. “We think there is more we can do to step this up.” Fort Lauderdale-based Citrix recently bought a South Florida startup, Virtu.al, and Fleck reminded the crowd of the power of an ecosystem – Citrix’s first 10 employees came from IBM.

Also announced on Wednesday was Ultimate Software’s $1 million donation to help fund Tech Station. Part of the funding will go to expand the existing Ultimate Software Academy, which trains high school teachers and students. “We want to scale this out with Miami-Dade Public Schools to bring in as many teachers and students as we can for advanced training, workshops and programs,” Luis said, adding that the

“Innovation Garage” maker space will host hackathons, coding clubs and programs like Girls Who Code.

Ultimate Software, homegrown and based in Weston and now with 2,600 employees, began an internship program with FIU in 2007 and has hired more than 100 FIU engineers into full-time jobs, said Adam Rogers, Ultimate’s chief technology officer. He said the college listens to suggestions and is quick to improve the curriculumn.

Rogers said the partnership goes beyond the financial contribution. “We think the bigger contribution is embedding ourselves with [FIU’s] faculty and students for years to come.”

FSU: NSF Grant Aims to Build More Livable Cities

Florida State University is among nine universities who will share a $12 million grantfrom the National Science Foundation (NSF) to build a unique network of scientists, industry leaders and policy partners committed to building better cities.

The network will include major metropolitan cities in the United States and India, infrastructure firms, and policy groups that will focus on ways to reimagine energy grids, road networks, green spaces and food and water systems. The research seeks to determine how cities can become more highly functional, better promote the health of residents and the environment, and be more desirable places to live and work - that intangible "vibe" known as livability.

FLORIDA ENERGY NEWS

FPL to build 5,700 solar panels at FIU

Florida Power & Light Co. signed a partnership with Florida International University to install more than 5,700 solar panels on its engineering center in west Miami-Dade County.

The company, a subsidiary of Juno Beach-based NextEra Energy (NYSE: NEE), plans to build 23 canopy-like structures this summer in the parking lot. Not only would the 1.6-megawatt solar array generate power for FPL customers, FIU students could study its performance in the electrical grid.

"This innovative solar project builds on FIU's relationship with FPL, one that provides our students with unparalleled and unique training opportunities," FIU President Mark B. Rosenberg said in a news release. "Through this project, our engineering students will make a direct contribution to the growth of solar energy in our state, while gaining invaluable experience working side by side with professionals from one of the most forward-thinking utilities in the nation."

The solar array would measure 342,000 square feet and would also shade 600 parking spaces.

FPL aims to triple its solar generation in Florida by the end of 2016.

“As the economics of solar continue to improve, we look forward to harnessing more and more energy from the sun,” FPL President and CEO Eric Silagy said in a news release. "Our partnership with FIU is designed to help us manage solar power’s interaction with the greater electric grid as part of our commitment to reliably deliver affordable clean energy for all of our customers.”

In the meantime, FPL is among the main opponents of a ballot initiative to amend the Florida constitution to allow consumers to install solar panels on their properties and sell power. Laws preventing such arrangements have limited the growth of solar panel leasing companies in Florida.

Jupiter Biotech Firm Wins Bioenergy Grant

Dyadic International's Dutch subsidiary won a 1 million euro ($1.14 million) grant for bioenergy research.

The Jupiter-based company (OTCBB: DYAI) said the European Commission's Horizon 2020 program selected its Dyadic Netherlands B.V. subsidiary, the Compagnie Industrielle de Matière Végétale, and five other research partners to build a large facility to produce ethanol from biomass. The project is called 2G BIOPIC.

Dyadic owns a C1 enzyme that can rapidly produce proteins for biofuel, manufacturing chemicals, biopharmaceuticals and animal feed.

"We are pleased to continue working closely with CIMV, and believe that Dyadic's C1 enzymes will play a critical role in the 2G BIOPIC project success,” Dyadic COO Danai Brooks said in a news release. "The aim of 2G BIOPIC is to demonstrate the performance, reliability and sustainability of producing bioethanol from agriculture waste and wood. The demonstration plant built in the 2G BIOPIC program will process one ton of biomass per hour, or about 50 times the size of the CIMV pilot plant upon which the project is based.”

The grant will pay Dyadic 1 million euros ($1.14 million) over three years, including an upfront payment of 439,819 euros ($499,570).

Tampa Electric Announces Its Sale to Canadian Company Emera

The parent of Tampa Electric Co. and Peoples Gas announced late Friday it had reached an agreement to sell the Tampa-headquartered utility to Canada-based Emera Inc. in a $10.4 billion transaction.

The deal by TECO Energy, expected to close by mid 2016, would be one of the largest involving a Tampa Bay company if it is approved by federal authorities. It affects just over 1 million TECO and Peoples customers in Tampa Bay and throughout Florida.

The sale marks the closing chapter of a veritable Hillsborough County institution whose roots go back 115 years when the company got its start managing Tampa's electric trolley system. TECO becomes a wholly owned subsidiary of Emera, which is headquartered in Halifax, Nova Scotia.

Hillsborough community leaders were already lamenting TECO's departure as an independent local institution.

Former Tampa Mayor Dick Greco recalled his close friendships with past TECO presidents and how its top leaders were always close with everyone who worked for them.

"They were always willing to do whatever the city needed. All that's going to be bygones now," Greco said. "Tampa Electric has just been a household name since I was a kid. It just feels funny."

But Emera president and CEO Chris Huskilson and TECO chief John Ramil took pains at a Tampa news conference to provide reassurance that little will change once the merger is done.

"Tampa Electric will continue to be the area's hometown electric company," said Ramil, noting the utility would not even change its name.

Huskilson said existing electric rates will not change, no job losses are anticipated, and the TECO employees and executives will remain an integral part of the communities where they live and work.

"We recognize that TECO and its employees are a vital presence in many communities," Huskilson said. "I love the phrase that TECO will continue to be the hometown electric utility for its customers. That's exactly what we want it to be."

In fact, rates can't change without approval by state utility regulators.

TECO announced earlier this week that it was proposing that its 2016 residential electric rates be reduced by $2.25 per 1,000 kilowatt hours, a drop of 2.1 percent to $106.22 for a typical residence. The rate decrease, which is because of lower natural gas prices, is expected to be approved by state utility regulators in November.

The all-cash deal still requires several federal approvals, including a review by the Department of Justice and shareholders of the two utilities. The combined company will have 2.4 million customers and $20 billion in combined assets, making it one of the 20 biggest utilities in North America.

TECO's board of directors had met several times in recent days to consider the deal. Final board approval came shortly after the stock market closed at 4 p.m. Both TECO and Emera's board unanimously approved the transaction.

The sale comes less than two months after TECO Energy confirmed rumors that it was considering a sale. The rapid conclusion of TECO's search for a suitor affects 700,000 customers mostly in Hillsborough and Polk counties and another 350,000 Peoples Gas Systems customers throughout Tampa Bay and Florida.

The sale also includes TECO's New Mexico Gas Co., which has 510,000 customers across that state.

Hillsborough County Commissioner Sandy Murman said she was disappointed to see TECO absorbed by a larger company.

"Obviously my reaction to the sale of TECO is about the same feelings I had when Maas Brothers went away," Murman said. "I'm very saddened that we're losing such a fixture to our community, a great community partner. … I will miss calling TECO, but I do look forward to getting to know Emera."

Former Tampa Mayor Sandy Freedman said she was concerned to see TECO absorbed by a company without local roots.

"As a public official you want to know who to make a call to over there if there is a problem," she said. "Now you're going to have a whole new set of players that nobody knows."

Perhaps to head off just that sort of concern, Emera said as part of its commitment to the communities it serves, a local "operating board" would be established with local representation. It was not immediately clear what the duties of such a board would be.

While Emera is a utility based in Canada, it also owns assets in New England. With the acquisition of TECO, 71 percent of Emera's assets will be in the United States.

The companies said TECO shareholders would receive $27.55 per common share, which is 48 percent above TECO's stock price on July 15, which is the day before TECO confirmed Internet reports that it was exploring a possible sale. TECO stock closed at $21.07 when markets closed at 4 p.m. Friday.

The $10.4 billion deal includes the assumption of $3.9 billion in debt.

TECO's unusual confirmation in mid July that it was considering a possible sale didn't provide much detail, except that it was "exploring strategic alternatives" and had retained Morgan Stanley to help weigh its options.

Ramil said negotiations with Emera had not begun at that point. He confirmed that TECO fielded several additional offers from other utilities. But he said confidentiality agreements barred him from identifying them.

Two of the state's utility giants, Duke Energy Florida and Florida Power & Light, surround TECO's electricity service area, which led to speculation that one of those players might acquire the Tampa-based utility. Emera was a name that was absent in speculation.

A smaller utility is seen as being particularly appealing to bigger neighbors eyeing an opportunity to consolidate operations and bolster revenue.

TECO's Tampa Electric, besides its large base in Hillsborough and Polk, also serves a handful of customers in the Oldsmar area of Pinellas and a small number in eastern Pasco County.

In recent months, TECO has moved to sell off its coal business, which operates coal-production facilities in Kentucky, Tennessee and Virginia. Emera officials said they supported the move to divest those coal assets. The officials said they expected those efforts to continue.

Freedman, on hearing Emera was based in Nova Scotia, joked: "That's a nice place, I've been to Nova Scotia. The lights were on, so that's a good sign."

U.S. ENERGY NEWS

U.S. Deploys 40.7 Megawatts of Energy Storage in Second Quarter of 2015

In the second quarter of 2015, the U.S. energy storage market had its best quarter in two and a half years, installing 40.7 megawatts (MW) of capacity, according to the Energy Storage Association (ESA). While the figure is a nine-fold increase year-over-year, this increase was mainly driven by one large utility project, although underlying trends show great promise for other markets. The ESA projects that 2015 will be the biggest year yet for energy storage, with a total of 220 MW planned or already deployed. See the **PDF**.

The current results largely reflect a 31.5-MW storage project installed in Illinois by Invenergy LLC, which plans to install a similar project in West Virginia later this year. Such installations on the utility's side of the power meter accounted for 87% of storage deployments in the second quarter. Likewise, the energy storage market's best quarter was the fourth quarter of 2012, when Duke Energy brought the 36-MW Notrees project online in Texas with the help of Energy Department funding.

Google Wants You to Put Solar Panels on Your Roof

You can now "Google your roof."

To ecourage more people equip their homes with solar panels, the company just launched a new initiative dubbed Project Sunroof.

Search your home address and Google's tool will spit out information to will help you decide whether solar panels could be a right renewable energy option for you.

You'll see about how much sunlight hits your roof during the year, based on high-resolution aerial mapping and local weather patterns, and how much money you could save if you went solar.

If they're interested in moving forward with an installation, the tool can then recommend solar providers in your area (Google has partnered with five so far).

Right now, it only works for addresses in areas around San Francisco and Fresno, California, or Boston, Massachusetts, but Google says it plans to expanding the tool's reach over time.

Project Sunroof is the brainchild of self-described "solar energy geek" Carl Elkin.

Elkin, who's worked as an engineer at Google for nearly three years, has long been interested in both the science of solar and its benefits to the environment, installing

panels on his own house in 2011 and volunteering with the Boston-based program Solarize Masschusetts since 2012.

"In doing that, I talked to hundreds of people, and one thing that I really learned was that people overall don't always realize that they can save money by installing solar panels," he tells Business Insider. "They often think, 'Sure it's good for the environment, but it's going to cost me money.'"

But Elkins says that solar power often isn't the money-loser people think it is and can often cheaper than grid power.

Through conversations with people on Google's Geo and Maps teams, it dawned on him that Google had data and computational tools necessary to put together a tool that could potentially help millions of people. He started working on creating a resource as a 20% time project about a year and a half ago — Google encourages its employees to spend a fifth of their time working on things they're passionate about that think could benefit the company — but took on Project Sunroof full-time for the last several months.

Although not every 20% project makes it to the big leagues, Elkin's says his project won approval because it fits neatly with Google's overall goals.

"We're providing information to our users — which of course is absolutely core to Google's mission — and we're using data from many parts of the company," he says. "It also really fits in Google's tradition investing in renewable energy."

In a blog post about Sunroof, Elkin points out that Google has invested in a company called SolarCity, helped finance the largest solar farm in Africa, and priotized making its new campus as solar-powered as possible.

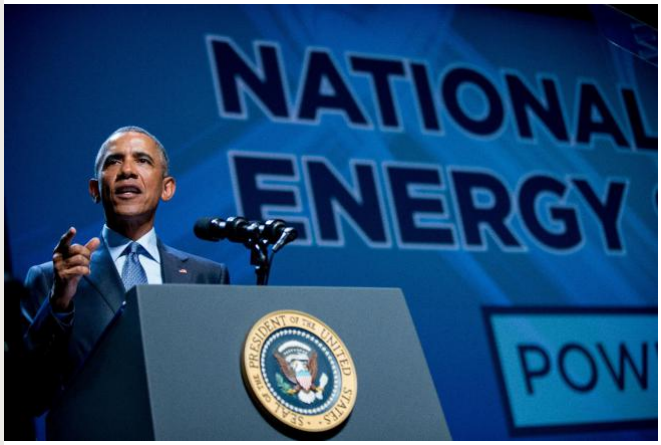
"Because we were using so much of the 'Google Magic' as well as doing something that would be difficult to do *outside* of Google, it was widely thought that this would be worth an investment of some Google resources," he says.

"We're really very excited. We think that this is important both for Google and for the country. It provides very useful information for a lot of people who are coming to Google anyways to start their solar journey.

Pushing Back Against Fossil Fuel Interests, Obama Backs Clean Energy Choices for Consumers

Pushing back against fossil fuel interests, President Barack Obama is pressing to give ordinary Americans more power to choose what kind of power they use.

The president, in a speech at a clean energy conference in Las Vegas in August, planned to announce new executive actions and other efforts aimed at making it easier for homeowners and businesses to invest in green energy improvements that in the past may have been impractical or unaffordable.



The moves, which include expanding the use of energy improvement loans, are designed to build on the clean power plant rules that the president announced earlier in the month to cut carbon dioxide emissions from coal-fired power plants by a third. They all feed into Obama's goal of cutting overall U.S. emissions by 26 percent to 28 percent over the next decade to combat climate change and encourage other countries to do likewise.

The actions Obama announced Monday focused on giving families and businesses more say in what types and how much power they rely on. That could mean rooftop solar panels, once largely the province of committed environmentalists, or other renewable energy innovations.

Ahead of Obama's remarks, Housing Secretary Julian Castro said the plan "hits the sweet spot" by making clean energy more affordable for people and protecting the environment. He said people too often have been "priced out" of clean-energy options.

However, Utah Republican Rep. Rob Bishop, chair of the House Committee on Natural Resources, said Obama's policies were leveling "increased costs and decreased choices on all Americans and especially the most disadvantaged communities."

The Heartland Institute, a conservative think tank that denies manmade climate change and gets money from the Koch brothers was among groups co-sponsoring a simultaneous "affordable energy summit" in Las Vegas as a counterpoint to Reid's gathering. The organization, which previously received money from ExxonMobil, maintains that Obama's policies promote wind and solar power at the expense of conventional energy and "will inevitably cause skyrocketing electricity prices while providing little if any net environmental benefits," according to the summit's website.

Wind Energy Could Blow U.S. Coal Industry Away

It's not enough to say that fossil fuels have to go or nuclear is hopeless (which are both probably true statements). The question is: What will replace them? Furthermore, how long will it take?

An intriguing headline appeared in CleanTechnica on August 4: Wind Could Replace Coal As US' Primary Generation Source, New NREL Data Suggests. Wouldn't that be

nice? Is it even possible? (The article originally appeared in The Handleman Post on July 26.)

Though solar energy has become the poster child for renewable energy generally, the strongest player in the game, for now, is wind. Wind leads solar energy in capacity installed as well as output (world solar capacity passed 200 GW this year); and other than a few welcome cases (so far) where PV comes in under 5 cents per kWh, wind is generally cheaper.

It is worth noting that some of the world's industrial giants have not only taken a keen interest in wind energy but have also taken the lead in sticking turbines in the ground. (Offshore makes up only about 2 percent, to date, as the above chart indicates.) GE and Siemens are on the podium, trailing only Denmark's Vestas. The big three supplied 98 percent of the U.S. market last year according to the Department of Energy (DOE).

Passing the 400 GW mark this year, world wind capacity already exceeds U.S. coal capacity and will likely pass natural gas power capacity in the U.S. this year. It topped U.S. nuclear capacity many years ago, and has now caught up worldwide.

The point of this article is to assert that wind not only can but will replace nuclear as a source of carbon free, risk free energy, with no fuel cost and no externalities. The time has come to acknowledge that spinning wind turbines are the "air apparent." Given a billion dollars to invest in power plants, which would you rather own, operate and collect income from? Which facility would you rather have in your back yard or your view?

At this point in the debate, the Old Guard will chime in: "Yes, but wind is intermittent, so the capacity factor is far below that of coal, gas or nuclear." Are you sure about that? The article mentioned above begins with an astonishing claim: "The National Renewable Energy Laboratory (NREL) recently released data showing that the Capacity Factor (CF) for wind power can reach 65%, which is comparable to that of fossil fuel based generation."

The key to such a high CF for wind is height. "[It's] head is set among the clouds" is a pretty good translation for the caption under the top picture. At this stage of the game, a 35 percent capacity factor is a tap in. The further up you climb, the steadier the wind and the higher the capacity. The resource is also steadier offshore.

On the bottom line, gas combustion turbines have such a low factor because these facilities are generally only used during peak hours (the so-called Hundred Hottest Hours) when demand for air conditioning causes a spike in the overall system load. This month, extreme heat pushed Texas to a record peak of 69 GW. Though Texas leads the U.S. in wind capacity, it doesn't blow so much during the day.

Fortunately, the cause of everyone turning on their AC units is also the cure, sunlight; PV will probably take this market away from gas pretty soon. The capacity factor for sun in most of Texas is closer to 25 percent than 5 or 10. Therefore, $600 million dollars is better spent on 400 MW of PV than 1 GW of gas capacity, which still needs fuel; when the peak hours hit, the price of gas spikes with it while the price of solar

falls to near zero, which is a different sort of problem, though a better one from the customer's point of view. (Somewhere Over the Rainbow)

The DOE released its Wind Technologies Market Report this month . Eric Wesoff, the Editor-in-Chief at Greentech Media (GTM), wrote about some key takeaways from that report on August 11. First, though there are still uncertainties, the industry in the U.S. rebounded in 2014, after a dismal 2013, providing 24 percent of all new U.S. capacity. In short, "it's a growing market with record-low prices."

A Utility Dive article on August 20 seconds that conclusion: "This year will be big. Next year will be similarly big. What happens after 2016 is anybody's guess because of concerns about the federal production tax credit."

This chart ought to prove the point that wind has become a 'credible resource.' "Co-author [Mark] Bolinger [from the Lawrence Berkeley National Lab -- LBNL] noted that the number of states where wind accounts for a significant amount of in-state generation has changed drastically from just 10 years ago, reporting, 'Wind power currently contributes almost 5 percent of the nation's electricity supply, more than 12 percent of total electricity generation in nine states, and more than 20 percent in three of those states.'" (Texas has more than twice the capacity of any other state).

Ryan Wiser, the other co-author, adds: "Electric utilities now consider wind to be a mainstream energy source and part of the portfolio."

The next item on the Report's list shows rotors are getting bigger which makes for higher capacity factors and more power. According to the report, "Since 1998-99, the average capacity of wind turbines installed in the United States has increased by 172 percent, the average turbine hub height has increased by 48 percent, and the average rotor diameter has increased by 108 percent."

Best of all costs keep coming down. LBNL reports that projects in 2014, on average, were installed at $1,710 per kilowatt, down $600 from the 2009 peak. This translates into cheap power. "The average levelized long-term price from a sample of wind power sales agreements signed in 2014 (and admittedly concentrated in the lowest-priced central region of the country) fell to just 2.35¢/kWh. These prices are below the bottom of the range of nationwide wholesale power prices, and compare very favorably to a range of projections of the fuel costs of gas-fired generation."

Most of the uncertainty referred to above stems from the expiration of the production tax credit (PTC) which still lingers for those projects that were begun in 2014 if they are up and running in 2016. The other primary uncertainty has to do with the price of natural gas. The GTM article concludes: "As for what happens after the PTC, Bolinger suggests that 'the PTC actually has an impact on how these projects are financed.'

The structure favors tax equity funding, 'one of the most expensive sources of capital.' As the PTC fades, different and cheaper sources of capital will be available to wind project developers, according to Bolinger. 'That shift to lower-cost capital will partially mitigate the loss of the PTC.'" In other words, we shall see. (For Report highlights only)

Wind Over Seas

Offshore wind is steady and it lies close to the largest load centers, i.e. big cities, where empty fields for planting wind turbines are few and far between (and those

available are too pricey). The biggest drawback is the cost, as seawater is not only corrosive but the constant turbulence is hard on equipment, so it costs more to engineer the arrays to operate reliably for decades. The world's largest offshore array is in England (the 630 MW London Array – the 300 MW Thanet Wind Farm is nearby); Britannia still rules some of the waves.

Another Greentech Media article of note was published on August 10: Europe Launches Offshore Wind Power Bonanza. It asks the question, 'Is 55 gigawatts of new offshore wind by 2020 possible?' According to the European Commission, approximately 130 GW of wind (mostly onshore) provided 8 percent of Europe's electricity in 2014. Though offshore makes up only about 2 percent of total capacity worldwide (as noted above), the proportion in Europe is higher, and the push to continue is much stronger than in the U.S. where the first project, off the coast of Rhode Island, finally got a regulatory green light.

"Offshore wind is expected to boom over the coming years in Europe, building on a record year in 2014, which saw nearly $20 billion in investment, according to Bloomberg New Energy Finance. . . . Europe expects to see a 40 percent reduction in costs for offshore wind farms by 2020, a trend that has already started. Better installation techniques alone could cut up to 15 percent of costs, an important factor as increasingly large turbines are installed in deeper offshore areas. Large offshore wind turbines are now pushing 6 MW to 8 MW power ratings and are more than 500 feet tall. The size of offshore projects is also growing."

Siemens, based in Germany, has begun testing its massive new 7 MW offshore turbine in Denmark. According to Cleantechnica, these units can each supply 32 million kWh annually which indicates a capacity factor greater than 50 percent (i.e. 4,500 hours per year). Another of its virtues is gearless technology: "A synchronous generator with permanent magnets converts the rotor motion directly into electrical energy without the use of a gearbox which normally steps up the low speed of the wind rotor to high speed for generating electricity. With the new technology, the entire drive train operates with significantly fewer components, making it lighter, more compact and less prone to wear."

Smil's Challenge

The fastest ramp ever for an energy source, from 1 to 20 quads, came from nuclear power plants between 1970 and 1990. (A quad is one quadrillion Btus, the amount of energy in roughly 175 million barrels of oil).

It took coal 70 years to get from 1 to 20 quads (1830 to 1900 – wood was top dog for a few millennia before that); it took oil a bit more than 40 years (from the Model T rollout in 1908 until 1950), and gas took about the same amount of time as oil (from roughly 1920 to the early 1960s.

The U.S. uses about 100 quads per year and world demand is on the order of 500 quads. To be fair, that figure for nuclear power is a bit of a stretch since the number of Btus delivered was closer to 7 quads. But let's be generous and ignore the inefficiencies in thermal power generation. (*Source: Vaclav Smil, Energy Transitions, Appendix*.)

In other words, the scale of what is needed to feed the world energy beast is enormous and it takes a very long time for even the best sources to move from being a rounding error to becoming the top dog, or even a major player at the very least.

Even if low cost power and heat from the wind and the sun are the greatest thing since the Almighty said 'Let there be light,' going from a few percent of our energy requirements and a few quads, where they are now, to the top of the table won't happen overnight.

Mission Objectives:

Wind replaces Nuclear power
Electricity replaces Oil for Transport
Sunlight replaces Oil & Gas for Heat & Power
Wood replaces Coal
Efficiency: the One Thing to Rule Them All

Even if the table above were the agreed upon summary of mission objectives, and that is far from being true, it will still take decades to bring about the stated results. The first objective seems the most likely to happen first, however, and sooner than you think.

Approximately 400 nuclear stations around the world produced 2,364 terawatt-hours (TWh) in 2014. (Source: Nuclear Energy Institute.) We don't yet know what the average capacity factor for wind turbines will be in ten years' time, but if that number gets to 50 percent, then it would take 600 GW of wind to replace the current nuclear contribution. With 400 GW now in place, the goal line seems already in sight.

Since existing turbines have a lower capacity factor than those to come (currently around 33 percent according to NREL), it will take more than 600 GW; for the sake of argument, let us say between 750 and 800 GW, with the next 400 having an average CF of 50 percent. 51 GW of wind capacity were added worldwide in 2014 (bringing the total to 370 GW). Even if that number did not grow, and another 50 were added every year, the crossover point would be achieved by 2022 or 2023.

Note that Germany quickly replaced all 43 TWh of lost nuclear generation since shutting its fleet down after Fukushima with wind and solar power, so this is by no means a fantasy. Even without the PTC in the U.S., it is reasonable to assume that more than 50 GW will be added each year. China is the world's top market (adding 23 GW in 2014) and they do not intend to slow down. Furthermore, as offshore wind becomes a larger part of the mix, with higher and steadier winds available, these numbers seem conservative.

The second item on the list of Mission Objectives will depend on several nebulous variables so it is much harder to predict. What will the price of batteries be in 2020? In 2030? UBS believes that once the price falls below $150 per kWh (and right now it is around $250) EVs will start to take over the car business.

When will that be? Navigant says the cost of materials is around $87. Elon Musk says he will be disappointed if the price does not get below $100 per kWh by 2020. Other important variables include the price of oil/gasoline and the level of world economic activity between now and then. Place your bets.

Tilting at windmills used to be an expression to describe someone 'off their rocker' who was pursuing a fantasy or fighting an imaginary enemy, as was the case with Cervantes' hero Don Quixote (Part 1, Chapter VIII):

Just then they came in sight of thirty or forty windmills that rise from that plain. And no sooner did Don Quixote see them that he said to his squire, "Fortune is guiding our affairs better than we ourselves could have wished. Do you see over yonder, friend Sancho, thirty or forty hulking giants? I intend to do battle with them and slay them. With their spoils we shall begin to be rich for this is a righteous war and the removal of so foul a brood from off the face of the earth is a service God will bless."

"What giants?" asked Sancho Panza.

"Those you see over there," replied his master, "with their long arms. Some of them have arms well nigh two leagues in length."

"Take care, sir," cried Sancho. "Those over there are not giants but windmills. Those things that seem to be their arms are sails which, when they are whirled around by the wind, turn the millstone."

Don Quixote symbolized a dying age, the age of Knights and Chivalry. Today's dying age is based upon fossil fuels and nuclear power. Consequently, tilting at windmills should now be taken to mean someone who doesn't realize there is no stopping them, i.e. windmills.

Nuclear power does not measure up (on price, on time to build, on fuel, on risk) and cannot compete with 2.35 cents per kWh. Fossil fuels, though they still measure up (at least until carbon gets a price), are finite. Resistance is futile, and the risk to investors who don't get this is substantial and rising.

GE Announces the Largest US Energy Storage Contract

General Electric Company (GE - Analyst Report) recently announced a contract to supply a 30-Megawatt ("MW") Battery Energy Storage System to Coachella Energy Storage Partners ("CESP") at Imperial Valley, CA. CESP's new facility will serve the Imperial Irrigation District ("IID") by enhancing grid flexibility and reliability on IID's network.

This is General Electric's largest energy storage project to date with commercial operations expected to begin in the third quarter of 2016.

As a part of the project, General Electric will provide CESP with a comprehensive energy storage solution employing its latest technologies in order to achieve seamless and complete system performance. The facility will provide solar ramping, frequency regulation, power balancing and black start capability for an adjacent gas turbine. The plant will be operated by ZGlobal - engineering collaborator with CESP for the first one and half years after which it will be controlled by the IID.

General Electric recently expanded its lithium ion battery storage facility to capitalize on the increasing demand by power producers seeking to install energy storage systems. The current contract will augment its revenues and strengthen its position in this emerging market segment.

General Electric is one of the largest and most diversified technology and financial services corporations in the world with products and services ranging from aircraft engines, power generation, water processing and security technology to medical imaging, business and consumer financing, media content and industrial products. Its segments include Power & Water, Oil & Gas, Energy Management, Aviation, Healthcare, Transportation, Home & Business Solutions and GE Capital.

General Electric currently has a Zacks Rank #3 (Hold). Better-ranked stocks include Swire Pacific Limited (**SWRAY** - Snapshot Report) Engility Holdings, Inc (**EGL** - Snapshot Report) and Northrop Grumman Corporation (**NOC** - Analyst Report), all carrying a Zacks Rank #2 (Buy).

FUNDING OPPORTUNITIES

FESC office tracks the energy related funding opportunities, shares them with faculty and industry partners, facilitates the submission of multi-faculty, multi-SUS university competitive proposals in response to solicitations for major research programs. The most recent funding opportunities are listed below. For a complete list please visit the funding opportunities page on the FESC website.

DEPARTMENT OF ENERGY

DE-FOA-0001002: **Innovative Development in Energy-Applied Science (IDEAS)**
Concept Paper Submission Deadline: September 28, 2015
Full Application Deadline: 9/28/2015

DE-FOA-0001374: DOE Traineeship in Robotics
Closing Date for Applications: September 30, 2015

DE-FOA-0001375:
Collaborative Fusion Energy Research in the DIII-D National Program
Closing Date for Applications: Oct 2, 2015

DE-FOA-0001313: Advanced Reactor Industry Competition for Concept Development
Closing Date for Applications: Oct 5, 2015

DE-FOA-0001366 - **SBIR/STTR FY 2016 Phase I Release 1**
Application Deadline: October 19, 2015

DE-FOA-0001386:Early Career Research Program
Closing Date for Applications: November 19, 2015
DE-FOA-0001282: Scientific Infrastructure Support for Consolidated Innovative Nuclear Research
Application Deadline: Feb 18, 2016
DE-FOA-0001281: FY2016 Consolidated Innovative Nuclear Research Funding
Letter of Intent Due Date: August 27, 2015 at 8:00 p.m. ET
Full Application Due Date: February 18, 2016 at 8:00 p.m. ET
Berkeley Cleantech University Prize (CUP)
Closing Date for Applications: TBD

H2 Refuel H-Prize Competition
Deadline: 10/31/2016

DE-FOA-0001203 - **Assisting Federal Facilities with Energy Conservation Technologies, Fiscal Year 2015 (RFI)**
Application Due Date: TBD

SPOTIR-0000018: Technologist-In-Residence Pilot: Laboratory Call for Proposals
Application Due Date: TBD

NATIONAL SCIENCE FOUNDATION

NSF 13-594: Industry/University Cooperative Research Centers Program
Applications Closing Date: September 25, 2015 Planning Grant and Full Center Proposal

NSF PD 13-7607: Energy, Power, Control and Networks (EPCN)
Full Proposal Window: October 1, 2015 - November 3, 2015
October 1 - November 1, Annually Thereafter
PD-15-7644: Energy for Sustainability
October 1, 2015 - October 20, 2015
October 1 - October 20, Annually Thereafter

NSF PD 13-7607: **Energy, Power, Control and Networks (EPCN)**
Full Proposal Window:
October 1, 2015 - November 2, 2015
October 1 - November 1, Annually Thereafter

NSF 15-601: **NSF/DOE Partnership in Basic Plasma Science and Engineering**
Full Proposal Target Date(s):
November 19, 2015
October 21, 2016
Third Friday in October, Annually Thereafter

OTHER

The US-Israel Binational Agricultural Research and Development Fund (BARD)
Submission Date: Yearly, Mid September

ABB Research Award in Honor of Hubertus von Grunberg
The application deadline for the first award is Jan. 29, 2016.
N00167-15-BAA-01 - **Energy Conservation Applications for the US Navy**
Response Date: 11/30/2016

Read more at our website>>

UPCOMING EVENTS

The Battery Show and Critical Power Expo

September 15 - 17, 2015

Novi, Michigan

Critical Power Expo is dedicated to connecting the buyers, operators and specifiers of critical power equipment and technology with a wide range of suppliers along with the whole supply chain - from manufacturers of batteries, power systems and products to UPS equipment and monitoring systems.

Taking place September 15-17, 2015, in Novi, Detroit, Michigan, the exhibition hall offers attending facilities managers, data center managers, IT managers and engineers a one-stop-shop for informing key stationary power technology decisions.

Click **here** for more information.

ACEEE National Conference on Energy Efficiency

September 20-22, 2015

Little Rock, AR

The ACEEE National Conference on Energy Efficiency as a Resource is a biennial event that was first held in 2001. The conference is widely recognized as the premiere event for examining energy efficiency as a strategic and critical utility system resource. The program content will be specifically designed to focus on the issues related to utility-sector energy efficiency policies and programs. Industry leaders will gather to discuss the latest developments in the use of energy efficiency as a key resource for meeting customer and utility system needs and for addressing other critical economic and environmental objectives.

Click **here** for more information.

International Conference on Green Energy and Expo

September 21-23, 2015

Orlando, FL

We officially invite all participants across the globe to attend the International Conference on Green Energy & Expo popularly known as Green Energy-2015, to be held during Sep 21-23, 2015 at Orlando, Florida USA. Green Energy 2015 will focus on usage of natural resources and a unique opportunity for scientists from all over the world to meet, share, and perceive new scientific interactions. The theme of conference is "Share & acquire knowledge on utilization of natural resources" which reflects the emerging progress from our resources and scientist as discoveries in the lab are translated into useful technologies in an increasingly targeted and precise manner.

Click **here** for more information.

World Energy Engineering Congress

September 30 - October 2, 2015

Orange County Convention Center
Orlando, FL

AEE is very pleased to bring the WORLD ENERGY ENGINEERING CONGRESS (WEEC) to Orlando for 2015. Now in its 38th year, the WEEC is well-recognized as the most important energy event of national and international scope for end users and energy professionals in all areas of the energy field.

WEEC's featured Opening Session speaker for 2015 will be Dr. Condoleezza Rice. Dr. Rice will focus her remarks on terrorism, energy, and economic security. She will also discuss challenges and opportunities we might face as a result of the ever changing geopolitical landscape.

Click **here** for more information.

The First International Symposium on Sustainable Human-Building Ecosystems

October 5 - 7, 2015

Pittsburgh, PA

The Steering Committee of the NSF funded Research Coordination Network (RCN) on Sustainable Human-Building Ecosystems (SHBE), in partnership with the Carnegie Mellon University, cordially invites you to participate in the First International Symposium on Sustainable Human-Building Ecosystems (ISSHBE).

The symposium provides an opportunity to share cutting edge findings in the integration of human behavioral science, social and economic sciences with building design, engineering and metrology for better understanding of building energy performance, environmental impacts and occupant comfort.

Click **here** for more information.

Florida Green School Awards : Celebrating and Recognizing Environmental Excellence in Florida's Schools and Districts

October 8, 2015
Streamsong Resort, Polk Co., Florida

With nearly 50 nominations of outstanding efforts to teach and live green, the 6th Annual Florida Green School Awards called upon a number of remarkable individuals to serve on the panel of judges. After an eligibility check by the Department of Education, each nomination was reviewed by three judges. Scores were tabulated and aggregated. The top three finalists were identified in each category. The highest scoring project in each category was selected as the state winner.

Click **here** for more information.

Third Annual Go SOLAR & Renewable Energy Fest

October 9 - 10, 2015
Ft. Lauderdale, FL

Go SOLAR Florida will host the Third Annual Go SOLAR and Renewable Energy Fest at the Greater Fort Lauderdale/Broward County Convention Center, in Fort Lauderdale. This FREE event will feature the latest information on alternative and renewable energy. It is quickly becoming the premier event in South Florida to promote renewable energy and learn how to save money while using cleaner sources of energy.

Click **here** for more information.

2015 Florida Energy Summit

October 14 - 16, 2015

Jacksonville, FL

This year the summit will be held in Jacksonville, Florida, to showcase how Northeast Florida is leveraging America's evolving energy sector to grow an economy that will serve its residents today and allow future generations to thrive.

Click **here** for more information.

BuildingEnergy NYC 2015

October 15, 2015
New York, NY

BuildingEnergy NYC is a rapidly growing, cross-disciplinary conference that offers practical, hands-on solutions to the financial, environmental, legal, and maintenance challenges facing NYC building owners and practitioners in every neighborhood and borough. Conceived in 2012 and nearly doubling in size yearly, BuildingEnergy NYC sets itself apart as a place where members of New York's building industry come together to learn from each other how to make the buildings of this great city even better. This year BuildingEnergy NYC offers six tracks and 24 fully accredited sessions to start the conversations. We'll share the details on big energy savings in multifamily retrofits, the bigger picture on policy and where it's driving the building industry, and plans for the biggest Passive House yet, out on Roosevelt Island.

Click **here** for more information.

National Advanced Biofuels Conference & Expo

The 5th annual National Advanced Biofuels Conference & Expo will take place October 26-28, 2015, at the Hilton Omaha in Omaha, Nebraska.

Produced by BBI International, this national event will feature the world of advanced biofuels and biobased chemicals-technology scale-up, project finance, policy, national markets and more-with a core focus on the industrial, petroleum and agribusiness

alliances defining the national advanced biofuels industry.

With a vertically integrated program and audience, the National Advanced Biofuels Conference & Expo is tailored for industry professionals engaged in producing, developing and deploying advanced biofuels, biobased platform chemicals, polymers and other renewable molecules that have the potential to meet or exceed the performance of petroleum-derived products.

Click **here** for more information.

The 6th International Conference on Smart Grid Communications (SmartGridComm 2015)

November 2-5, 2015
Miami, FL

The Organizing Committee is pleased to invite your participation in 6th IEEE International Conference on Smart Grid Communications (SmartGridComm 2015). This conference seeks to bring together researchers and practitioners around the world who are leveraging and developing Information and Communication technology for the Intelligent Grid with attendant economic, environmental, and societal benefits.

We look forward to sharing the innovative technologies and approaches being used to enable two-way energy and information flow, faster fault isolation and power outages restoration, renewable energy integration and consumer energy optimization tools as well as other smart grid applications.

SmartGridComm 2015 will be held in Miami Florida , USA on November 2-5, 2015. Miami is a major crossroads of multiple continents, rich in cultural diversity and offering many opportunities for leisure and exploration. IEEE SmartGridComm 2015 will feature a technical program centered around four thematic symposia, namelyCommunications and Neworks to Enable the Smartgrid, Cyber Security and Privacy, Architectures, Control and Operation for Smart Grids and Microgrids and Data Management, Grid Analytics, and Dynamic Pricing.

We warmly invite you to participate in the IEEE SmartGridComm 2015 program of activities. We are confident that you will find the program to be enriching, enlightening and rewarding.

Click **here** for more information.

Advanced Bioeconomy Leadership Conference (ABLCNext)

November 2-5, 2015

San Francisco, CA

ABLCNext is the largest gathering of advanced bioeconomy senior leadership on the West Coast - focusing on advanced low carbon fuels, chemicals, and materials, advanced foods, seed and trait development, crop & soil technology, drones & robotics, and waste mitigation.

What happens at ABLCNext? Companies coming out of stealth, product and project milestone announcements, key policy movements, media coverage of all of the above; tons of networking re: finance, public-private partnerships, policy, award ceremonies, and a real array of new products and technologies are showcased both on stage, via TV and in the NEXT STORE.

Click **here** for more information.

Power Up Energy Expo

Fall, 2015
South Walton, FL

The Premier Energy Conference along the Gulf Coast,Power Up offers a great opportunity to network with peers and develop qualified leads for your business.

Click **here** for more information.

2016 Capitol Days

January 13, 2016 - January 15, 2016 @ All Day
FSU Turnbull Conference Center
Tallahassee, FL

Reserve your space to attend the Florida Chamber's Capitol Days and kick-off the 2016 Legislative Session with Florida's top business executives, legislators and state leaders with an event that focuses on:

- Florida's Business Agenda - The business communities 2016 legislative priorities,
- Securing Florida's future through private-sector job creation and economic development,
- Innovation, lawsuit abuse reform, healthcare, regulatory reform, talent supply, and water,
- State-of-the-State Update and more.

Register today and be a part of the conversation to secure Florida's future.

Click **here** for more information.

EUEC 2016: ENERGY, UTILITY & ENVIRONMENT CONFERENCE

February 3, 2016 - February 5, 2016 @ All Day
San Diego, CA

The 19th Annual EUEC 2016, is USA's largest professional networking & educational event of its kind, with 2,000 attendees, 200 exhibits, and 400 speakers in 10 tracks.

Click **here** for more information.

ESCC 2015: 3rd International Conference on Energy, Sustainability and Climate Change

July 10th - 16th, 2016
Marathon, Athens, Greece

ESCC series aims on bringing together leading experts in the fields of optimization and computational methods to discuss recent advancements and trending topics.

Click **here** for more information.

Note from the Editor

Thank you for reading Florida Energy Systems Consortium Newsletter and sharing this newsletter with your colleagues. We try to highlight developments in renewable energy technology and research all across Florida and the world. If you have any news you would like to see featured in the Newsletter, or events you would like to announce, feel free to e-mail floridaenergysystems@gmail.com for posting in the next newsletter and on the **FESC website**: www.floridaenergy.ufl.edu