



Florida Energy  
Systems Consortium

September 2014  
Issue

FESC Highlights

Florida Energy News

U.S. Energy News

Funding Opportunities

### Upcoming Events

Midwest Energy Policy  
Conference | September 30-  
October 1  
| St. Louis, MO

Click [here](#) for more.

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USEA 7th Annual  
Energy Supply Forum |  
October 2nd |  
National Press Club,  
Washington, D.C.  
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2014 International  
Workshop on  
Environment and  
Alternative Energy |  
October 21 - 24 | The  
Debus Conference  
Facility, Kennedy  
Space Center  
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## FESC Instructional Workshop on Feb 2-3, 2014 in Orlando "Integration of Renewable Energy into the Grid"

### Please mark your calendars!

FESC will be hosting a 1.5-day instructional workshop on "Integration of Renewable Energy into the Grid". This instructional workshop is designed for industrial personnel, students and faculty who want to learn the state of the art and future directions in enabling renewable energy integration. Experts in this area will present the workshop lectures.



## WORLD NEWS

### The Coming Era of Unlimited - And Free - Clean Energy

In the 1980s, leading consultants were skeptical about cellular phones. McKinsey & Company noted that the handsets were heavy, batteries didn't last long, coverage was patchy, and the cost per minute was exorbitant. It predicted that in 20 years the total market size would be about 900,000 units, and advised AT&T to pull out. McKinsey was wrong, of course. There were more than 100 million cellular phones in use 2000; there are billions now. Costs have fallen so far that even the poor — all over world — can afford a cellular phone.

The experts are saying the same about solar energy now. They note that after decades of development, solar power hardly supplies 1 percent of the world's energy needs. They say that solar is inefficient, too expensive to install, and unreliable, and will fail without government subsidies. They too are wrong. Solar will be as ubiquitous as cellular phones are.

Futurist Ray Kurzweil notes that solar power has been doubling every two years for the past 30 years — as costs have been dropping. He says solar energy is only six doublings — or less than 14 years — away from meeting 100 percent of today's energy needs. Energy usage will keep increasing, so this is a moving target. But, by Kurzweil's estimates, inexpensive renewable sources will provide more energy than the world needs in less than 20 years. Even then, we will be using only one part in 10,000 of the sunlight that falls on the Earth.

In places such as Germany, Spain, Portugal, Australia, and the Southwest United States, residential-scale solar production has already reached "grid parity" with average residential electricity prices. In other words, it costs no more in the long term to install solar panels than to buy electricity from utility companies. The prices of solar panels have fallen 75 percent in



the past five years alone and will fall much further as the technologies to create them improve and scale of production increases. By 2020, solar energy will be price-competitive with energy generated from fossil fuels on an unsubsidized basis in most parts of the world. Within the next decade, it will cost a fraction of what fossil

fuel-based alternatives do.

It isn't just solar production that is advancing at a rapid rate; there are also technologies to harness the power of wind, biomass, thermal, tidal, and waste-breakdown energy, and research projects all over the world are working on improving their efficiency and effectiveness. Wind power, for example, has also come down sharply in price and is now competitive with the cost of new coal-burning power plants in the United States. It will, without doubt, give solar energy a run for its money. There will be breakthroughs in many different technologies, and these will accelerate overall progress.

Despite the skepticism of experts and criticism by naysayers, there is little doubt that we are heading into an era of unlimited and almost free clean energy. This has profound implications.

First, there will be disruption of the entire fossil-fuel industry, starting with utility companies — which will face declining demand and then bankruptcy. Several of them see the writing on the wall. The smart ones are embracing solar and wind power. Others are lobbying to stop the progress of solar power — at all costs. Witness how groups in Oklahoma persuaded lawmakers to approve a surcharge on solar installations; the limited victory that groups backed by the Koch brothers won in Arizona to impose a \$5 per month surcharge; and the battles being waged in other states. They are fighting a losing battle, however, because the advances aren't confined to the United States. Countries such as Germany, China, and Japan are leading the charge in the adoption of clean energies. Solar installations still depend on other power sources to supply energy when the sun isn't shining, but battery-storage technologies will improve so much over the next two decades that homes won't be dependent on the utility companies. We will go from debating incentives for installing clean energies to debating subsidies for utility companies to keep their operations going.

The environment will surely benefit from the elimination of fossil fuels, which will also boost most sectors of the economy. Electric cars will become cheaper to operate than fossil-fuel-burning ones, for example. We will be able to create unlimited clean water — by boiling ocean water and condensing it. With inexpensive energy, our farmers can also grow hydroponic fruits and vegetables in vertical farms located near consumers. Imagine skyscrapers located in cities that grow food in glass buildings without the need for pesticides, and that recycle nutrients and materials to ensure there is no ecological impact. We will have

the energy needed to 3D-print our everyday goods and to heat our homes.

We are surely heading into the era of abundance that Peter Diamandis has written about — the era when the basic needs of humanity are met through advancing technologies. The challenge for mankind will be to share this abundance, ensuring that these technologies make the world a better place.

## Where the US and the EU Import All Their Fuel From

### Top 10 Import Partners for Fuel in the European Union

The countries below account for **82.1%** of total EU fuel imports.

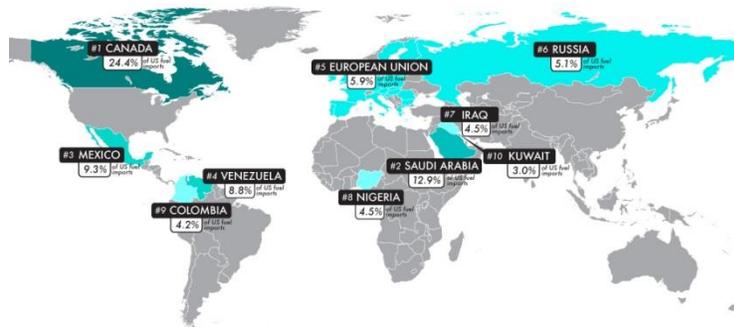


Simran Khosla / GlobalPost

Source: World Trade Organization, 2012

### Top 10 Import Partners for Fuel in the United States

The countries below account for **82.5%** of total US fuel imports.



Simran Khosla / GlobalPost

Source: World Trade Organization, 2012

### Upcoming Events (Cont.)

World Bio Markets  
USA | October 27 -  
29 | San Diego, CA  
Click [here](#) for  
more.

[Add to  
GoogleCalendar](#)

Canadian  
Bioeconomy  
Conference |  
December 1 - 3 |  
Toronto, ON,  
Canada  
Click [here](#) for  
more.

[Add to](#)

Using data from the World Trade Organization we created these maps to show which foreign nations supply the United States and European Union with most of their fuel imports. The World Trade Organization defines fuels as petroleum, natural gas, coal, and other energy products.

## FESC HIGHLIGHTS

### Florida Polytechnic Officially Opens with LAUNCH Celebration



**(L-R) University President Dr. Randy K. Avent, Chief Operating Officer Ava L. Parker, Provost Ghazi Darkazalli, Immediate Past Board of Trustees Chair Robert H. Gidel and the Florida Polytechnic Board of Trustees launch Florida's newest university dedicated exclusively to science, technology, engineering and mathematics (STEM).**

Florida Polytechnic University is now officially open and ready to welcome its Inaugural Class. Florida's newest state university held a public LAUNCH Celebration on Saturday to commemorate its grand opening and the completion of the iconic Innovation, Science and Technology (IST) Building.

Florida Polytechnic leaders, Governor Rick Scott, and more than 1,000 supporters and new students gathered to experience the state-of-the-art University up-close for the first time. A formal ceremony was followed by an actual launch – a vivid pyrotechnics display showered a campus lake adjacent to the IST Building.

"I'm grateful to all of the special guests and supporters who have joined us to celebrate the launch of Florida's next great university," said Florida Polytechnic President Dr. Randy K. Avent.

"What's truly remarkable about Florida Polytechnic is that every single component of it, including the cutting-edge IST Building, has been designed around our mission – to prepare students to become innovative problem solvers and high-tech professionals."

Dedicated exclusively to STEM (Science, Technology, Engineering and Mathematics), Florida Polytechnic's approach to learning emphasizes real-world problem-solving, work experience, applied research and business leadership opportunities through industry partnerships.

Leaders from across the state were on-hand to celebrate the new University, including Governor Rick Scott, Commissioner of Agriculture Adam Putnam, Representative Seth McKeel, Governor Wendy Link of the Florida Board of Governors and former Florida Senator J.D. Alexander.

Governor Scott said, "I would like to congratulate Florida Polytechnic University on becoming Florida's 12th public university. Florida Polytechnic University's strong focus on STEM education and its dedication to helping students graduate with the skills they will need to get a great job will play a key role in creating jobs for the next generation in Florida. A highly skilled workforce will ensure that companies in Florida will be able to grow."

Saturday's LAUNCH Celebration followed PIVOT, a philanthropic gala on Friday evening, which generated more than \$3.6 million to support scholarships for Florida Polytechnic University's Inaugural Class.

"We are grateful to those who so generously supported our Inaugural Scholarship campaign," said Cindy Alexander, Chair of the University's Foundation Board, which hosted the event. "Their gifts are not only an investment in the many talented students who have chosen to attend Florida Polytechnic University, but also a commitment to further developing the high-tech sector of our State's economy."

Both PIVOT and LAUNCH took place in and around the University's cornerstone structure.

The IST building's noted architect Dr. Santiago Calatrava also participated in the LAUNCH Ceremony. Calatrava, world-renowned for his stunning feats of modern architecture, shared his inspiration for the IST Building.

"I am honored to have been involved in this project dedicated to the study of science, technology, engineering and math – a set of subjects so crucial to our society and our economy. I am proud of what we have all achieved and I hope the young people that study here will be inspired to be creative and to meet their potential," Calatrava said. "Working with the visionary university leadership and amongst the enthusiastic Lakeland community has been a privilege and I wish everyone associated with this project the best of luck in coming years."

A moveable and functional work of art, the 162,000-square-foot, white domed IST Building features a distinctive louvered roof system that adjusts with the sun's angle and is surrounded by a ring of curved metal pergolas that shade its outer terrace and walkways.

It houses classrooms, auditoriums, administrative offices, common areas and a number of cutting-edge laboratories, including a Supercomputer and Student Data Center, a Visualization and Technology Collaboration (VTC) Lab, and a Rapid Application Development (RAD) Makerspace Lab with 3D printing capabilities.

Construction of the IST Building took 28 months and was completed by Skanska USA. Headquartered in New York, Skanska USA is one of the largest construction and development companies in the country with expertise in construction, civil infrastructure, public-private partnerships and commercial development initiatives in select U.S. markets.

"Welcome to the cathedral of learning," said Chuck Jablon, vice president of operations at Skanska. "If you're a builder, this is what you dream about doing in your career. You think

about it at nighttime, you think about it coming into work – it doesn't leave you."

With the IST Building and residence hall complete, Florida Polytechnic is now ready to welcome students for the inaugural day of classes on August 25, 2014. The University will offer six undergraduate degree programs with 19 unique areas of concentration and two masters degree programs in the College of Engineering and the College of Innovation and Technology.

"I'm awed by how much Florida Polytechnic has been able to accomplish in a little more than two years. The team has literally built a university from scratch, and today is a culmination of those efforts," said outgoing Board Chair Rob Gidel. "I'm proud of everyone involved – from campus construction to curriculum development – and I can't wait to watch our students and our state reap the benefits."

## **Florida Atlantic University to Install World's First Ocean Current Energy Test Site**

Researchers at Florida Atlantic University's Southeast National Marine Renewable Energy Center (SNMREC) will soon install the world's first offshore test berth for small-scale ocean current turbines thanks to a recently signed five-year lease agreement between FAU and the U.S. Department of the Interior's Bureau of Ocean Energy Management (BOEM).

"This project is a potentially paradigm-shifting development in the global quest for clean energy sources and puts South Florida at the forefront of research in this critical effort," FAU President John Kelly said. "It also demonstrates the multidisciplinary nature of marine renewable's research, a successful public, private partnership and FAU's international leadership in the field."



The lease allows installation of multiple anchored floating test berths on the U.S. outer continental shelf 13 miles (22 km) offshore from Broward County, Fla. These test berths, each consisting of a buoy anchored to the sea floor, allow ocean current turbine prototypes (up to 100kW generation capacity) to be deployed from vessels moored in the Gulf Stream for a few weeks at a time.

"This is the first time a lease has been issued to test ocean current energy equipment in Federal waters," said Walter Cruickshank, BOEM acting director. "The Gulf Stream contains a tremendous amount of energy, and this technology offers exciting potential to expand the nation's renewable energy portfolio."

Industry partners will have the opportunity to evaluate the efficacy of their turbine designs while mooring buoys collect measurements of ocean conditions nearby.

“Our team's hard work and dedication to our vision is symbolized by the signed lease,” said Susan Skemp, director of SNMREC in FAU's College of Engineering and Computer Science. “We are now looking forward to working closely with our industry partners as we begin to collectively evaluate equipment to generate power from ocean currents and continue to inform future regulatory processes.”

FAU's SNMREC has been working since 2007 to establish the world's first offshore ocean current turbine test site. Researchers recently performed a successful final sea trial of the first test berth buoy as well as preliminary tow tests of a small-scale research turbine in late 2013 – key steps before the installation of the test site. Before receiving a lease offer from BOEM, an environmental assessment of the project concluded that “no significant impact” was expected. Before installation of the first test berth planned this year, a project plan will be reviewed by BOEM. This work is supported by close to \$20 million in funding from the U.S. Department of Energy, the state of Florida and private companies.

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## **Florida Agricultural and Mechanical University Launches the FAMU Sustainability Institute (FAMU-SI)**

According to FAMU President Elmira Mangum, advancing the research, teaching, and application of innovative solutions to global socio-economic, ecological and energy sustainability issues is one of the cornerstones of her administration. The FAMU-SI will play a pivotal role toward helping the university to achieve this mission.

“FAMU has received national recognition for its strong commitment to sustainability. As such, the goal of this institute is to enhance our efforts, as well as expose the extensive knowledge and expertise that our faculty and staff possess in this area,” Mangum said. “Our goal is to provide real solutions to some of the world's greatest and immediate environmental sustainability needs.”

The three core programmatic areas of the institute include: enhancing the university's academic and research mission; improving the efficiencies and environmental stewardship of campus operations; and performing outreach and engagement initiatives among the university community and broader communities.

The institute will directly engage students with the goal of training future sustainability practitioners, entrepreneurs, leaders in science, technology, research, engineering, agriculture, and mathematics (STREAM) and other related disciplines.



**Abena Sackey Ojetayo**

To assist in carrying out the president's sustainability initiative, Abena Sackey Ojetayo has

been appointed chief sustainability officer and executive director of the institute.

“We are fortunate to attract such a world-class professional to FAMU to lead the institute,” Mangum said. “I’m encouraged by what lies ahead because of Ms. Ojetayo.”

Ojetayo is a LEED (Leadership in Energy & Environmental Design) accredited professional, and was named among the “10 New Faces of Civil Engineering for 2013” by the American Society of Civil Engineers (ASCE), which highlighted her as one of the industry’s next leaders.

“I am honored to join FAMU during such a transformative phase, which allows us the opportunity to align cross-disciplinary research, teaching and campus operations to create a model 21st century institution,” Ojetayo said. “As a historic land-grant institution with solid agricultural expertise and a public service mission, FAMU is positioned to be at the forefront of investigating, teaching and applying solutions to the global insecurities we are seeing in the energy, water, and food economies. I am looking forward to working with faculty, staff, and students in this great initiative for our campus and community.”

Ojetayo earned her bachelor’s degree in civil engineering from Cornell University with a concentration in infrastructure and sustainable development. She also earned her master’s degree in engineering management from Cornell.

She has researched and worked in various countries, including working as an energy and infrastructure planner in Greece and managing an interdisciplinary team of engineers, architects, and urban designers to master plan a model sustainable city in Nigeria — Anam City, which was recognized by the Clinton Global Initiative as a promising approach to international sustainable development.

In her most recent position, Ojetayo worked in Cornell’s energy and environmental engineering section of facilities services and helped manage its alternative energy and green building design scope for its new Tech Campus.

The FAMU-SI leadership team will also include College of Agriculture and Food Sciences Professor Odemari Mbuya, Ph.D., who will serve as faculty director, and FAMU-FSU College of Engineering Professor Clayton Clark, Ph.D., who will serve as associate faculty director. Together, the team will mobilize faculty in cross-disciplinary research and help transform the campus environment into a living-learning laboratory for students and the broader community.

According to K. Ken Redda, Ph.D., vice president for research, the implementation of the institute and Ojetayo’s expertise will be a welcomed addition to the groundbreaking research community at FAMU.

“This institute is a strong representation of the university’s research capabilities,” Redda said. “FAMU has a long history of conducting research that has impacted the region, nation, and the world in remarkable ways. This institute will not only expand our impact, but will continue to position FAMU as a leader in sustainability research.”

The institute is already preparing to make a global impact, as it has joined forces with FAMU’s School of the Environment and the City of Tallahassee to host the International Summit on Energy-Water-Food Nexus on March 26-28, 2015 at the Tallahassee-Leon County Civic Center. The summit will serve to promote and recommend practical and innovative solutions to the global crisis surrounding energy, water, and food.

The summit will be chaired by Victor Ibeanusi, Ph.D., dean of the School of the Environment.

“This is not just a conference, it is a summit with tangible practical industry solutions and outcomes,” said Ibeanusi. “This summit will empower this generation and generations to come to be innovative contributors to creating and adopting solutions that will serve as a much needed answer to our global needs regarding the energy, water, and food crisis.”

Tallahassee Mayor John Marks applauded FAMU for its efforts.

“The City of Tallahassee commends FAMU for its dedication to sustainability and is proud to partner with this outstanding institution in hosting the Summit on Energy-Water-Food Nexus,” said Marks. “As an award-winning utility provider and internationally recognized leader in sustainability, the City of Tallahassee knows firsthand the importance of the institute and the summit and the need for our community to be a part of the ongoing global dialogue.”

Earlier this year, FAMU was named among the “Top 10 Greenest” HBCUs in the nation by the Building Green Initiative and was previously recognized by the Princeton Review for its commitment to sustainability in its academic offerings, campus infrastructure, activities, and career preparation.

## UCF Progresses on Smart Sensor Consortium and Research Center

In June, we told you about a **state-of-the-art research center** focused on the next generation of universal smart sensors. As mentioned, the center's goal was to recruit companies to create the world's first industry-led smart sensor consortium.



At our Quarterly Investor Update held at Osceola Heritage Park last week, leaders from Osceola County, University of Central Florida and the Orlando Economic Development Commission announced the creation of the International Consortium for Advanced Manufacturing Research (iCAMR) with a panel discussion that also included GrayRobinson, P.A. and Lockheed Martin.

The consortium is already hard at work recruiting companies from around the world to develop and manufacture the next generation of universal smart sensors for a variety of industries - from agriculture and aerospace to medical and defense - and will provide Florida with an unmatched global competitive advantage in advanced manufacturing.

Orlando EDC Chair Scott Faris praised local leaders and UCF researchers for their multi-year dedication to the project.

"This technology will take us into the future," said Osceola County Commission Chairman Fred Hawkins, Jr., whose county pledged \$61 million to establish a partnership with UCF and the Florida High Tech Corridor Council to create the center.

By next year, industry leaders expect the international smart sensor market to be at \$7.8 billion and could reach \$1.9 trillion by 2020.

"We're going to be the leader in this technology space in the world, thanks to this project," said Charlie Gray from GrayRobinson, P.A.

Calling the project "game changing," Jeff Pridmore of Lockheed Martin said iCAMR and its research center will allow for more companies in the region to become involved in advanced manufacturing, reducing barriers to entry. "There has been a hole in this region, and this consortium will help fill that gap," he said.

Based on similar technology and incubation consortia in other U.S. cities, local leaders expect iCAMR could help create 20,000 high-tech jobs in the next decade across the region.

To help fund start-up operations costs, the state recently awarded the consortium a \$1.9 million Quick Action Closing Fund, while the consortium continues raising additional money for research and development, as well as recruiting industry partners.

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## USF Ranks as #7 Cool Schools

The University of South Florida has ascended the ranks of Sierramagazine's annual "Cool Schools" list to land for the first time in the top 10 catalog of America's greenest colleges.

Sierra magazine ranks American colleges and universities according to their environmental practices, green initiatives, and the caliber of sustainability-focused education. This year, USF ranked No. 7 out of the 173 colleges that participated in the cool schools ranking



nationally. USF is the only university in Florida that has made it to the top 10 list.

The "Cool Schools" ranking is one of many sustainability accolades bestowed upon USF in recent months. In April, USF was listed as one of only 22 schools to earn the Princeton Review's 2014Green Honor Roll. Earlier this year, AASHE reaffirmed USF's

Gold STARS rating, originally awarded in 2011. Additionally, for the third year in a row, the National Arbor Day Foundation has recognized USF as a Tree Campus USA.

"Ranking in the top ten of Sierra Club's 'Cool Schools' list is something USF has been working towards for years," said Dr. Kebreab Ghebremichael, Director of USF's Office of Sustainability. "The ranking is indicative of the deep commitment of the University administration and the wholeUSF community to sustainability."

The Office of Sustainability, housed within the Patel College of Global Sustainability (PCGS), leads sustainability efforts across the campus and the local community.

Among the most recognizable achievements in green efforts on campus include harvesting solar power, installing new water bottle filling stations throughout campus, and constructing LEEDcertified buildings. USF students have reiterated their support to campus sustainability effort by voting for the renewal of a Student Green Energy Fund (SGEF) that will help steer USF toward a carbon-free campus.

“We hope that our upcoming SGEF projects – like the campus wide bike share program, the smart parking guidance system, biodiesel production and building monitoring system – will help propel USF to even greater heights,” said Dr. Ghebremichael. “The ultimate goal is to become the greenest university in the nation.”

USF was lauded for several measures: USF’s eco-assets include America’s first 20,000-watt solar charging station for electric vehicles, The Clean Energy Research Center, where students work on fuel-cell and solar technologies, and the Power Center for Utility Explorations, which builds smart grids.

Also, campus buildings are designed to prevent water waste, and students voluntarily pay a fee that goes toward conservation initiatives. The school’s 24-year-old recycling program has diverted more than 48 tons of aluminum and 9,700 tons of paper from local landfills.

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## UF Public Utility Research Center - Research Update

Read up-to-date research on a range of topics PURC researchers are addressing in new working papers and publications. The September 2014 edition of the PURC Research Newsletter is available [here](#).

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## UCF Member of NSF's National Innovation Network

UCF has been selected by the National Science foundation (NSF) to provide Florida’s first implementation of one of the agency’s flagship programs to foster innovation among faculty and students, promote regional coordination and linkages in the innovation ecosystem, as well as develop a National Innovation Network, NSF’s I-Corps™.

The NSF Innovation Corps(I-Corps) is the agency’s signature effort to assist teams of university scientists and post-doctoral or graduate students to go outside of their laboratories and into



the marketplace where they can learn first-hand about entrepreneurship while they explore and validate the commercial landscape surrounding their innovation. The primary goal of NSF I-Corps is to provide University scientists and researchers the program, process, and resources to investigate and validate the commercialization of their science.

**I-Corps program executive committee: Ivan Garibay, Cameron Ford, Tom O’Neal, Pallavoora “Vaidy” Vaidyanathan and Oscar Rodriguez. Not pictured, Timothy Kotnour and Michael O’Donnell.**

“We are going to be teaching researchers and graduate students how to be effective entrepreneurs,” said Tom O’Neal, associate vice president for the Office of Research & Commercialization and UCF I-Corps Site Executive Program Director. “Our objective

is to increase the number of successful spin-out companies based on University research and innovation.”

UCF has one of the nation’s best innovation and entrepreneurial networks and is one of 15 universities nationwide that is leading an I-Corps program. NSF has also established five regional I-Corps centers, or nodes, located in such innovation hotspots as Washington DC, New York City, Michigan, San Francisco and Massachusetts.

The \$300,000 NSF I-Corps funding will enable UCF to reach even more potential inventors and innovators. With a goal of recruiting and training 96 entrepreneurial teams that could result in 96 new companies over the three year grant period.

Teams will consist of an academic lead (typically a university faculty or staff member), an entrepreneurial lead (a graduate student), and an external industry mentor. Each selected team will participate in a 10 week workshop utilizing the Lean LaunchPad (LLP) curriculum and methodology. Selected teams will leave the workshop possessing a solid understanding of what is necessary to achieve an economic impact with a particular innovation.

The new program will offer up to \$3,000 to each selected team to be used as early development seed money to turn their entrepreneurial ideas into potentially viable companies. Development of prototypes, customer research and travel to meetings with potential customers would all be acceptable expenses, said Ivan Garibay, researcher at the Center for Innovation and Entrepreneurship and UCF I-Corps Site Program Director.

By utilizing a group of experienced advisors to mentor and coach the selected teams, the NSF is counting on cultivating more qualified applicants for larger funding awards, such as the \$50,000 offered by the NSF

I-Corps Teams program, and up to \$1.4M in awards from the NSF SBIR program. The I-Corps program, which will be housed at UCF’s newly established Center for Innovation and Entrepreneurship (CIE), is developing a new generation of entrepreneurs and increasing the economic impact of fundamental research by combining a method for company creation that has proven successful in Silicon Valley with hands-on coaching and feedback from consumers.

The CIE is the collective home for UCF’s existing entrepreneurship programs and will be an integral part of both the identification of potential team members and the follow-up mentoring and coaching activities. A specific goal of UCF’s I-Corps program is to increase the numbers of women and underrepresented minorities involved in starting companies.

A selected group of teams will be participating in a spring pilot program of the Lean LaunchPad bootcamp. UCF students and faculty who are interested in participating in the bootcamp can submit an application found on the website: [icorps.cie.ucf.edu](http://icorps.cie.ucf.edu).

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## **FSU Researchers Bring in \$2.7 Million to Improve Aircraft Performance**

A group of Florida State University researchers has won a highly competitive \$2.7 million grant from the Air Force Office of Scientific Research to improve aircraft performance by

examining how shock waves impact the bodies of supersonic airplanes.

The charge, though a very fundamental research problem, has many practical applications in the long-term, said Farrukh Alvi, the lead researcher on the grant and the director of the Florida State-based Florida Center for Advanced Aero-Propulsion.

Understanding how shock waves impact the air flow, especially the flow near the surface of the vehicle, referred to as the boundary layer, would allow researchers and aerospace companies to more efficiently control air flow into an aircraft's engine, or over its wings and other parts of the air frame. That, in turn, could impact the aircraft's speed, mobility and overall efficiency.



**Farrukh Alvi, the director of the Florida Center for Advanced Aero-Propulsion at Florida State.**

"It has a lot of applications, some that we may not even be aware of at this point," Alvi said.

Florida State will be joined on the project by Auburn University, Ohio State University and the University of Texas-Austin. Rajan Kumar, assistant professor of mechanical engineering at Florida State, will serve as the co-primary investigator with Alvi.

"It's a complicated problem, and we're bringing in the needed expertise from different universities," Alvi said. "I believe that together, we make a formidable team."

Auburn researchers will focus on advanced measurement techniques, Ohio State will run high-fidelity simulations and University of Texas-Austin will use its experimental facilities to study supersonic and near-hypersonic flow.

FCAAP, with its new polysonic wind tunnel, will also focus on supersonic flow and running a number of the experiments in the wind tunnel, which can generate wind speeds up to Mach 5, i.e. five times the speed of sound.

The process to get the funding was long and highly competitive, with Florida State's application competing against many of the top aerospace engineering programs in the country.

Over the past few years, Florida State has been building its engineering program by recruiting top researchers and faculty members and has invested in the facilities needed to test next generation aircraft.

"We have made a concerted effort to give our engineering program a boost through some tremendous faculty hires and the addition of new facilities, such as the polysonic wind tunnel," said Vice President for Research Gary K. Ostrander. "This grant from the Air Force is a wonderful show of faith in our ability to produce top notch research results. And I know that Farrukh and his team will not let them down."

The grant, distributed over five years to the four universities, will support six to eight doctoral students and at least two post-doctoral researchers who will also work with Alvi and his colleagues on the research.

## FLORIDA ENERGY NEWS

### Florida's Untapped Potential

A news report Monday that Burlington, Vermont, can now get 100 percent of its electricity from renewable sources is a reminder of how little Florida has done to embrace alternative energy.

No, Florida is not Burlington, a city of 42,000 with access to hydroelectricity as well as other renewable sources such as wind power and biomass.

But Burlington lacks Florida's largely untapped access to solar energy. And it also doesn't face Florida's severe risks from rising sea levels due to climate change caused in part by burning fossil fuels.

Florida ranks third among all states for solar energy potential but, as of the end of last year, it was 18th in solar production. The state is exploring greater use of biomass -- the conversion of vegetation and algae into fuel -- but it has a long way to go.

With just 2 percent of its energy coming from renewables, Florida is far behind not only Sun Belt states such as California and Arizona but many Northern states like Massachusetts, New



The DeSoto Next Generation Solar Energy Center in Arcadia, part of which is shown here, is one of the largest solar installations in the state. Built by Florida Power & Light, it has the capacity to power about 2,500 homes.

Jersey and New York.

#### Renewable portfolio standards

There are economic reasons for Florida's slow transition to renewable energy. Much of Florida's electricity is fueled by natural gas, which is cheaper and lower in harmful emissions than the oil and coal widely used in Northern states.

But natural gas is still a fossil fuel and, though plentiful now, it is a finite source that will become more expensive as demands outpace easy-to-reach supplies.

The longer Florida waits to begin an earnest shift toward increased use of renewables, the more difficult and costly the shift will be.

The Legislature, in next year's session, should provide incentives and set goals for greater use of alternative energy.

Lawmakers can start by establishing, as 36 other states have, renewable portfolio standards. These policies require electricity producers to supply a certain minimum share of their power from designated renewable resources within a set time. The share and the time can vary from state to state.

Florida has been there before. In 2009, then-Gov. Charlie Crist directed the Public Service Commission to develop an RPS policy with a goal of 20 percent renewable energy production by 2020. The PSC drafted a plan, but the Legislature failed to adopt it.

The opponents' argument -- that the policy would increase consumers' energy costs amid the economic recession -- had some validity at the time.

But the cost of solar energy systems has fallen 40 percent to 50 percent since 2009, and is likely to become even cheaper as other states, and other nations, increase the demand for solar.

Florida also has legal barriers to greater use of renewables that the Legislature should either remove or modify.

#### Limits on sales and leasing

Under state law, as PolitiFact has reported, only a few utilities -- Florida Power & Light and Duke Energy among them -- can sell power directly to consumers. If a solar energy provider wants to enter the Florida market, it must first sell to one of those utilities at a cheaper, wholesale rate. "This undercuts the economic incentives to invest in solar," said PolitiFact.

In addition, the Tampa Bay Times has noted, Florida has tax hurdles that negatively impact solar leasing programs, which can help property owners avoid the huge upfront costs of solar installation. These rules discourage the widespread use of solar for homes and businesses.

Florida is a long way from Burlington's level of 100 percent renewable energy. But it should be working toward realistic goals that will provide both economic and environmental benefits.

## Adam Putnam Says Florida Should Focus on Energy, Water Use

Agriculture Commissioner Adam Putnam is hoping a second term will allow him to look ahead to new challenges, including building strategies for energy and water use.

The Bartow native told the *Tampa Bay Times* editorial board Friday those were just some of the issues the Department of Agriculture and Consumer Services faces as he seeks re-election. He named other worries ranging from citrus greening to giant African land snails.

“A consequence of a smaller world and increased trade and increased visitation is that Florida is ground zero for any number of things,” he said, “whether it’s pythons in the Everglades or a threat to citrus or things with goofy names like redbay ambrosia beetle that threaten ficus trees and avocado industries and all the fancy hedges in Palm Beach.”

But energy and water, those are the big ones people recognize right away. Although Putnam is an advocate of nuclear power, he said he thought the fiasco over Duke Energy’s failed nuclear power plants highlights how Florida needs sustainable energy goals. And if consumer sentiment in the Tampa Bay area is any indicator, the state’s Public Service Commission, which works with utility companies to set rates, needs to be addressed, too.

“This particular service area has had more than its share of problems, and they need to be corrected,” he said of Tampa Bay, which comprises the bulk of Duke Energy’s Florida customers. “There are other service areas who are paying less than what the Duke service area are paying, and they’re less inclined to show up at the PSC with pitchforks and torches.”

He said he thought the money Duke Energy is still collecting for the damaged Crystal River plant, specifically, is a burden that “could be more fairly apportioned between ratepayers and shareholders.”

The visit came the same day word spread that state Sen. Jack Latvala, R-Clearwater, and Rep. Kathleen Peters, R-South Pasadena, [announced plans to draft legislation](#) to tighten regulation of Florida’s utilities. And it follows criticism by Sen. Wilton Simpson, R-Trilby, of a [PSC staff recommendation in support of Duke](#) over a potential \$54 million credit to customers.

There already are programs in place to help large vehicle fleets convert to liquid and compressed natural gas, and in the future the Legislature could consider incentives for electric vehicles. The state is becoming increasingly dependent on natural gas, he said, so resource diversity and reliability is paramount, as long as it’s affordable.

Creative solutions are also necessary for water policy, which the Republican sees as a goal Tallahassee may be able to tackle soon. He would like to see an “overarching regional framework” in which all parts of Florida help one another in times of need.

“We need to recognize that every corner of Florida now has some type of water conflict,” he said. “It’s not just Tampa Bay water wars anymore.”

He said would like to see three water districts in close proximity to Orlando working together to formulate a plan to deal with projected growth. He wants the state to work with ranchers

to develop a shallow water storage plan to help control water levels in Lake Okeechobee. He thinks policies should foster the use of reclaimed water instead of groundwater for industrial use.

Florida should have a state funding mechanism that would spread project costs across the counties -- just as Pinellas County pays in part for cleanups in Monroe County, the Keys should help fund restoring Apalachicola Bay.

Putnam further noted he opposes Amendment 1, which would dedicate 33 percent of a tax on documentation to the Land Acquisition Trust Fund, because he was “opposed to writing the state’s budget into the state’s Constitution.”

He also opposes Amendment 2, the medical marijuana initiative, because there were no caps on THC potency or the number of dispensaries. Among other objections, he cited murky liability language.

“No one has ever prescribed smoking anything as a medicine,” he said, also expressing fears about edible marijuana. “Florida does not need to legalize marijuana for any reason, in the Constitution.”

Putnam shrugged off a question about his [controversial hunting trips](#) to King Ranch in Texas, where he and other top Florida Republican elected officials have visited since U.S. Sugar leased land there in 2011. Putnam [previously told the Times](#) he has been on two deer hunts and one turkey shoot at King Ranch, but his last visit was 2012.

“I was invited to participate in a Republican fundraiser,” he said, saying other politicians often come to this state for similar events. “Raising money around Florida and raising money outside of Florida is an unfortunate part of running in a state this expensive.”

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## **Waste-to-Energy Technology Provides Florida A New Option for Electricity**

Recently in Palm Beach County, community leaders gathered for a tour of the Solid Waste Authority of Palm Beach County Renewable Energy Park, including the country’s first waste-to-energy plant to be built since 1995. Waste-to-Energy technology employs state of the art technology to produce a reliable, consistent source of renewable energy. The technology has the potential to play a larger role in the country’s energy mix, especially with the recent rules proposed by the U.S. Environmental Protection Agency regarding carbon emissions for new and existing power plants.

The EPA’s proposal for existing power facilities, a major part of President Obama’s climate initiative, will set a national target of lowering these CO2 emissions — from 2005 levels — of 25% by 2020 and 30% by 2030. The rule will not be finalized until next year, at which time Florida will have only until June 2016 to develop and submit plans for cutting emissions about 38 percent.

At a time when electricity consumption in the state is projected to grow, these new rules will require coal-fired power plants to significantly reduce their carbon emissions, leaving these

facilities with the difficult choice to either upgrade or shut down. Given that Florida generates about one quarter of its electricity from coal, both options mean higher electricity prices for Florida consumers.

Consumer Energy Alliance advocates for an "all-of-the-above" energy plan. One energy source is not more important to the U.S. than another; each plays an important economic and sometimes national security purpose. Whether it is coal, nuclear, natural gas or renewables, the technological advancement of WtE technology is impressive and for a state such as Florida where we are very dependent on natural gas for our electricity generation, having another viable option in the mix is not only desirable but necessary.

The Solid Waste Authority of Palm Beach County's Renewable Energy Park is designed to process more than 1.7 million tons of solid waste per year and generate enough renewable energy to power more than 85,000 homes. It will employ more than 200 full-time workers. This new facility is designed to have high combustion efficiency and eliminate 90 to 99 percent of acid gas, heavy metal and dioxins emissions. The additional facility also is projected to reduce the amount of waste currently being land-filled by up to 85 percent, which could delay the need to develop a new landfill in Palm Beach County for from page 4

op a new landfill in Palm Beach County for many years while also significantly reducing emissions of the potent greenhouse gas methane, which is created by decomposing landfill waste.

As the EPA continues to mandate rules and regulations, it is important for America to have different options available to ensure that consumers have stable, reliable electricity. Waste to Energy technology can be one of those options for all of Florida including Clay County as the new facility in South Florida now demonstrates.

## **U.S. ENERGY NEWS**

### **USDA Announces Loan Guarantee to Help Innovative Company Turn Waste Into Renewable Jet Fuel**

\$105 Million loan guarantee provided through the Biorefinery Assistance Program

LAS VEGAS, Sept. 4, 2014 - Agriculture Secretary Tom Vilsack today announced that USDA has closed on a loan guarantee to Fulcrum Sierra Biofuels, LLC to build a biorefinery to produce jet fuel from municipal solid waste.

"This represents a huge step forward in the development of clean, renewable, job-creating American fuels," Vilsack said during a speech at the National Clean Energy Conference. "The nation is entering a new energy age that will make us more energy independent, cut carbon pollution and strengthen our economy, especially in rural communities where clean fuels will be produced."

USDA is awarding Fulcrum a \$105 million Biorefinery Assistance Program loan guarantee through Bank of America, N.A. to construct a facility in McCarran, Nev., to convert municipal solid waste to biodiesel jet fuel. USDA Rural Development's loan guarantee represents less than half of the \$266 million project cost. The plant is expected to produce 11 million gallons

of fuel annually.

This is the first loan guarantee USDA has made for the production of bio jet fuel.

Fulcrum will produce synthesis gas from 147,000 tons of municipal solid waste and catalytically convert it to synthetic paraffinic kerosene/jet fuel through a proprietary technology. The plant will be the first of what the company expects to be several bio jet fuel plants throughout the country.

Last month, Cathay Pacific Airways announced that it is investing in Fulcrum Bioenergy Inc., the parent company of Fulcrum Sierra BioFuels, LLC, and has negotiated a long-term supply agreement with Fulcrum for 375 million gallons of sustainable aviation fuel over 10 years. This would represent about 2 percent of the airline's annual fuel consumption.

USDA awarded the first loan guarantee in 2009 to Sapphire Energy in New Mexico. Sapphire has already paid off its \$54.5 million loan guarantee. The program's current portfolio includes Fremont Community Digester, located in Fremont, Mich., which received a \$12.8 million loan in 2011 to convert food and agricultural waste to biogas that is used as fuel to generate electricity. INEOS New Plant Bioenergy, located in Vero Beach, Fla., received a \$75 million loan in 2011 to produce cellulosic ethanol from woody biomass and municipal solid waste.

USDA is negotiating three additional loans for biorefineries in Iowa, North Carolina and Oregon. These loans would provide financing to produce renewable fuels from woody biomass, municipal solid waste and energy grasses such as switch grass, miscanthus and arundo donax. One of these ventures will retrofit an existing corn ethanol facility to produce cellulosic ethanol.

Biorefineries have broad economic and environmental implications. They lower greenhouse gas emissions, reduce dependence on foreign oil, give businesses and consumers more energy options and create jobs.

Congress established the Biorefinery Assistance Program in the 2008 Farm Bill. It reauthorized and extended the program in the 2014 Farm Bill. The 2014 Bill expands the program to include bio-based renewable chemicals and bio-based product manufacturing. USDA staff are working on regulations to set forth upcoming application terms for additional loan guarantees under the program.

The 2014 Farm Bill builds on historic economic gains in rural America over the past five years, while achieving meaningful reform and billions of dollars in savings for taxpayers. Since enactment, USDA has made significant progress to implement each provision of this critical legislation, including providing disaster relief to farmers and ranchers; strengthening risk management tools; expanding access to rural credit; funding critical research; establishing innovative public-private conservation partnerships; developing new markets for rural-made products; and investing in infrastructure, housing and community facilities to help improve the quality of life in rural America. For more information, visit [www.usda.gov/farmbill](http://www.usda.gov/farmbill).

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## **Federal Agency Shrinks NC's Zone for Offshore Wind Farms**

Prospects for large-scale wind farms off North Carolina's coast got a lot smaller Monday when the U.S. Department of Interior announced it reduced the areas of the Atlantic Ocean where turbines can be built.

The Bureau of Ocean Energy Management approved just one-fourth of the ocean waters it had been considering for wind farm development, leaving most of the sea regions off-limits. The decision released Monday leaves open about 480 square miles of ocean, down from the 1,900 square miles that had been considered for potential wind farms.

Up to now, wind energy advocates were confident areas being considered were so vast they could never be all developed. Monday's change dramatically reduces development potential off the state's coast, which is regarded as having some of the nation's best wind resources along the East Coast.

Most of the shrinkage affected the Outer Banks strip near Manteo, Kill Devil Hills and Kitty Hawk. Two sections across from Wilmington were largely left intact.

"I'm a little surprised by the magnitude of the cuts in the Kitty Hawk area," said Brian O'Hara, president of the Southeastern Coastal Wind Coalition. "It appears to be pretty severely cut back."

The ocean areas could be scaled back even further if an upcoming environmental assessment identifies conflicts with natural habitats and wildlife. Such an outcome would throw up yet one more obstacle to tapping offshore wind energy in this country, which remains of the most expensive forms of electricity generation.

North Carolina is far back in the queue for offshore wind projects, behind Massachusetts, Delaware, New Jersey, Maryland and Virginia. A wind farm planned in Nantucket Sound has been beset for years with legal challenges and is not expected to begin construction until next year at the earliest.

Wind power advocates are expected to petition the Interior Department's Bureau of Ocean Energy Management to reconsider its decision and expand the maritime blocks available for wind farm construction off North Carolina's shore. That could delay an already lengthy review process that is still several years away from accepting wind farm applications.

The Bureau of Ocean Energy Management listed a host of reasons for its decision to reduce workable regions, in response to concerns raised by the U.S. Coast Guard, the shipping industry, marine ecologists and local town officials whose communities depend on tourism and recreation.

The Coast Guard and shipping industry warned that installing giant pylons in the ocean would



**Turbines of the Burbo Bank offshore wind farm stand in a calm sea in the mouth of the River Mersey on May 12, 2008 in Liverpool, England. A federal study says offshore wind farms would not be visible from North Carolina's coast much of the time.**

increase collisions between seafaring vessels and also lead to ships smashing into wind farm facilities.

The town of Kitty Hawk expressed aesthetic concerns and passed a resolution in 2013 that urged that no wind farms be build within 23 miles of the coastline. The federal map released Monday shows that wind farms would be set back nearly 28 miles away in the Kitty Hawk area.

Other concerns included turbine towers interfering with shipping routes plied by tugs, barges and container ships. The National Park Service requested that wind farms be set back nearly 39 miles from the Bodie Island Lighthouse.

The 460-foot tall turbines are equipped with flashing hazard lights that can be clearly seen blinking in unison more than 10 miles offshore.

In the Wilmington area, sections were deemed off-limits to wind farms that have high fish populations or that are known as migration routes for North Atlantic right whales, other marine mammals and sea turtles.

Harnessing offshore wind energy was embraced by Democratic Gov. Bev Perdue and also encouraged by Republican Gov. Pat McCrory. In his letter to BOEM, McCrory wrote that wind farms would boost the state's economy and noted that a number of companies would benefit.

McCrory cited ABB, which makes power transmission cables, Nucor, which makes steel plates used in wind turbine towers, and PPG, which makes fiberglass for wind turbine blades.

"Development of commercial wind farms off the North Carolina coast could stimulate factory development in the state to provide the necessary equipment and bring jobs in that sector," McCrory wrote last year.

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## **Grand Opening for Project LIBERTY: Nation's First Plant to Use Corn Waste as a Feedstock**

POET-DSM's [Project LIBERTY](#) in Emmetsburg, Iowa, will celebrate its grand opening September 3, 2014, becoming the first commercial-scale cellulosic ethanol plant to use corn waste as a feedstock. Developed through a joint venture between POET LLC in Sioux Falls, South Dakota, and DSM Royal, a Dutch enzyme manufacturer, the project uses biochemical conversion technologies (yeast and enzymes) to convert cellulosic biomass into transportation fuels.

The U.S. Department of Energy (DOE) has supported Project LIBERTY since 2007, with an initial \$12.1 million grant for the design, construction, and operation of a cellulosic ethanol facility using corn waste, corncobs, and a biochemical conversion process. In 2012, Project LIBERTY was awarded an additional \$87.8 million DOE grant to allow the project to begin construction. The Bioenergy Technologies Office (BETO) provided cost-shared funding for POET to design, build, operate, and validate the technology and project.

Project LIBERTY will have an annual output of 20 million gallons of cellulosic ethanol per year from corncobs, leaves, husks, and corn stalk harvested by local farmers in a 30–40-mile radius of the plant—creating enough energy to power the facility, as well as a co-located bioethanol

plant. Project LIBERTY is co-located with POET's existing corn ethanol plant to allow the facilities to share staff and infrastructure, thereby improving economies of scale.

Project LIBERTY is the nation's second commercial-scale cellulosic ethanol biorefinery to come on line. In 2013, [INEOS Bio's Indian River BioEnergy Center](#) in Vero Beach, Florida, began producing 8 million gallons of cellulosic ethanol per year from vegetative, yard, and municipal solid waste. Project LIBERTY will serve as a test bed for producing cellulosic ethanol with biochemical conversion technologies, helping to inform future POET facilities, as well as other advanced biofuels projects across the nation.

As more commercial-scale cellulosic ethanol biorefineries open, BETO and DOE are realizing their goal of catalyzing the development of a U.S. capability to produce cost-competitive renewable fuels from cellulosic biomass. Biofuels are a major component of a multipronged strategy that addresses enhancing our nation's energy security by reducing our dependence on foreign oil and gas and making our economy more energy-independent; decreasing transportation-related greenhouse gas emissions; and creating domestic jobs.

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## **BETO Premieres Bioenergy Video**

Why do you care about bioenergy? Originally premiering at Biomass 2014, BETO's new 15-minute video, [Bioenergy: America's Energy Future](#), shares the stories of farmer and All-American NFL player Bruce Nelson, Intel Science Talent Search winner Sara Volz, and Solazyme CEO Jonathan Wolfson as they work to move the U.S. bioenergy industry forward. Investing in bioenergy helps maintain America's competitive advantage, while creating domestic jobs for manufacturers, scientists, and engineers. Watch and share this video, explaining why it matters to you, via social media using hashtag #Biomass2014.

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## **Zero Energy Building Revenue Expected to Exceed \$1.4 Trillion Annually by 2035**

Aiming to reduce energy costs and minimize the carbon footprint of their buildings, governments, corporations, and home-builders are pursuing zero energy building (ZEB) solutions. Also called net zero energy buildings, ZEBs bring together existing energy efficient technologies to form a high-performance building. According to a new report from Navigant Research, worldwide revenue from ZEBs is expected to grow from \$629 million annually in 2014 to more than \$1.4 trillion in 2035.

"The global zero energy building market has many pockets of potential growth, but challenges remain in defining what exactly a ZEB is, as well as raising awareness of the increasing accessibility of these solutions," says Noah Goldstein, research director with Navigant Research. "The strongest driver for this market is regulation, as policies like the European Union's Energy Performance of Buildings Directive and California's evolving Title 24 building code bring ZEB markets into being for new commercial, new residential, and retrofitted commercial spaces."

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## **Homeowners Are Expected to Invest More Than \$625 Billion in Residential Generation and Storage from 2014 to 2023**

Innovations in renewable distributed power generation, along with attractive new financing mechanisms, are providing residential customers with new options to manage their energy use and generate their own power. Known collectively as distributed energy resources (DER), these innovations are causing a broad disruption that is altering the traditional relationship between utilities and their residential customers. According to a recent report from Navigant Research, homeowners and other residential customers are on pace to invest

more than \$625 billion, cumulatively, in DER from 2014 through 2023.

## 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-0001078](#) - NOTICE OF INTENT (NOI): To Issue a Restricted Eligibility Funding Opportunity Announcement for Collaborative Grid Testing, Research and Valuation and Testing of Advanced Energy Storage Systems**

Submission Deadline: TBD

ARPA-E intends to promptly issue a restricted-eligibility Funding Opportunity Announcement (FOA) for collaborative electrical power grid testing, research and valuation of advanced energy storage systems. The purpose of the FOA is to fund one or more research collaborations that facilitate rapid commercialization of energy storage systems resulting from ARPA-E funded research efforts. While new grid storage technologies are maturing quickly, their adoption is hindered by a lack of performance and reliability data, and by customers' perceptions of the technologies as unproven. The research collaboration(s) selected through the FOA will address this gap in adoption of new energy storage technologies.

#### **[DE-FOA-0001002](#) - ARPA-E Open Innovative Development in Energy-Related Applied Science**

Concept Paper Deadline: 9/26/2014, 5:00pm, EST

Submission Deadline: TBD

This Funding Opportunity Announcement (FOA) is intended to provide rapid support to revolutionary applied energy research (Studies) that may lead to new ARPA-E programs to develop transformational and disruptive energy technologies. Studies are defined as single phase efforts of durations less than 12 months and cost less than \$500,000. Awards will be issued through Grants. ARPA-E is issuing this FOA as a one-year pilot initiative. If successful, this or a similar FOA will be issued annually. Applicants will submit brief Concept Papers (4 page maximum) as described below, and selected Concept Paper Applicants will then be invited to submit Full Applications. This FOA addresses only the Concept Paper process. Applicants must propose energy research that is not (1) covered by current ARPA-E projects, programs, FOAs, and RFIs (Requests for Information) and (2) an incremental improvement to existing technology. Applicants are encouraged to review current ARPA-E projects, programs, FOAs, and RFIs prior to application.

#### **[DE-FOA-0000890](#) - Frontier Observatory for Research in Geothermal Energy (FORGE)**

Application Issue Date: 07/17/2014

Application Due Date: 10/01/2014

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) on behalf of the DOE, Energy Efficiency and Renewable Energy (EERE) Geothermal Technologies Office (GTO) is seeking applications under this Funding Opportunity Announcement (FOA) for establishing and managing a dedicated Enhanced Geothermal Systems (EGS) field laboratory called the Frontier Observatory for Research in Geothermal Energy (FORGE). FORGE will focus on science and technology Research & Development (R&D) in an ideal EGS environment (see Section I.D.) in a domestic location. It is envisioned that FORGE will result in a rigorous and reproducible methodology that will enable development of on the order of 100+ GWe of cost-competitive EGS power, supporting the President's climate goals.

Projects under this FOA will be comprised of three Phases. Under Phase 1 Applicants will complete certain mission-critical technical and logistical tasks that demonstrate the proposed site's viability and the Applicant's full commitment and capability to implement Phase 2 and 3 activities of FORGE as envisioned by DOE. Phase 2 is comprised of three subphases that collectively involve preparation and demonstration of full readiness of the FORGE site, including detailed site characterization and full environmental compliance, as well as initial planning for technology testing R&D and evaluation in Phase 3. Phase 3 involves full implementation of FORGE and tasks specific to the identification, testing and evaluation of new and innovative EGS techniques and technologies.

#### **DE-FOA-0000951 - Alternative Fuel Vehicle Deployment Initiatives**

Application Issue Date: 07/16/2014

Submission Deadline for Concept Papers: 08/01/2014

Submission Deadline for Full Applications: 10/01/2014

For the past 20 years Clean Cities has supported the use of alternative fuel in transportation, including renewable biofuels and the deployment of energy efficient transportation technologies. The Clean Cities activities were authorized by the Energy Policy Act (EPA) of 1992, Section 505. This requirement aligns with EERE's Strategic Plan that aims to reduce U.S. dependence on foreign oil, increase the viability and deployment of renewable energy technologies, and increase energy efficiency.

The objective of this FOA is to create and implement high impact and highly innovative approaches to increase the acceptance and deployment of Alternative Fuel Vehicles (AFVs). This will be accomplished in part by funding three different Areas of Interest (AOI) which focus on: AFV-use demonstrations via hands-on experiences, safety-related training, and emergency preparedness.

#### **DE-FOA-0000995 - FY 2014 Continuation of Solicitation for the Office of Science Financial Assistance Program**

Issue Date: 10/01/2013

Application Due Date: Open until September 30, 2014 or until replaced by a successor FOA

The Office of Science of the Department of Energy hereby announces its continuing interest in receiving grant applications for support of work in the following program areas: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and

Environmental Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics. On September 3, 1992, DOE published in the Federal Register the Office of Energy Research Financial Assistance Program (now called the Office of Science Financial Assistance Program), 10 CFR 605, as a Final Rule, which contained a solicitation for this program. Information about submission of applications, eligibility, limitations, evaluation and selection processes and other policies and procedures are specified in 10 CFR 605. This Funding Opportunity Announcement (FOA), DE-FOA-0000995, is our annual, broad, open solicitation that covers all of the research areas in the Office of Science and is open throughout the Fiscal Year.

## **NATIONAL SCIENCE FOUNDATION**

### **[NSF 14-511](#) - NSF/DOE Partnership On Advanced Frontiers In Renewable Hydrogen Fuel Production via Solar Water Splitting Technologies 2014-2016**

Letter of Intent Due: 10/06/2014

Full Application Due: 12/11/2014

The Directorate for Engineering at the National Science Foundation (NSF) has established a partnership with the Fuel Cell Technologies (FCT) Office of the U.S. Department of Energy (DOE) in order to address critical fundamental and applied research challenges associated with advanced technologies for the production of hydrogen fuel via solar water splitting processes. The goal of the partnership is to leverage the complementary missions of applied research, development and demonstration (DOE) and use-inspired fundamental research and education (NSF) to address issues of national importance that impact the sustainable production of fuels using renewable resources. The Directorate for Engineering seeks proposals with transformative ideas that meet the detailed requirements delineated in this solicitation.

## **OTHER**

### **[2014-NIST-AMTECH-01](#) - NIST Advanced Manufacturing Technology Consortia (AMTech) Program, Planning Awards**

Applications Due: October 31, 2014

The National Institute of Standards and Technology (NIST) today announced a new competition for planning awards to support industry-driven consortia in developing research plans and charting collaborative actions to solve high-priority technology challenges and accelerate the growth of advanced manufacturing in the United States.

NIST's Advanced Manufacturing Technology Consortia ([AMTech](#)) Program anticipates awarding a total of \$5.6 million in two-year grants during the young program's second competition. Awards will range between about \$250,000 and \$500,000, subject to the availability of funds.

### [2014-NIST-CR-COE-01](#) - Community Resilience Center of Excellence Program

Closing Date: 09/12/2014

NIST is soliciting applications to establish a Community Resilience Center of Excellence in which NIST researchers collaborate with interdisciplinary researchers from academia and industry on development of tools and standardized methods that will enhance the disaster resilience of communities and their built environment through innovations in measurement science and in new modeling, simulation, data, and informatics tools coupled with field studies of multiple hazard events.

### [OBAMA-SINGH 21ST CENTURY KNOWLEDGE INITIATIVE \(OSI\)](#)

Proposals Due: November 3, 2014

The United States-India Educational Foundation (USIEF) announces an open competition for the support of projects through the Obama-Singh 21st Century Knowledge Initiative (OSI). Announced by the U.S. and Indian governments, OSI aims to strengthen collaboration and build partnerships between American and Indian institutions of higher education. Accredited U.S. post-secondary educational institutions meeting the provisions described in Internal Revenue Code section 26 U.S.C. 501c(3) may submit proposals to support the program's goals of encouraging mutual understanding, facilitating educational reform, fostering economic development, and engaging civil society through academic cooperation with Indian post-secondary educational institutions, in the thematic areas of Energy, Climate Change & Environmental Studies; Education & Educational Reform; Public Health; Sustainable Development & Community Development; and International Relations & Strategic Studies.

[Read more >>](#)

## UPCOMING EVENTS

### [Midwest Energy Policy Conference](#)

September 30th - October 1st  
St. Louis, MO

The Midwest Energy Policy Conference in 2014 will address:

- The 2014 environmental and energy rulings of the United States Supreme Court
- The path forward following the EPA greenhouse gas 111(d) ruling
- What makes successful state energy plan programs relevant and successful in several key focus areas (economic development, education, research, regulations, portfolio mix, biofuels, and more)

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### [USEA 7th Annual Energy Supply Forum](#)

October 2nd, 2014  
The National Press Club, Washington, DC

Corporate executives will gather to discuss topics ranging from unconventional energy supply resources to onshore exploration and production to technological advances in the supply sector.

Topics:

- U.S. Exports-Crude Oil, Natural Gas, Coal
- Shale Revolution
- The Future of Coal & Nuclear Power
- Promoting Technological Innovation
- Domestic Production Advances
- Future Global Outlook

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## **2014 International Workshop on Environment and Alternative Energy**

October 21st - October 24th, 2014

The Debus Conference Center, Kennedy Space Center Visitor Center

An exciting program is being planned that will include presentations on current issues, progress on those issues, and technological solutions, from research and development to commercially available technologies, with a view toward collaboration.

This year's workshop will have a unique combination of technical presentations and discussions including:

- Increasing Space Mission Critical Ground Infrastructure Resiliency through Sustainability
  - Energy/Water Security Measures
  - Infrastructure Resiliency Measures and Analytical Tools
- Environmentally-Driven Changes to Aerospace Materials and Process Management:
  - Corrosion Protection
  - Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation
- Other collaborative opportunities welcomed
- Student presentations on related international and domestic research

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## **World Bio Markets USA**

October 27th - October 29th, 2014

San Diego, CA

The must attend forum for North America's leaders in advanced biofuels and bio-based chemicals.

Join us in 2014 for the 5th annual edition of North America's #1 bio-based markets congress looking at bio-based fuels and chemicals. With a new look format for this year featuring 2 tracks: WBM Fuels and WBM Chemicals, 2013 provided you with more in-depth content alongside broader networking opportunities - and 2014 is proving to be better.

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## **Canadian Bioeconomy Conference**

December 1st - December 3rd, 2014

Westin Harbour Castle Hotel, Toronto, ON, Canada



This December, the Canadian Renewable Fuels Association (CRFA) will host its 11th annual conference - which is expanding to become the first national Canadian Bioeconomy Conference.

The Canadian Bioeconomy Conference will continue to include the content you've come to expect over our 10 year history as well as a wide range of topics and information on the emerging bioeconomy. This natural transition reflects the ever-evolving changes and advancements in Canadian renewable fuels and sustainable products as outlined in CRFA's new vision and action plan Evolution and Growth.

This premier policy event brings together over 300 professionals from North America including leading petroleum, ethanol and biodiesel companies, trade suppliers, government officials and members of the finance and investment industries.

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## **Power Generation Week**

December 7th - December 11th, 2014

Orange County Convention Center; Orlando, FL

## **Renewable Energy World Conference and Expo**

December 9<sup>th</sup> – December 11<sup>th</sup>, 2014

Orange County Convention Center; Orlando, FL

Our large-scale renewables track will cover baseload and multi-megawatt-scale renewable energy projects, policies and applications.

Our distributed generation track will look at smaller commercial and behind-the-meter renewable energy applications, technologies and policies and our utility integration track will cover permitting and interconnection and other grid impacts of renewable energy.

Our renewables and the global market track will examine how renewables are making an impact on emerging markets, for example how they are solving energy issues for the billions of people worldwide without access to power.

Finally, our innovative energy partnerships track will look at how renewable energy and other traditional fuels can work together such as pairing geothermal energy with oil and gas exploration; algae projects with power plants; pumped hydro or natural gas with wind farms and solar with coal plants.

#### 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](mailto:floridaenergysystems@gmail.com) for posting in the next newsletter and on the **FESC website**: [www.floridaenergy.ufl.edu](http://www.floridaenergy.ufl.edu)