|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | |  | | --- | | C:\Users\eg-adm-tejas\Desktop\FESC_Logo_Final.jpg | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | ***December 2014 Issue*** |   MIST Center Kickoff Meeting |  December 11 - 12 | Gainesville, FL  Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#mist) for more.  [**Add to Google Calendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45cK9nwvkTdz0yFG1uQUuxLPO2GHVxpIjhwI98bWqbY6FpL4FBL-kneE6Ww77z3fk2PAaWnFi3BYbHIEaXueti3gI4i6R5SCbqX1zuqEVUo5_C-4iOXNDqVrQR_E2aYLnDj4qOf8KCqyYCnEC8wflHdswrWt9Q_u2H)    The PURC/World Bank International Training Program on Utility Regulation and Strategy| January 12 - 23 | Gainesville, FL  Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#purc) for more.  [**Add to GoogleCalendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45RcYktTuI6C4QCzu0HqrSc6IHX7CjP8jDUisEiOomOEPdXiFw2Oa5rVhy-tKQhAwl3N-ToT4gBEkgByBQYc7zeD33t5pbZESoT7tykfs6YNcx70IidP-TZmPThPnqwVsezf1ghbLmxJhl6quU8D28--lJGFije3Ew)    39th International Conference and Exposition on Advanced Ceramics and Composites | January 25- 30 | Daytona Beach, FL  Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#international) for more.  [**Add to GoogleCalendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45ew3DYfIDszgd_FgOmZjAZHBYXi7krBCq2ZP9kp1iZMeDHIKZ1pNsF2LMpnkmqAG12NIAYDn0XDWe6EuTHS47gctpk7EXPR1YxcC2jo6ZUx7PaIxtPV6HjTp0JPTf4P9iZGdC-SIaPgo-8FKU4UAEdFUN9h5tcfyIFuiwnsPb1AA=) | |  | | --- | |  | | https://origin.ih.constantcontact.com/fs186/1103157481682/img/354.jpg | | |  | | --- | | [**FESC Instructional Workshop - "Integration of Renewable Energy into the Grid"**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXcvDBslk_rEsorc9CQyC5pWPbFVQraTVdQqbQ17Ojv0oSAcUNEmwU9EeLvWzVpwtSU=) | | February 2 - 3, 2015  Orlando, FL  This instructional workshop targets newcomers to power systems and is designed to bring attendees up to speed on the issues related to the integration of renewable energy sources into the transmission system.  Developing solutions to these integration challenges will enable higher penetrations of renewable generation sources and will critically impact the future growth of renewable energy.  Click [here](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXcvDBslk_rEsorc9CQyC5pWPbFVQraTVdQqbQ17Ojv0oSAcUNEmwU9EeLvWzVpwtSU=) for more information. | | https://origin.ih.constantcontact.com/fs186/1103157481682/img/330.jpg  [Follow FESC on Twitter and Facebook!](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87KfFHsFvPpx0dRruZrUtuYWk7NHoskK6V8Zjew4Y658D4k7PQ5luLH0ZdNbLLvFhfo=)    Like us on our reinvented Facebook page for regular updates!  We are maintaining our Facebook page with daily posts so be sure to check out our page at [**www.facebook.com/FloridaEnergySC**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87KfFHsFvPpx0dRruZrUtuYWk7NHoskK6V8Zjew4Y658DyYfkAN_8HBv). Updates include relevant funding opportunities, upcoming events, current energy news and all FESC-related information. Share our energy-related posts, opportunities and news with your Facebook friends.  We are also brand new on Twitter, where we will be sending the same daily tweets to keep you updated. Make sure to follow us [**@FESC\_UF**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87Lv60cGnSIqZfL063HRCcFpBbuhY6DUdUg8BmYwwCB09CvWUcV6lZl8BgsURCcJFUQfcm_2qJ-gBQ==)!  FESC Instructional Workshop - "Integration of Renewable Energy into the Grid" | February 2 - 3 | Orlando, FL   Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#fesc) for more.  [**Add to GoogleCalendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45ew3DYfIDszgd_FgOmZjAZHBYXi7krBCq2ZP9kp1iZMeDHIKZ1pNsF2LMpnkmqAG12NIAYDn0XDWe6EuTHS47gctpk7EXPR1YxcC2jo6ZUx7PaIxtPV6HjTp0JPTf4P9iZGdC-SIaPgo-8FKU4UAEdFUN9h5tcfyIFuiwnsPb1AA=)    Global Energy Outlook to 2040 | February 3 | Florida International University Modest Maidique Campus  Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#global)for more.  [**Add to GoogleCalendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45gdafuJxIKFMntl6kZY53ybTEY7s1i7riZqVx_YbE_rvYSbNqYGu9C5S0ISvpcU8NmdIeXJGBXN5aF_g5pdCiuZ2NrnpqAxVPMYISW8v2h__7SGMYZ6VzqNxYjkDdJJVuCMXxQ0qWKa2UUh9dXuMwkQKn4zj6c5J2)    The Energy and Materials Research Conference - EMR2015 | February 25 - 27 | Madrid, Spain  Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#the) for more.  [**Add to GoogleCalendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45RcYktTuI6C4QCzu0HqrSc6IHX7CjP8jDUisEiOomOEPdXiFw2Oa5rVhy-tKQhAwl3N-ToT4gBEkgByBQYc7zeD33t5pbZESoT7tykfs6YNcx70IidP-TZmPThPnqwVsezf1ghbLmxJhl6quU8D28--lJGFije3Ew)    The 32nd International Battery Seminar | March 9 - 12 | Fort Lauderdale, FL  Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#battery) for more.  [**Add to GoogleCalendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45RcYktTuI6C4QCzu0HqrSc6IHX7CjP8jDUisEiOomOEPdXiFw2Oa5rVhy-tKQhAwl3N-ToT4gBEkgByBQYc7zeD33t5pbZESoT7tykfs6YNcx70IidP-TZmPThPnqwVsezf1ghbLmxJhl6quU8D28--lJGFije3Ew)    Critical Power Expo | September 15 - 17 | Novi, MI  Click [**here**](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#battery) for more.  [**Add to GoogleCalendar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87K2Oc4s3GGpZPrJrfsIyST7CbTNGDcZCI826Tr2RZC6UpOB5b9uwHTIKSh__K1qnaDl6cB3Z_-0nL0DtH5Xor45xxdlgHafTUaC03GlNVbpD_20rPuqYceuOqVSURzUd-GZMa06fhyTVbpSwP0qI5BjxOMrq3kFmlBmeS1P7JUR7jL3eIp-KUn8MR7tnWPRVsFAH-UYbZW92c6caJ_k-t693hDVFdXGcMi_XmZ16nUBsvJ9hKl1nwSr)    We are reaching out to students, educators, researchers and industry professionals with information relevant to everyone from our FESC website at [**www.floridaenergy.ufl.edu.**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXePZ5R9O3MStg==)  https://origin.ih.constantcontact.com/fs186/1103157481682/img/346.jpg https://origin.ih.constantcontact.com/fs186/1103157481682/img/347.png | |  |  |  |  | | --- | --- | | **WORLD NEWS** |  |  |  | | --- | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **The View From Inside Mexico's Energy Reform** As Mexico’s government agencies implement historic energy reforms, the Comisión Nacional de Hidrocarburos (CNH) bears the burden of coordinating the contract and bidding process with private partners who will work with government-owned petroleum company Pemex, and making sure the process goes smoothly. So far it has.  [Dr. Guillermo C. Dominguez Vargas, CNH](http://www.privcap.com/wp-content/uploads/2014/09/DominguezVargas.jpg)In August, Mexico’s President Enrique Peña Nieto enacted secondary laws allowing foreign and domestic companies into an energy industry monopolized by Pemex since the 1930s. Dr. Guillermo C. Dominguez Vargas, a commissioner at CNH in charge of exploration and production technology and metering technology, spoke with Privcap about what has happened since this legislation was introduced, and what the next steps are.  1 Dr. Guillermo C. Dominguez Vargas, CNH  “We’re now moving as fast as possible implementing all that is written in [the] secondary legislation,” says Dominguez, a former Pemex Exploration and Production Vice President of Planning, and later, VP of Technology and Professional Development.  “The energy reform goes according to the timeline we set,” he says, “saving some time here and there. It’s very exciting for all of us—the first time in 75 years we have the opportunity to receive domestic companies and those outside of Mexico. We have a lot of hydrocarbon resources.”  Dominguez and the six other commissioners at CNH will be taking care of all of the regulation, with Pemex and other agencies doing all of the tendering of projects and licenses for Round 1. The commissioners also provided technical support as well as advice to Mexico’s Energy Secretariat (SENER) as it was decided what areas of the country should be given to Pemex in Round Zero.Pemex got first choice on licenses for this inaugural round, and can operate them with participation of private companies. The SENER and the CNH will select the partners and manage and control the contracts.  Early in September, it was announced that the areas to be contracted out by Pemex in Round 1 would be selected by CNH and SENER. Dominguez says there will be 169 blocks offered in the bidding process for this round, to be done in the first quarter of 2015. Included will be some shale gas areas onshore near the border with the U.S., some conventional areas in shallow waters, and deep offshore locations. “The closest to the states is Perdido, deep offshore on the Mexican side [in the Gulf of Mexico].”  A National Hydrocarbons Data Center will also be created, under the government’s energy reforms. CNH will manage this geologic and operational database, information that currently resides with Pemex. There will be enough data on hand to offer to all of the companies awarded contracts in Round 1, Dominguez says, but as of now the new center is not ready to receive the information.  In addition to managing this database, CNH will authorize surveys above and below the ground, carry out bids and establish awardees, sign the contracts, manage technical issues of the licenses and contracts, supervise operational plans, and regulate exploration and production.  “The way we do things in Mexico is the Secretary of Energy will tell us what kind of contracts they want to offer the companies in Round 1—it could be production-sharing, licenses and profit-sharing contracts,” Dominguez says.  While it’s unclear yet how much involvement private companies—and private capital—will have in the Mexican opportunity, Dominguez wants to stress that the momentous changes to the country’s energy sector are a “good opportunity to do business with Mexico.”  “The energy reform is going according to the timeline we set,” he says. “We’re making sure it’s worth it to come to Mexico and help us out. We need to spread the word…we are a very responsible country. We’re trying to do the energy reform the best way we have learned abroad. We’re very tough in terms of corruption, and know there might be some problems there. We’ve been very open on these tenders, and have provided a lot of public information.”  [**IEA Wind 2013 Annual Report Released**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3pwMC6oc5OG1o9p_94SZ0n1VORfTqjXiHV_ef93SMp_rPUnCEziqtW0oJjsHnxtWmy_3PkORZGAU32NuqUbf-9m1uSwSTpYDVS1BbAsRTXLg==)  The International Energy Agency (IEA) on November 5 issued the IEA Wind 2013 Annual Report, which finds that global wind energy capacity generates enough electricity to meet about 4% of the world's electricity demand.    In 2013, five countries installed more than 1 gigawatt (GW): China (16.09 GW), Germany (3.36 GW), the United Kingdom (2.42 GW), Canada (1.60 GW), and the United States (1.09 GW). In the United States, wind energy accounted for nearly 4.1% of national electricity generation, was deployed in 40 states and territories, and represented 9.95% of new U.S. electricity generation capacity at the end of 2013.    In addition, nine countries increased capacity by more than 20%, with Finland boosting its capacity by 67%.  [Read more >>](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3pwMC6oc5OG1o9p_94SZ0n1VORfTqjXiHV_ef93SMp_rPUnCEziqtW0oJjsHnxtWmy_3PkORZGAU32NuqUbf-9m1uSwSTpYDVS1BbAsRTXLg==)  [**'Miracle' Tech Turns Water into Fuel**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK0MMkAt4CEHGo1DWrR7pGczWQpK894Z5DJ8faBoZQwcn8gUgALFmOslGh_g9fZNBr9Z7P9UcVWi6P2sszLenTB-)   |  | | --- | | https://origin.ih.constantcontact.com/fs186/1103157481682/img/345.jpg | | German cleantech company Sunfire GmbH has unveiled a machine that converts water and carbon dioxide into synthetic petroleum-based fuels. |   If we're going to make a move away from fossil fuels, it's not going to happen overnight; too much of our existing infrastructure and technology is based on coal and petroleum, which would take a lot of time and money to replace.    However, synthetic fuels would be a good interim option, especially if they could be cleanly produced -- as Sunfire GmbH has done. The Dresden-based cleantech company has unveiled a rig -- the first of its kind -- that uses what it calls"Power-to-Liquid" technology to convert H2O and CO2 into liquid hydrocarbons -- synthetic petrol, diesel and kerosene.    The technique is based around the Fischer-Tropsch process developed in 1925, combined with solid oxide electrolyser cells (SOECs). The SOECs are used to convert electricity -- supplied by renewable sources such as wind and solar -- to steam.  oxygen is removed from this stream to produce hydrogen.  In the next step of the process, this hydrogen is used to reduce carbon dioxide (CO2) -- harvested from the atmosphere, precipitated at biogas facilities or gathered using waste gas processing -- to carbon monoxide (CO); and the resultant H2 and CO are then synthesised into high-purity fuel using the Fischer-Tropsch process. Excess heat from the process is then used to create more steam -- ensuring an efficiency rate, Sunfire claims, of 70 percent.  The rig, at this stage, is for demonstration and feasiblity purposes; its capacity for CO2 recycling is currently at around 3.2 tonnes per tonne fuel, and it has the capacity to produce a barrel of fuel per day. The cost of designing and building the rig was "seven figures", half of which came from public funding received from the Federal Ministry of Education and Research.  "This rig enables us to prove technical feasibility on an industrial scale," said Sunfire CTO Christian von Olshausen. "It is now a matter of regulatory factors falling into place in a way which gives investors a sufficient level of planning reliability. Once that has occurred it will be possible to commence the step-by-step substitution of fossil fuels. If we want to achieve fuel autonomy in the long term, we need to get started today."   |  |  | | --- | --- | | **FESC Highlights** |  |  Duke Energy to Invest $1 Million in USFSP Research Project Duke Energy Florida has awarded USF St. Petersburg (USFSP) a one million dollar SunSense® grant that will fund research to explore the integration of storing solar energy in new battery systems. As part of the grant, a 100 kW solar photovoltaic (PV) system will be installed on the top of the University’s 5th Avenue South parking garage.  Energy produced by the new solar PV system will be stored in new battery systems and high resolution data will be collected on all aspects of PV and energy storage, maximizing synergy between the two systems. The new energy storage system would operate in conjunction with two existing USF storage systems.  “This effort is a true collaboration with USF St. Petersburg and the USF College of Engineering,” said Alex Glenn, State President, Duke Energy Florida. “This partnership allows us to enhance our efforts to research and develop alternative energy solutions that will be benefit our customers and the environment.”  A solar panel system will be built on top of the 5th Avenue parking garage.“This is an incredible opportunity to manage energy costs, while promoting sustainability on campus,” said USFSP Regional Chancellor Sophia Wisniewska. “We are pleased and proud to have been awarded this grant, and to provide faculty and students with a chance to help build something of lasting impact. USFSP has long enjoyed a strong partnership with Duke Energy and we look forward to future collaborations.”  2 A solar panel system will be built on top of the 5th Avenue parking garage.  USFSP faculty representing all three colleges – Arts & Sciences, Business, and Education – submitted signed letters stating how this project and sustainability will be incorporated into curriculum. Faculty have pledged to include sustainability education in Business Law, Financial Reporting, Marketing, Environmental Economics and Managing Global Sustainability courses, among others.  The 100 kW solar array at USF St. Petersburg would measure approximately 7,100 square feet, with 328 individual panels. It will be designed as a freestanding canopy with space beneath for parking. The energy needs of USFSP average approximately 19.1 million kWh per year and solar panels of this size can produce on average 164,250kWh of energy a year.  “A project like this is huge in reinforcing the importance of sustainability on our campus,” said Daniel McGarigal, an Interdisciplinary Social Sciences senior who assisted in gathering faculty support for the grant proposal. “Given the size and visibility of the solar panels, people will really be able to feel and appreciate our commitment to environmental responsibility.”  “This new 100 kW solar array represents one of the largest and most efficient solar arrays in St Petersburg, said Joe Pietrzak, Duke Energy Senior Planning Analyst. “One of the current challenges to solar is that the sun is not always available when customers need it most. The data and technical research we will gain from the battery storage aspect of this project will assist us in to promoting and using the sun to help offset the growing need for some electricity in Florida.”  USFSP has an existing 2.0kW solar energy system located at its Central Facilities Plant that was constructed in partnership with Duke Energy (as Progress Energy Florida) and the USF Tampa School of Engineering. Additionally, a series of solar panels provides power for decorative lights on campus.  **Florida Polytechnic University Partners with Global Leader in 3-D Printing Technology** The high-tech 3D printing revolution that is captivating doctors and designers, inventors and innovators is so new that industries and consumers are only beginning to imagine the possibilities.  From manufacturing customized car parts to molding artificial limbs, 3D printing and scanning already has a multitude of early applications evolving at a rapid pace. It even is saving lives.   * [Michigan researchers recently used 3D printing](http://www.engin.umich.edu/college/about/news/stories/2014/march/second-baby-s-life-saved-with-3d-printed-airway-splints) to create an emergency splint that kept an infant breathing after her windpipe collapsed. * [NASA aims to rocket 3D printers](http://www.madeinspace.us/3d-printer-headed-space-station-ready-launch) to the International Space Station to make replacement parts for aging equipment.   Now Florida Polytechnic University is at the forefront of the desktop 3D printing revolution. The state’s newest university – and only higher education institution dedicated to science, technology, engineering and mathematics (STEM) – has partnered with MakerBot, a global leader in 3D printing and scanning, to create the largest MakerBot innovation center in the nation.  The partnership makes sense for the University, MakerBot and the Florida economy. The 3D desktop printing market is predicted to undergo tremendous growth in the next three years, rocketing to $600 million in 2017 from $75 million in 2013, [according to Citigroup](http://business.financialpost.com/2014/07/14/home-depot-inc-starts-selling-3-d-printers-in-stores-for-first-time-but-dont-expect-the-tech-you-see-on-star-trek/?__federated=1&__lsa=c5d1-f41a). Yet the 3D printing industry is still in its infancy and will need people to become educated and skilled on how to use software to design objects.  http://www.tampabay.org/sites/default/files/styles/scale_590w/public/media/3D%20Printer%20FL%20Poly%20%282%29.jpg?itok=eo4DvHrdThat’s where Florida Poly and its STEM students and faculty come in. They will have unusual access to MakerBot equipment, training and support. The University’s Rapid Application Development (RAD) Makerspace Lab is located in the Innovation, Science and Technology Building, the University’s primary classroom building. It houses the latest array of MakerBot products for prototyping and design, including 55 3D printers and scanners as well as MakerBot experimental equipment.  Students will be invited to immerse themselves in the technology. That access is key. The RAD Makerspace Lab is designed to be a hub for creativity and innovation. Florida Poly also hopes to extend that access to the community at large, with maker fairs, inter-collegiate events, guest lectures and open-community forums.  “Florida Poly encourages research applicable to the real world, and 3D printing is at the center of the product iteration and technological innovation process. Our RAD Makerspace Lab will inspire students to explore, discover and innovate,” said Tom Hull, the University’s Chief Information Officer.  Providing students with specialized skills, education and equipment will enable future advances and spur product development.  The importance for students to have easy access to the latest technology is underscored by the life story of technology pioneer Bill Gates, whose family lived near the University of Washington when he was a teen. Back in 1968, access to a University computer was unusual, just as access to a bank of 3D printers and training to use them is rare today.  The young Bill Gates would sneak off to the University of Washington after bedtime to try his programming skills on the University’s computer. That exposure and skill building led Bill Gates to launch Microsoft in 1975, transforming the computing industry and helping to propel the global economy.  With MakerBot as an industry partner, Florida Polytechnic is poised and ready to turn the students of today into the innovation leaders of tomorrow.  [**UCF Partnership Manufacturing Energy-Efficient Turbine Engines**](http://today.ucf.edu/ucf-engineering-team-sees-causes-jet-engine-turbine-coating-damage/)  A UCF-led research team has succeeded in studying the impact of extreme heat on jet engine turbines in near real-time, which could ultimately help manufacturers better protect against breakdown.  The work, which was published Thursday in [Nature Communications](http://www.nature.com/ncomms/2014/140731/ncomms5559/full/ncomms5559.html), was conducted at the University of Central Florida, the [Institute of Materials Research at the German Aerospace Center](http://www.dlr.de/wf/en/desktopdefault.aspx) (DLR) and the [Argonne National Laboratory](http://www.anl.gov/) near Chicago with the collaboration of [Cleveland State University](http://www.csuohio.edu/).  Seetha Raghavan, associate professor of mechanical and aerospace engineering at UCF, conceived of the highly challenging idea of monitoring the very thin layers of super strong coatings used to protect turbine blades as they are exposed to extreme conditions in order to get a clear understanding of how they fail.  Because of the difficulty of monitoring engines in-flight, most manufacturers test blades either after flight or rely on simulated tests to give them the data on how the various coatings on the blades are performing. The prospect of “seeing” the coatings at work in actual conditions was enticing to Raghavan.  She was familiar with the work of Cleveland State University’s Dean of Engineering, Professor Anette Karlsson and DLR Materials Professor Marion Bartsch and she has had a longstanding collaboration with Jonathan Almer and John Okasinski from the Advanced Photon Source at the Argonne National Laboratory. Her idea was to use the expertise at the German facility to develop samples and design a compact furnace capable of mimicking real-world conditions faced by the turbines and then transporting the furnace to the Argonne Center to integrate it for the synchrotron X-Ray portion of the experiment.  “While the idea sounded impossible, we had a team of willing collaborators with complementary skills as well as excellent students who were motivated to take on the challenge,” Raghavan said.  The Argonne particle accelerator would be used to generate the high-energy X-Rays which would be deflected by the atoms in the coating material. By measuring the level of bending or diffraction, the scientists would be able to determine how the coating has been impacted by conditions.  Raghavan, who has been funded by the National Science Foundation for the last three years to study the durability of high temperature coatings, received an additional $52,000 as part of a Catalyzing New International Collaborations award from the agency to support the experiment and international collaboration.  In June 2012, Raghavan and her graduate students Kevin Knipe and Albert Manero travelled to Cologne, Germany where the students spent two months working with the DLR team to design the compact furnace and coat the turbine blade material to develop specimens to be tested. In November, the team reunited outside Chicago at the Argonne laboratory to conduct the synchrotron X-ray studies.  After four days of round-the-clock testing, the team collected a terabyte of raw data, revealing some areas of previously undetectable strain, which are expounded on in the Nature Communications piece.  Raghavan said she hopes the research will be used by turbine manufacturers to verify their testing results, develop new simulation models and ultimately help them better predict any potential failure.  Other participants in the project included Sanna Siddiqui of UCF and Carla Meid and Janine Wischek of DLR. The work was additionally supported by the German Science Foundation and the U.S. Department of Energy.  [**Determining the Best Driving Range for Plug-in Hybrid Electric Vehicles**](http://www.transportation.institute.ufl.edu/?p=2067)  With growing public concern over greenhouse gas emissions and the environment, the use of plug-in hybrid electric vehicles (PHEVs) is one way to curb our appetite for oil and reduce traffic emissions. These vehicles can be available to consumers without challenging our transportation engineers, governments and policymakers to build expensive infrastructure to support their operation. Consumers who purchase these PHEVs do not have to worry about being stranded when on the road because once exhausted, the system will switch to fuel.  These cars start off by using battery power and then switch to fuel when battery life is depleted.  plug in hybrid electric vehicleIn the U.S., PHEVs can drive on the battery powered feature (all electric) for 30-38 miles (driving range), but this is dependent on whether a driver is on an urban or highway setting. Minimum driving range thresholds have been set by The Energy Policy Act of 1992 and the National Highway Traffic Safety Administration for these vehicles in order to comply with environmental requirements. However, in an effort to find out the *best*all-electric driving range of a PHEV, one that minimizes the daily cost absorbed by society when using this technology, a group of researchers at UF, led by Dr. Yafeng Yin and his graduate student, Eleftheria Kontou, worked to create an optimization framework, using available U.S. market data. The driving range is essentially how far the vehicle can operate utilizing its electric battery. The researchers believe that if this optimal driving range is not investigated, it could be an issue for the success of PHEVs in the form of bad-policy making and cost to society.  The researchers divided the “social cost” they set forth to minimize into three components: 1) the internal cost that incorporates purchasing the electric vehicle’s battery and operating the vehicle; 2) the external cost that is composed by summing up the emissions cost of manufacturing the vehicle’s battery and the emissions cost for operating the vehicle; and 3) the amount of money the government will have to invest for installing public chargers.  Results of the study showed that the optimal range is 22 miles with an average cost to society of $3.02/day when charging at home only, but the optimal range was sensitive to the cost of battery packs and the retail price of gasoline. So, to put things into perspective, if the U.S. automobile market was about to deploy only one PHEV so as to minimize the average total social cost up to $3.02 per day, it would be a PHEV with an all-electric driving range of 22 miles. Also, when public charging options were introduced in this study, the optimal all-electric driving range increased from 22 to 24 miles, so if you owned a PHEV you would benefit more from recharging this way because you would be more inclined to travel a longer “electrified” distance.  The researchers also demonstrated that offering consumers varying sizes of battery packs for PHEVs could further benefit the cost to society.  [**UF's MIST Center to Lead Research of Smart Electronics for Emerging 'Internet of Things'**](http://news.ufl.edu/archive/2014/10/ufs-mist-center-to-lead-research-of-smart-electronics-for-emerging-internet-of-things.html)  The University of Florida’s Multi-functional Integrated System Technology (MIST) Center will  play a leading role in researching the next generation of “smart” electronics funded by a National Science Foundation  program that combines federal money with industry investments in strategic research.  As a designated Industry/University Cooperative Research Center, the [MIST Center](http://www.ece.ufl.edu/node/1942) will receive over $880,000 from the NSF and upwards of $4 million from industry and government partners to help power the “Internet of Things.”  In the last 30 years, the Internet revolution has completely changed how we communicate, exchange money and explore the world.  Access to the Internet has  evolved from the desktop computer to hand-held - and now wearable - devices. Soon, engineers envision an interconnected cyber-physical world, dubbed an “Internet of Things.” The MIST Center will research the materials, sensors, actuators, power sources and electronics that are expected to drive this new era.  “The MIST Center will serve as a nexus for pre-competitive, industry-driven research that will help train Florida students and shape the  ‘smart systems’  of tomorrow,” said Toshikazu Nishida, director of MIST.  The MIST Center is a collaborative center housed in UF’s [College of Engineering](http://www.eng.ufl.edu/), with a partner site at the University of Central Florida. It is composed of an interdisciplinary team of faculty from the electrical, mechanical, biomedical, chemical and materials engineering departments. The center directors are Nishida and David Arnold, both professors in UF’s department of electrical and computer engineering, and Jiann-Shiun (Peter) Yuan and Hyoung Jin (Joe) Cho, professors at UCF.  “This is an exciting group that is doing great work,” said Cammy Abernathy, dean of UF’s College of Engineering. “The MIST Center is at the forefront of determining what our personal electronics will look like as we move into the future, and how our economy will evolve around them. The opportunity to work with NSF and industry on this research is a unique and tremendous opportunity for the college.”  The MIST Center will host its inaugural meeting with industry and government partners in December 2014. More information can be found at [www.mist-center.org](http://www.mist-center.org/).  [**Osceola Partnership Could Fuel UCF Bid for $200 Million Photonics Manufacturing Institute**](http://www.research.ucf.edu/news/2014/20141017FAMRC.html)  In a move that would secure Florida’s role as a national leader in photonics manufacturing, the University of Central Florida is competing for $200 million in federal and private funds to house a national Integrated Photonics Manufacturing Institute for Manufacturing Innovation.  President John C. Hitt announced UCF’s decision to go after the federal money at today’s groundbreaking ceremony for the first-of-its-kind Florida Advanced Manufacturing Research Center in Osceola County. Hitt joined Osceola County Commission Chairman Fred Hawkins Jr., Commissioner Frank Attkisson and other dignitaries at the center site, located on 20 acres owned by Osceola County near the intersection of U.S. 192 and Florida’s Turnpike.  “Together, we are building a new catalyst for our region’s economy while positioning our state as a leader in the manufacturing of the future,” Hitt said.  Hawkins said: “The timing of this effort is perfect. It’s a testament to the hard work of all our partners who are here today and who have helped us be in a position to move forward on this project. As a lifelong Osceola resident and businessman, I’m elated about the opportunities that await us.”  The center, a partnership with Osceola County government, the Florida High Tech Corridor Council (The Corridor) and the Metro Orlando Economic Development Commission, would house many of the research activities associated with the institute if UCF’s bid is successful.    The center is a 100,000-square-foot, state-of-the-art manufacturing research facility set to open in 2016. Partners in the project aim to create the world’s first industry-led smart-sensor consortium. The facility will develop innovative manufacturing processes and materials to advance production of smart sensors. Sensors are expected to shape the future of automobiles, surgical devices, home appliances and much more.  Some smart sensors are already embedded in things we use every day, such as remote controls. There are other potential applications from detecting deadly carbon monoxide to showing a doctor how cancer, Alzheimer’s disease and diabetes affect the body.  Enterprise Florida, the University of Florida and the University of South Florida also are partners in the center’s initiative, a tangible example of what the White House has described as the future for manufacturing in this country.  President Barack Obama earlier this month announced the competition, signaling the White House’s support of investment in this area and the belief that photonics – a new technology that harnesses the power of light and lasers – will be a cornerstone in manufacturing’s future. Manufacturing continues to be the bedrock of jobs in America and photonics manufacturing holds the promise of making America a magnet for good, middle-class jobs.  UCF’s College of Optics & Photonics and its Center for Research and Education in Optics and http://www.research.ucf.edu/News/2014/Images/20141016FAMRC.jpgLasers, a recognized national leader in its field, is uniquely positioned to lead the effort, which will include partners from industry, universities, state colleges, local governments and nonprofits.  “We are in full-court-press-mode to develop a proposal,” said MJ Soileau, UCF’s vice president for Research & Commercialization.  The federal initiative aligns in many ways with UCF’s strengths in integrated photonics manufacturing, a sign that the government picked up on measures proposed by CREOL in an earlier request for information by the Department of Defense, which would manage the national initiative, said Bahaa Saleh, dean of the College of Optics & Photonics.  Although a request for proposals is not expected until the end of the month, Saleh said he expects the creation of a photonics manufacturing center will remain in the solicitation.  The creation of a federal Photonics Manufacturing Institute for Manufacturing Innovation in Florida would greatly add to the roughly 30,000 photonics-related jobs in the state, said Alex Fong, president of the Florida Photonics Cluster. While a 2009 report by The Corridor and Florida Photonics Cluster put the gross regional product at $3.65 billion and sales of these companies at $7.27 billion, the national impact of the industry rises to more than $3 trillion.  While pursuing the federal money, UCF and its partners are not waiting to move forward with construction of the center.  As these innovations become ready for the marketplace, the center’s partners envision growth in high-wage jobs for Central Floridians. The White House announcement, on the heels of the center’s approval in June, shows UCF and the Central Florida community  are envisioning the future and making it happen today.  As leaders celebrated Thursday and talked about what tomorrow would bring, construction crews were turning earth and preparing the land for the new facility. The project is expected to cost about $270 million over five years and would become self-sufficient five years after becoming fully operational. Osceola County has committed to investing $61 million for design, construction and equipment costs associated with the facility in addition to the land. UCF will lease the building for $1 a year for 30 years and will operate the center. UCF is set to provide $10 million – from non-state and non-tuition sources – to help design and build the center and for start-up costs, as well as an additional $7 million for focused faculty hires.  The Corridor will contribute $1 million initially. The Corridor also will expand the scope of its signature Matching Grants Research Program at UCF, the University of South Florida and the University of Florida to include sensor-driven advanced manufacturing. Up to $5 million of matching funds will be available for research activities and the operation of the consortium over five years.  “From the outset it was clear that this partnership with UCF and Osceola County has the potential for a huge impact in terms of jobs and opportunity that will change our economic landscape, but little did we know it could happen this rapidly,” said Corridor president Randy Berridge.  [**Trash to Ash to Roads, UF Finds Ways to Recycle**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK2PHCa6Xwv7Bop_SvHZK1nuvOWRXr8MBgVBarODe50e8ZGkEcJUDrMsVr46Ccl-D76uaeuZqyB9rgl3g0kTwGNrbArvutFRkZQnlvXPt9TnRaYZZlrf9pxU)  Currently all the waste energy ash that's produced at plants across the country goes into a landfill. The [https://origin.ih.constantcontact.com/fs186/1103157481682/img/343.jpg](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1cPZvo4U0rkajcd_oaYKNLxk27KnLdTXR65i-lrgP5fWoBM4dCNT0vSvTfn2KBGLTkD1qH1RkooBOfwRII7OLr)landfills are designed and operated in a manor to be protective of human health and the environment, but ultimately they create piles of material that we have to continue to watch essentially forever.  The University of Florida is working with Pasco County to find ways to recycle the ash with the bi-products that remain after they combust the garbage to turn into electricity.  The primary market that the University of Florida is investigating for recycling the bottom ash is in road construction.  Watch the video [here](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3DTnJEZQvzG3VFuTPWPzRcAWF1JJQbgC55IHFaMyiPBg==).  [**Ocean Exploration Institute at FAU Harbor Branch Awarded $1.77 Million Grant**](http://www.fau.edu/mediarelations/releases1014/101411.php)  The Cooperative Institute for Ocean Exploration, Research and Technology (CIOERT) at FAU’s Harbor Branch Oceanographic Institute (HBOI) was recently awarded a $1.77 million grant from the National Oceanic and Atmospheric Administration (NOAA) for the 2014-15 fiscal year. The funding will allow CIOERT scientists to continue work in developing advanced underwater technologies, as well as exploring and researching regions of the eastern U.S. continental shelf and vulnerable deep and shallow coral ecosystems.  “The funding allows us to continue to discover, study, and protect deep coral reef ecosystems off the coast of Florida,” said Shirley Pomponi, Ph.D., executive director of CIOERT. “These reefs are important nurseries for commercially-important fisheries, and they may serve as refuges for corals that are affected by warming ocean temperatures.”  New projects will focus on developing autonomous underwater vehicles and sensors to map and monitor deep reefs, as well as expanding the use of the new Exploration Command Center at HBOI to “virtually” participate in expeditions in the North Atlantic and the Caribbean.  CIOERT scientists also will continue to study the pharmaceutical potential of chemicals produced by deep-water organisms that have been collected during the first five years of the project, and to document the health of corals in the Gulf of Mexico and Florida Keys.  CIOERT was established in 2009 under a five-year cooperative agreement with NOAA. The program was rated “outstanding” by the NOAA Science Advisory Board and, as a result, was renewed for another five-year period. More than $6 million in funding was awarded to CIOERT during the first five years.  [**Evolution and Growth of Sustainability Careers at State and Community Colleges**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1Rel0v8jvA-Th0JQIfRAas3ZXAInhEbr7Jlodz54qWmdfuEAhrrMToMY_nnNf0qiI-sHNKohiLMXPe4-I2K2BGLoxdFT2OcN0C4GUkLM9fw5MivobOxUw3Qz7zAHwwhWRfEgiuPpmkAQ==)     |  | | --- | | https://origin.ih.constantcontact.com/fs186/1103157481682/img/348.png | | Sustainability staff (usually coordinators) often drive volunteer activities such as campus cleanups and beautification efforts. |   As an increasing number of state and communitycolleges step up their efforts to make their campusesand  programs more green", the number of staffpositions (including coordinators, managers,directors, and chief sustainability officers), dedicated to college sustainability efforts and programs is also growing.  Colleges however, do still lag far behind universities in terms of numbers of full-time positions focused on sustainability.    Results of the Association for the Advancement of Sustainability in Higher Education (AASHE's) July2013 "Salaries & Status of Sustainability Staff in Higher Education" report, show an increase in University positions from 74% in 2010 to 85% in 2012.    ASHEE’s report also shows that although campus sustainability positions are relatively new within higher education, numbers are rising (this report includes Florida colleges and universities). The newness of sustainability positions can be reflected in the finding that nearly 90% of respondents have been in their current positions for five years or less. Nearly half of all respondents in 2012 were in positions created or upgraded since 2010, indicating significant growth for sustainability positions in recent years. The shift toward sustainability is clear and the increasing number of staff sustainability positions is a powerful visual indicator of this shift.  In October 2014, the Florida Advanced Technological Education Center (FLATE) (a National Science Foundation-funded Regional Center of Excellence that coordinates industry-specific programs for technicians and works with FESC to create a relevant statewide educational delivery system), conducted an informal survey of college sustainability staffing and sustainability-related programs. They found that of the 28 state and community colleges (with 68 campuses and 178 sites) in Florida, only two (Valencia Community College and Hillsborough Community College), have dedicated, paid sustainability positions (Director of Sustainability and Sustainability Coordinator respectively). Valencia College’s Office of Sustainability was established in November 2011, within the Facilities Department and HCC’s Sustainability Council was established in 2009, with the Coordinator position added in 2011. Other collegeshave staff that carry out sustainability-related tasks such as recycling and energy efficiency measures, but these individuals are usually facilities/operations maintenance and management staff members. Sustainability-related tasks are only a small part of their positions’ responsibilities.  Without fail, all of Florida’s colleges have active student sustainability, green and/or environmental clubs and groups dedicated to sustainability causes and educating fellow students, staff and the community about the importance of sustainability. All colleges have recycling programs and many have ridership programs to encourage students to carpool and lessen their impact on the environment, while at the same time saving money. Energy-saving practices and measures are the norm on college campuses. Eight of Florida’s colleges have Leadership in Energy and Environmental Design (LEED)-certified buildings (which promote energy efficiency, human and environmental health, and sustainable site development, among other features), and many of those that do not, are planning new buildings to LEED standards.  Seven are members of ASHEE and 12 are members of Sustainability Education and Economic Development (SEED). Many colleges have received sustainability-related awards including Hillsborough Community College (HCC). HCC was selected as “Overall Winner” of the American Association of Community College’s (AACC) Inaugural Green Genome Awards in 2012. The award is designed to identify and honor community colleges who have taken strong strategic leadership roles promoting sustainability, and green workforce development throughout their institution and community as a whole. Sustainability staff (usually coordinators) often drive volunteer activities such as campus clean ups and beautification efforts.  Creation of campus sustainability offices is becoming more and more common in colleges and universities as sustainability careers continue to increase and evolve. In AASHE’s July 2013 report, survey responses showed that 67% of 2012 respondents indicated that their positions were housed in a sustainability office, compared to just 23% in 2010. Higher education sustainability-focused job announcements presented in the AASHE Bulletin in 2013, increased by 34% from 2012, supporting the upward trend in dedicated positions reported in the 2013 report. There are significant opportunities for continued growth in state and community colleges’ sustainability staffing moving into the future, and buy-in and commitment from campus administration is essential for these positions to become a reality. |  |  |  | | --- | --- | | **U.S. ENERGY NEWS****USEnergy** |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | [**Biomass Plant Awarded New Air Permit**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3vnu7SpY00rHy0DwCMvqY8Ef4Zr_XBlWa-t6pZN7pa-JMPCcAvQGBpCeTO2bPtfIldXcLPLF_H7mbT2k3nultXjI3IiEqgijs=)  The Gainesville Renewable Energy Center has received its Title V air operation permit from the Florida Department of Environmental Protection, which includes regulations on air emissions that the biomass plant is already meeting.    The biomass plant was given its Title V permit, which replaces its prior construction air permit, after months of air-quality monitoring, according to a GREC news release. The plant's emissions have been below both of those permits' requirements.    "There was very little change between our construction and operational permit," Communications Director John Brushwood said. The plant is fully permitted now.   The Title V permit will be effective Jan. 1 and must be renewed every five years. Unless there's a change of law or a change in the plant's operation, Brushwood said renewing it should be a fairly easy process.  The Gainesville-based facility is the most recent power plant in Florida to get an air permit, so it must adhere to the strictest regulations, according to the news release.  The plant uses a monitoring system that continuously measures its air emissions, and FDEP gets quarterly updates on those and ensures the facility's compliance.  "We know our emissions minute by minute," Brushwood said.  The Title V permit was issued on Nov. 21 after the U.S. Environmental Protection Agency conducted a review and offered general comments that were incorporated into the final version, according to information FDEP emailed to The Sun. About 50 people attended an August public meeting in Gainesville to offer comments regarding their concerns about the proposed permit, and their comments were reviewed and addressed in the draft permit.  As for the differences between GREC's prior permit and the new operating permit, the EPA issued more standards for boilers after GREC received its construction permit, said FDEP spokesman Jim Lamar. As a result, additional limits for carbon monoxide, hydrogen chloride, mercury and particulate matter were included in the Title V permit.  The new Title V permit was issued shortly after the EPA clarified certain rules for the Clean Power Plan, which it proposed earlier this year, according to the GREC news release.  The Clean Power Plan would focus on reducing carbon emissions from existing U.S. power plants. The EPA is proposing state-by-state goals for reducing such carbon dioxide emissions.  The federal agency clarified that forest biomass culled from sustainably harvested sources, such as the fuel sources the Gainesville biomass plant uses, do not contribute any net new carbon to the Earth's atmosphere, according to the GREC news release.  Brushwood said there is mounting recognition that biomass that comes from such forest-derived sources is carbon neutral and a good energy alternative. This is just the latest clarification affirming that, he said.  [**'Climate Ribbon' Puts Wind Behind Miami Project**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK0nMzPKXPuqygl27ZT0U_RVKjwDesURLWNUm-oxx7G6qj2Lemi8kLsE7b0go5UtPIprDBja05abcUGKmYzzNPGhQn-hdNzASUbVYi4VaIrATrareunauJqA)   |  | | --- | | https://origin.ih.constantcontact.com/fs186/1103157481682/img/350.jpg | | Rendering of retail garden level in Brickell City Centre, with Swire's 'Climate Ribbon' above. |   MIAMI-For the past year, Swire Properties Inc. has touched the imagination of Floridians with talk of building America's first "Climate Ribbon," an environmental management system that uses nature to cool the outdoor air.    Now that the ribbon is starting to take form at Swire's huge $1 billion Brickell City Centre, it won't be long before tenants and shoppers can judge for themselves whether the ribbon lives up to expectations.    Brickell City Centre is located in the center of Miami's financial district. Swire began construction in 2013 and plans to begin completion of the first phase-5.4 million square feet, which includes retail and entertainment space, two residential towers, a hotel and high-end office space-in 2015.  Brickell City Centre is located in the center of Miami’s financial district. Swire began construction in 2013 and plans to begin completion of the first phase—5.4 million square feet, which includes retail and entertainment space, two residential towers, a hotel and high-end office space—in 2015.  A key element in the design of Brickell City Centre is sustainability and energy conservation, which will be achieved partly with the $20 million ribbon.  The ribbon will resemble an elevated trellis and comprises steel, glass and fabric. It is designed to undulate above the open-air retail space and cool shoppers by capturing and conveying the prevailing winds that blow off Biscayne Bay.  “We wanted to embrace what Miami is all about, which is being outdoors, but we knew we needed to protect people from the elements,” said Chris Gandolfo, senior vice president of development for Swire, a wholly owned subsidiary of Hong Kong-based Swire Properties Ltd. “We then realized that the Climate Ribbon could take on a much greater role in sustainability.”  In addition to cooling the outdoor retail space, Swire says the 1,000-foot-long ribbon will capture rain—as much as three million gallons a year—that can be recycled for irrigation purposes. It also has the potential for solar-energy harvesting in the future.  Other developers of open-air shopping centers have approached shoppers’ comfort differently. Some have installed landscaping and trees to provide shade, awnings for rain protection and fans to cool temperatures. And, of course, many enclose and air-condition their projects.  But Mr. Gandolfo said Swire is trying to do something more. “We are all about trying to reduce our carbon footprint, and that’s what the Climate Ribbon helps us to do,” he said.  The ribbon is the brainchild of Hugh Dutton, an architect and founder of Hugh Dutton Associés in Paris. As a child growing up on a banana farm in Jamaica, Mr. Dutton relied on the trade winds to keep cool.  “We had an old house with louvers and open ventilation and big verandas,” said Mr. Dutton. “So I grew up understanding cool breezes as a way of making life livable in the tropics.”  Mr. Dutton was also inspired to design the ribbon by sailing—his father had a sloop—and the ribbon works much like a sail in the way it scoops up breezes as they come off the ocean and moves them through the buildings.  Mr. Dutton was part of an international design team hired by Swire to create the ribbon; Swire trademarked the name.  The system is being closely watched. “I’ve seen rainwater collection, and I’ve seen passive ventilation strategies worked into architecture, but never really at this scale where it’s an integrated design concept,” said Jonathan Burgess, a vice president at Spinnaker Group in Weston, Fla., a sustainability consulting firm. “It’s a truly unique solution for dealing with comfort in exterior open spaces in hot and humid climates like Miami and similar wet tropical climates.”  Tom Hootman, an architect and director of sustainability at RNL Design in Denver, said the ribbon is an elegant re-creation of age-old technology that was “used in ancient cities in the Middle East and Europe.”  The jury is still out on how much the ribbon will add to the marketability of Brickell City Centre.  However, when luxury movie-theater operator Cinemex decided to open its first location in the U.S., it chose Brickell City Centre in part because of the ribbon. The company, based in Mexico City, plans to create a 622-seat, dine-in theater with oversize leather seats in 11 viewing rooms.  “While Brickell City Centre’s location and unique offering as a mixed-use project were important factors in our decision-making, understanding Swire’s dedication to sustainability impacted our commitment,” said Jaime Rionda, chief operating officer of Cinemex.  **Corrections & Amplifications**  An earlier version of this article incorrectly said Swire plans to complete the first phase of Brickell City Centre by the end of 2015. It is slated to begin completion in 2015. In addition, the article incorrectly stated that the Climate Ribbon would collect up to five million gallons of water. It will collect as much as three million gallons.  [**Boynton Beach Company Named One of World's Most Promising Startups**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1Nk7QIq9FY7fHMaEaolwWjylaokqIa02xP3wGqXmnr_Vq9V1riuTVZg16pcaa8T2Y5KSEwcCt1ZB78rb9dWMinNkkKEB3FFiFF13q4Rpeztl3uDHniDKb2-XgfpS0el8U_EhCRwzvLQP5adJuy9zRKv476vMcB5hsSFDpprgx8IxJGRBDdjVdq)   |  | | --- | | https://origin.ih.constantcontact.com/fs186/1103157481682/img/351.jpg | | A rendering of Peerless Wind Systems' wind turbine design. |     A Boynton Beach startup was named one of the 50 most promising startups in the world by Global Entrepreneurship Week.    Peerless Wind Systems is developing a wind turbine for the urban market, President and CEO Jay Moskowitz said. The helix-shaped turbine, designed by a kinetic artist to be visually appealing, can be mounted on a pole or a roof.    "We have a piece of art that also happens to be a very efficient electric generator," Moskowitz said.    About 600 companies launched in the past year applied for the Global Entrepreneurship Week competition. Out of the 50 selected as the most promising, 18 are based in the U.S.    Global Entrepreneurship Week kicks off Nov. 17. The organization will select a grand prize winner to present his or her startup at the Global Entrepreneurship Congress in Milan in March.  Winners are selected based on concept, business growth projections and founders' knowledge of their industries.  Kinetic artist [Robert Perless](http://www.bizjournals.com/southflorida/search/results?q=Robert%20Perless) designed the turbine, which begins moving in low-speed winds. The company's first and smallest turbine to go to market will be a 18-foot-tall, 7-foot-wide, 4-kilowatt model, Moskowitz said.  "Even our small one would service a typical home in the United States, probably four homes in China and who knows how many homes if you're putting this into a village that really has no electricity today," he said.  The goal is for the turbines to be installed in countries where the cost of electricity is high and wind is plentiful, he said. Installing the 4-kilowatt turbine costs about $15,000.  Peerless Wind Systems is seeking $850,000 in funding to bring the product to market.  Moskowitz has started eight companies, including RTS Wireless, which was sold to Aether Systems in December 2000 for more than $110 million.   |  |  | | --- | --- | | **U.S. Energy News** |  |   [**ACEEE: Tribute to Art Rosenfeld**](http://aceee.org/blog/2014/10/tribute-art-rosenfeld-our-founder-lea)  Anniversaries serve to remind us where we’ve come from, how much we’ve accomplished, and where we’re headed. What better way to launch ACEEE’s 35th anniversary as an organization (coming up in 2015) than by paying tribute to Dr. Arthur Rosenfeld, who was instrumental in our creation and guides our vision still?[Art](http://eetd.lbl.gov/people/arthur-rosenfeld) is our founder and is currently distinguished scientist emeritus at Lawrence Berkeley National Laboratory and professor emeritus of physics, University of California, Berkeley.  We asked seven leaders in the energy efficiency community to help us make a video honoring Art at our recent Summer Study on Energy Efficiency in Buildings. The stories they told and the history they shared with the sold-out crowd inspired Art to deliver an impromptu remembrance to “1,000 of his closest friends,” as he put it.  He recalled the pivotal point in his career when he shifted from high-energy physics to developing the field that became energy efficiency. And, yes, his mesmerizing present-at-the creation story about the origin of ACEEE involved Jimmy Carter and that dang sweater!  We are indebted to these seven energy efficiency luminaries for sharing their memories and heartfelt thoughts about Art in the tribute video:   * [Steven Chu](https://physics.stanford.edu/people/faculty/steven-chu), Stanford University * [Ashok Gadgil](http://energy.lbl.gov/staff/gadgil/agadgil.html), Lawrence Berkeley National Laboratory * [David Goldstein](http://nrdc.org/about/staff/david-goldstein), Natural Resources Defense Council * [Howard Geller](http://swenergy.org/about/staff/geller.htm), Southwest Energy Efficiency Project * [John Wilson](http://ef.org/staff/john-wilson), The Energy Foundation * [Dian Grueneich](https://linkedinlcom/pub/dian-grueneich/41/236/351), Stanford University, Precourt Energy Efficiency Center * [Carl Blumstein](http://uc-ciee.org/technical-experts/1/dpeople), California Institute for Energy and Environment and ACEEE.   Many thanks to all of you. And thanks to everyone who participated in this year’s Buildings Summer Study, the biggest in our history, for making it so successful.  Watch the tribute video [here](http://www.youtube.com/watch?v=HFrOdoVEvfg).  [**Lockheed Says Makes Breakthrough on Fusion Energy Project**](http://news.yahoo.com/lockheed-says-makes-breakthrough-fusion-energy-project-105429233--finance.html)  Lockheed Martin Corp said on Wednesday it had made a technological breakthrough in developing a power source based on nuclear fusion, and the first reactors, small enough to fit on the back of a truck, could be ready for use in a decade.  Tom McGuire, who heads the project, said he and a small team had been working on fusion energy at Lockheed's secretive Skunk Works for about four years, but were now going public to find potential partners in industry and government for their work.  Initial work demonstrated the feasibility of building a 100-megawatt reactor measuring seven feet by 10 feet, which could fit on the back of a large truck, and is about 10 times smaller than current reactors, McGuire told reporters.  In a statement, the company, the Pentagon's largest supplier, said it would build and test a compact fusion reactor in less than a year, and build a prototype in five years.  In recent years, Lockheed has gotten increasingly involved in a variety of alternate energy projects, including several ocean energy projects, as it looks to offset a decline in U.S. and European military spending.  Lockheed's work on fusion energy could help in developing new power sources amid increasing global conflicts over energy, and as projections show there will be a 40 percent to 50 percent increase in energy use over the next generation, McGuire said.  If it proves feasible, Lockheed's work would mark a key breakthrough in a field that scientists have long eyed as promising, but which has not yet yielded viable power systems. The effort seeks to harness the energy released during nuclear fusion, when atoms combine into more stable forms.  The magnetic coils inside the compact fusion (CF) experiment are critical to plasma containment, as pictured in this undated handout photo"We can make a big difference on the energy front," McGuire said, noting Lockheed's 60 years of research on nuclear fusion as a potential energy source that is safer and more efficient than current reactors based on nuclear fission.  3 The magnetic coils inside the compact fusion experiment pictured in an undated photo provided by Lockheed Martin. REUTERS/Lockheed Martin  Lockheed sees the project as part of a comprehensive approach to solving global energy and climate change problems.  Compact nuclear fusion would produce far less waste than coal-powered plants since it would use deuterium-tritium fuel, which can generate nearly 10 million times more energy than the same amount of fossil fuels, the company said.  Ultra-dense deuterium, an isotope of hydrogen, is found in the earth's oceans, and tritium is made from natural lithium deposits.  It said future reactors could use a different fuel and eliminate radioactive waste completely.  McGuire said the company had several patents pending for the work and was looking for partners in academia, industry and among government laboratories to advance the work.  Lockheed said it had shown it could complete a design, build and test it in as little as a year, which should produce an operational reactor in 10 years, McGuire said. A small reactor could power a U.S. Navy warship, and eliminate the need for other fuel sources that pose logistical challenges.  U.S. submarines and aircraft carriers run on nuclear power, but they have large fission reactors on board that have to be replaced on a regular cycle.  "What makes our project really interesting and feasible is that timeline as a potential solution," McGuire said.  Lockheed shares fell 0.6 percent to $175.02 amid a broad market selloff.  [**Secretary Moniz Dedicates Innovative Commercial-Scale Cellulosic Biofuel Plant**](http://energy.gov/articles/secretary-moniz-dedicates-innovative-commercial-scale-cellulosic-biofuel-plant)  Marking another milestone in the Administration’s support of clean energy technologies that will diversify our energy portfolio and help transition the U.S. toward a low-carbon future, Energy Secretary Ernest Moniz will deliver remarks today at the grand opening of Abengoa’s second-generation cellulosic ethanol plant in Hugoton, Kansas as part of Energy Action Month. Once operating at full commercial-scale, the biorefinery will produce up to 25 million gallons of cellulosic ethanol per year – enough to avoid 132,000 metric tons of carbon dioxide annually and equivalent to taking 28,000 vehicles off the road. The cellulosic ethanol produced at the Abengoa Bioenergy Biomass of Kansas (ABBK) facility, located about 90 miles southwest of Dodge City, Kansas, will be sold into the ethanol commodity market and used to fuel light duty vehicles.  "Every gallon of cellulosic ethanol produced and used to fuel our vehicles reduces the impact of harmful greenhouse gas emissions by greater than 60 percent as compared to conventional gasoline," said Secretary Moniz. "The Department is committed to supporting innovative technologies, from an early idea in the lab to a full, commercial-scale source of clean energy. As part of the Administration’s all-of-the-above approach to homegrown American energy, the production of cellulosic ethanol creates economic opportunities for rural communities, helps diversify our energy portfolio, and moves us closer to a low-carbon energy future."  Developed with the support of Energy Department investments, Abengoa’s Hugoton facility will be the nation’s third commercial-scale cellulosic ethanol biorefinery to come on line. The facility uses a proprietary enzymatic hydrolysis process, which turns cellulosic biomass, including non-edible corn stalks, stems and leaves, into fermentable sugars that are then converted into transportation fuels. To further support the local community, the state-of-the-art facility, which uses cellulosic biomass harvested within a 50-mile radius of the plant, will also feature an electricity cogeneration component that will generate up to 21 megawatts of electricity – enough to power itself and provide excess clean, renewable power to the local community.  In 2011, the project received a $132 million loan guarantee from the Department’s Loan Programs Office (LPO) to support construction of the commercial-scale facility. The project also previously received a $97 million cost-shared grant investment from the Department's Office of Energy Efficiency and Renewable Energy (EERE) before the loan guarantee was awarded. Since 2007, the Department of Energy has invested approximately $250 million to support the construction and technical development of cellulosic ethanol facilities.  Currently, LPO supports a diverse portfolio of more than $30 billion in loans, loan guarantees, and commitments, supporting more than 30 projects nationwide. The projects that LPO has supported include one of the world’s largest wind farms; several of the world’s largest solar generation and thermal energy storage systems; the first new nuclear power plant to begin construction in the United States in more than thirty years; and more than a dozen new or retooled auto manufacturing plants across the country.  [**Imagine 1000 Gigafactories - That's What's Coming**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87JKfh4JaFkrQrYsdH3llkgA5TyeCaaHjebE4za4qe0xnxcjEYxi5Wu1YPQ6iJQrWoQcJ39GR_Xit2MAkRcbOICP2EfijuH_xjgdKblJbekn6VM6C9NgQZdT4HpJ5GB40h5s9XV3Ddm8PMvoFaeBpb0E-a8gRT_qjVHjvpzIrAxG_Q==)  Imagine 1000 gigafactories - that's what we'll be seeing in the coming decade.    Tesla is everyone's favourite motor car company, a darling of investors large and small. Rev heads who have driven a Tesla give it the nod, even Japanese uber conglomerates are lining up to get in on the action. It's a marriage between high tech performance cars and dot.com risk takers, fast paced development and cleantech, all of which has the company growing in leaps and bounds.    Tesla's big announcement following the launch of their lotus bodied Roadster and the new seven-seater family Model S, is their new (battery producing) 'Gigafactory'. Most people who hear about the $5 billion battery factory probably think it's mind-boggingly big, and a big gamble on the future of motoring. They would be right; based on current production the Gigafactory is going to double the size of global lithium-ion battery production.  Some pundits have speculated that the [factory will create overcapacity](http://www.luxresearchinc.com/news-and-events/press-releases/read/tesla-motors%E2%80%99-gigafactory-will-see-more-50-overcapacity-its-li) and that Tesla, along with partner Panasonic, will lose money on the venture. But if current and rapidly declining battery costs are any indicator, the Gigafactory will go nowhere near supplying worldwide future demand for lithium-ion batteries.  So if the naysayers are wrong (and they almost always are when Elon Musk is involved) then what’s in store for the battery industry?  Answer: A likely massive upscaling of the global battery industry in the same way that occurred in PV panel production from 2008, which targeted a very similar market with the same money to spend from the same diverse funding sources.  So the Tesla/Panasonic Gigafactory, even with that huge expansion of lithium-ion battery production, is insignificant compared with the battery production tsunami coming in the next decade. It’s also a baby when compared to the 72 million units, $1.5 trillion a year car industry and the $3 trillion oil industry.  So the Gigafactory will cost $5 billion, but the kind of scale that will get us an electric transport future, with batteries costing less than $100/kWh, will involve building 1000 gigafactories or perhaps just 200 that are each five times the size of it. Kicking off the march to 1000 is stealthy German concern Alevo, which has just announced [an initial $1 billion for converting](http://cleantechnica.com/2014/11/10/alevo-1-billion-battery-startup/) a former Philip Morris factory in North Carolina to build its lithium-ion for grid storage battery solution based on a proprietary inorganic electrolyte.  It is highly likely that these (let’s call them 'terra') factories will be built in China, as has occurred with solar panel manufacturing. Once the [improved battery technology](http://media.ntu.edu.sg/NewsReleases/Pages/newsdetail.aspx?news=809fbb2f-95f0-4995-b5c0-10ae4c50c934)out of Nanyang Technology University, Singapore – which increases the lifetime and cycle life of lithium-ion batteries – is commercialised, taking away the risk for Chinese investors, they’ll kick-start an investment cycle bigger than we’ve seen for solar photovoltaic.  So how is it that the Gigafactory is being lauded as a huge development? It is only the beginning of an industry that will need to multiply output 1000 times from where it is today to dislodge the internal combustion engine.  The Gigafactory is sized to provide battery packs for 500,000 vehicles produced by Tesla per annum. If we were to scale the Gigafactory to meet global annual cars production, we’d need to expand 144 times the Tesla factory’s current size. With the cost reduction we’ll see through the doubling of lithium-ion battery density (coming soon care of Nanyang University, Stanford and others) and the more than halving of costs of production (through economies of scale), electric vehicles will be able to be supplied with larger battery banks for longer range. These will most probably be twice as large at 120-170kWh from 60-85kWh increasing range to 320-400km. So just to scale the world’s battery supply to meet a future of pure electric and range, extending plug-in hybrid electric vehicles will need 288 times the capacity of today’s lithium-ion battery production.  But there’s more, once batteries are at the point where we’re buying them in all our cars, they’ll also be at the point where they’re completely competitive (in stand-alone home power systems) with capacity supplied by electricity distribution and transmissions companies at the customer point of use. This could result in a doubling again. From 288 to 576 times today’s annual production, as households use the batteries to get off the power grid.  And what about the rest? To make up 1000 times today’s production, the developing world’s growing consumption (with its trends towards the standard of living that we’ve become accustomed to in the West) will be putting batteries in everything from bicycles, motor bikes and scooters to home and business storage systems.  Once the investments have been made in the first dozen or so factories mimicking Tesla, it will be game over for the conventional petrol and diesel engines and today’s electricity grids in their current form with their current structures. Lithium-ion batteries will finish the job that solar has started, advancing the world out of the fossil fuel age. |  |  | | --- | |  |  |  |  | | --- | --- | | **FUNDING OPPORTUNITIES****Funding** |  |  |  | | --- | | [**DE-FOA-0001199**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3nD9oQswkYcXc3o5cx8KyX30oWpJ42zHZWKy1Y1fxWMLTS85WhB3llFxM-oi1igRNI_opWMUKkmI5JtkOpBqcWvomxGR9Zd2rpiLB7WKBvxw==)**- Traveler Response Architecture using Novel Signaling for Network Efficiency in Transportation (TRANSNET)**  Application Due Date: December 22, 2014    [**DE-FOA-0001117**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87IdWKTsGw7qoVUOZPDuBW8eqm2osqaZasN9Q-WILcW5OEsZdxgPVEDOd1UbNu1AyjEt_rfZO0kZFJps4L9Yi8tHmChxPrdk65Z9SqAeJeQhsQ==)**- Building America Industry Partnerships for High Performance Housing Innovations**  Submission Deadline for Concept Papers: December 12, 2014, 05:00pm EST  Submission Deadline for Full Applications: February 4, 2015, 05:00pm EST    [**DE-FOA-0001167 - Buildings University Innovators & Leaders Development (BUILD) - 2015**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87IdWKTsGw7qoVUOZPDuBW8eqm2osqaZasN9Q-WILcW5OOF1qNMV_USRI_giyTlKqMhownXiOq8Vna9G8AtJDPz6ZqcvBrel__HKl9FKAcDdbw==)  Application Due Date: January 28, 2015    [**DOE Scholars Program**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK2QmjK36AJD6Qa8cIbiuJYsWVXWEya0DE3Qj6Wcp8nhEODL4RlEXHDrHkptIaCmZLk=)  Application Due Date: Thursday, January 15, 2015 before 11:59 PM (EST)    [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top)    [**Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3tPYa0moidfO3O35189t0qGmruFswX_2FRmCnr40LSISf959tkNTSY7uYbUm05kEgTDpUTo7pqEmHPty1MU5PU7dB5G3t5tVGOvoixPSG4fYuDUjBOIyoY9gcGaCktXW5t2Od1mBTaIbkCOaC6CNcr4P9_4yqEXrFjVEg1I4Rm_lIqdkBEgpq4mJ0q77MPoR-A9a9_AFuj5EDjJdb5RiCrVixRTvd0se9q0J6ZySU_8_TXhE87Ze0gecfCUw7vYgJjwnazRcaRBiTda2XW4kWcAheI_dyj4AMlRR5qij7DGRpVHLslnhVACq8WFlum-tbcWUOzNrEDR335DTQE4DNYVHbLzrcTO25Tz0fQDUit-g==)  Letter of intent filed by Monday, December 15 before 5:00 p.m. EST  Application Due Date: 2/3/2015    [**RFC-5-52004**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK0yahmu4kXUeL039L_3ovy9eQIp4AsicTvsm8S-9TWEd2pECxyzTVXRa1zgkf_G0kRcKX-ugyvZSgtuNdBFdT23hLSOfUEwpj7xThhXJj9xVQIDDam8zTo6KZSU1zHToONJg-jfpab4nIIhMlqW7EHIyzeKtzsqaGRKxf7UrbetpA==)**: Collegiate Wind Competition**  Proposal Due Date: December 15, 2014    [**DE-FOA-0001108**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAjVQHFFAGrWbmwAKUCfsyuMZO8Zy0jeednt5a-9fLai9bRshuNWgmdmDpOHTHsc2T6QJWoddF9CbmXJwcRJ9mdA7k3UgqJ4iu2re4DLueAhUqNgEgQv0gjL)**- Sustainable and Holistic Integration of Energy Storage and Solar PV (SHINES)**  Application Due Date: 3/19/2015    [**DE-FOA-0001179**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAhdBr9wxQEKb4ssAsFNEQN8le0exyVNk8mLugAZ2-uyLhyUR1S74tjB7uLZYFtYIR4=)**- Landscape Design for Sustainable Bioenergy Systems**  Application Due Date: 1/12/2015    [**DE-FOA-0001193**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAhmEQyPYrQ1wOEtbGs3dUQahwxaz_WibMXv3p1GerrzrXhqvywrlnUgzdjcUwsx0Ks=)**- SBIR/STTR 2015 Phase II Release 1**  Application Due Date: 12/9/2014    [**DE-FOA-0001181**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAg9Q_EOuYTftQvpD0N1Glsdty_B2AIC0nkLbAS5GZ5EZdFdVHJBgKJhiDmESXgqV3Wd4MgM8f280ck-pdBmdoW9LDkEkf3MAoZmAwbV2nS6Kfm5HDpj8rTg)**- Wind Energy - Bat Impact Minimization Technologies and Field Testing Opportunities**  Application Due Date: 1/7/2015    [**DE-FOA-0001168**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAg9Q_EOuYTftQvpD0N1Glsd5aafdtA_vJ_MVfL8IBvjBybgEKA3oPgkVifGSFqRrK4UVEMAbQh2uJEedhFCp57GfVwzRRVsovRE1c6Tuita1nGvf-vXt4fh)**- Advancing Solutions to Improve the Energy  Efficiency of U.S. Commercial Buildings**  Application Due Date: 1/20/2015    [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top)    [**DE-FOA-0001207**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3nD9oQswkYcXc3o5cx8KyX30oWpJ42zHZWKy1Y1fxWMLTS85WhB3llFxM-oi1igRNI_opWMUKkmI5JtkOpBqcWRfMXjfxbOwH7otlvac-UmQ==)**- Systems Biology Research to Advance Sustainable Bioenergy Crop Development** Application Due Date: 01/16/2015  [**DE-FOA-0001204**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAhMt4U49yDrNfPzpeVxOG-XGpXXMgb1_jg=)**- FY 2015 Continuation of Solicitation for the Office of Science Financial Assistance Program** Application Due Date: 09/15/2015 (or until replaced by a successor FOA)  [**DE-FOA-0001197**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAgkglF8fe0p2oO2vPXLmAcdF2t0LB0GZuOamiScMrdo4VXpSW2CNz4mnHhgVFBEkqoDf7wl54jZpw==)**- Advanced Research in Dry-Cooling (ARID)** Submission Deadline for Concept Papers: 11/10/2014, 5 PM ET Submission Deadline for Full Application: TBD, 5 PM ET    [**DE-FOA-0001186**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK0oUJKfzBeVu8-5aGrxYcnvo_M2-lMFbQVy4aXU3SFMgVstP6d3QmqMesRWJq4h5PIl8N1CAUKbVv-N6I6_QHodjBvOXaagS2S9jB01XgexEI4D0GOgwIKC-Mc-zAYhRB6xe05iHNlAGhxtyUQ1S6yUeiYFoCqhN0p3bJjnCENnGLesjQaHMy2LKSMnD4infCYLqNnBgu94Ib0Pkb06mEmFCC419LqEXIDFNejZ6dNtIebUIsvQt0b88I94ADvH-Wnb0t3E-RFZHdSwi_oClDWiQQFnKzGdfi9EmLzdTfIQfynztY8CNDtagYEyIdVfg4Ixydmx0CVviQ==)**- Concentrating Solar Power: Advanced Projects Offering Low LCOE Opportunities (CSP: APOLLO)** Submission Deadline for Concept Papers: 11/26/2014 Submission Deadline for Full Application: 2/20/2015  [**DE-FOA-0001166**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87IdWKTsGw7qoVUOZPDuBW8eqm2osqaZasMZNf9OE06xc3CS7u8NoqCLS2PQiHPBH1V60HhT3pkTRFZXoV99zplBW5pa1HWfvbewVyaDeQeRZoI2wLtvheC9)**- Building Energy Efficiency Frontiers and Innovations (BENEFIT) 2015** Deadline for Concept Papers: 11/10/2014 Full Application Due Date: 1/12/2015    [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top)    [**DE-FOA-0001192**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAjsjckSwTHnswNJ1vm00zWaz9vU4eMqiVxb-TAqtUHzEfufbx-DIgtR863EhcM1KAiMOvhFdrd-SQEF0Ze5kxD5MFfzWFu46SXlRZZNPMH90mLxLKHHXO79OhvIDwN0ZajtM3PUWw_bCJCjpM4sCS-0)**- Novel In Situ Imaging And Measurement Technologies For Biological Systems Science** Application Due Date:  12/18/2014    [**DE-FOA-0001177**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofugU7-wJh87IdWKTsGw7qoVUOZPDuBW8eqm2osqaZasN9Q-WILcW5OOLsjgjfXCtr0-Il6Wt1mzvrOk5A8p-270hEXlot_imrT-nNMzurJxZHkaZRxBkFcw==)**-Targeted Algal Biofuels and Bioproducts (TABB)**  Full Application Submission Deadline: 12/15/2014 5:00 PM ET  [**DE-FOA-0001218**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAikSKJuUQerdeWOS3SuU57SO0YV77FcrnzYvZQS6Ap93yZQ4vQkUTddxZ1Co7BUojt3uiTSf3qZn5gKr6DBjGVU)**- Photovoltaic Module Recycling (RFI)**  Application Due Date: TBD    [**DE-FOA-0001171**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAj48ObwkI9a9FrJI5YYYeKDhGY_98uMRI4=)**- Solid-State Lighting Advanced Technology R&D- 2015** Application Due Date: 1/15/2015  [**DE-FOA-0001203**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAjQz6dMVasMhI0gUupZ0KzfMZqVS8aQsAJ_pn-HnaD3ow==)**- Assisting Federal Facilities with Energy Conservation Technologies, Fiscal Year 2015 (RFI)** Application Due Date: TBD    [**DE-FOA-0001198**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAhYKEC6fiAR76hiE0yEgUSMs6BkoTZh4UrvSj0gcwbB9_XdfxZC-IHX5SlMDUbV-Dg=)**- Generators for Small Electrical and Thermal Systems (GENSETS)** Application Due Date: TBD    [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top)    **NATIONAL SCIENCE FOUNDATION**  [**NSF 15-507**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1GegAF4Hcj17jIFQ5uh0DPpEViizkd0kyHaf4LewbACen_5aJu5JVqPKjfKxHLF64dW-OTYe_Ba852jwIVIf2zWpMn7BgjQJhTtjBfYmhNbHv96nnRnP0nKBvRkF3rHtU=)**-Scalable Nanomanufacturing (SNM)** Full Proposal Deadline: January 20, 2015  [**NSF Partnerships for Innovation**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3SF74gUI9cZg3SwOPhOP8zNA0IUSni_wAXSjGueVsdPwvpmXNn1tq0Dj_s_RrRriQu4LGyVGucZrVPIBydYYU53e-G2bPXWd66QC_bNuyfzajR8nUoLBjoM_BpVaWVBUA=)- **Building Innovation Capacity (PFI: BIC)** Letter of Intent Due: 12/3/2014Full Application Due: 1/28/2015  [**NSF PD 13-7607**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1GegAF4Hcj17jIFQ5uh0DPDA6s7MGJi0Nv1PNB6mhD1SMBzuOPXOTD-ePVkZC-mziK--WlmWEs9yxYbG_yBwCUbOTXhQ28LEtHXKFJGFrYUVlDpwVK71sK) **- Energy, Power, Control and Networks (EPCN)**  Full Proposal Window: October 1, 2014 - November 3, 2014 October 1 - November 1, Annually Thereafter Supplement Deadline Date:  April 1, 2015  [**NSF 14-511**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1GegAF4Hcj17jIFQ5uh0DPpEViizkd0kz4x4ZbBWsQK09INoupY0Gf0-FOv2Ce7VtSgLttQ1Sm3ga5sJITJToc) **- NSF/DOE Partnership On Advanced Frontiers In Renewable Hydrogen Fuel Production via Solar Water Splitting Technologies 2014-2016** Full Application Due: 12/11/2014    [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top)    **OTHER**  [**Stanton Nuclear Security Fellowship**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK2WG_Mwcztjr6_QWsu3VbNJQRFEX_qRoLvV02RIxuTYiWj6td-b6pSqHtVaBE3LKZyoDf1nzvosOlCUcKtHPC69cu3GzmIT3bw=) Application Due Date: December 15, 2014  [**International Affairs Fellowship in Nuclear Security**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK2WG_Mwcztjr6_QWsu3VbNJQRFEX_qRoLvV02RIxuTYiWj6td-b6pSqeL0quYzklHqhLJqd0_ee3z7SUwuEy_uK) Application Due Date:  January 16, 2015  [**AID-SOL-OAA-00005**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAhjkcHcp1h3EIQycjmT1dkbGv1kN6uW_ZvPUapLBv5CbJFl2bMhtWlGMj5yvOhefQ3CSpfMvQN9dc7DTyzLrepUuJKSFqWZjm4GjZoEToxYAV-O_BLs_5V4) **- Broad Agency Announcement (BAA) for Powering Agriculture: An Energy Grand Challenge for Development (PAEGC) Second Global Innovation Call** Application Due Date: February 12, 2015 by 4 pm  [**Request For Proposals (RFP) The Hinkley Center for Solid and Hazardous Waste Management - Solid and Hazardous Waste Research, State University System of Florida**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK2PhGwsqluXEASytD1lNNNq4-08QdFnOMC7XSMsothVGobYL0hvP-gzBQT5DqqVEVROSPCN4ySIfUS4QnjHHFH6y9iq33Uu9KtELN72V8w9hjEe_kQ8quJLFnDUt-WFq21b_Y4SNBYp8CByqWWbGeC5) Application Due Date: December 12, 2014 by 5 pm  [**FOA-RQKM-2015-0009 - A Integrated Photonics Institute for Manufacturing Innovation (IP-IMI)**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfO2cF1oTNTmcS9XJSmSvB8o2DQjKtnCAg-Jv-7q6mQKvC6-sr75sluZQ3f9i79ay089lYjhN4o3A==) Application Due Date: December 19, 2014  [**Duke Energy Academy at Purdue 2015**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3jQf5koqjjFMD9995mrj61J20bgQNaJ7od0iwHf-iDpjCTY-yOmi82abEkOL7NnBcT9XLYJ3rpMxqWgBQszr845CEFPQJubII=) Application and Registration: January 18, 2015  Email FEWC at fewc.exec@gmail.com if you or your students apply.  [**EPA**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1tH_fWBOGqSxXfL1ibwhDyE-zmcN2QQH4Xyi9FftW9T4DEFmZ3tgRxm5GpaTJS4Nlz7ilbX2GG4A==) - **12th Annual P3 Awards: A National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet**  Application Window Date: September 5, 2014 - December 16, 2014    [Read more >>](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXfjdjWBUJdW-0nNHXnY6ZRCQvITAHSpvBI=)                                [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) | |  |  |  |  | | --- | --- | | events  **UPCOMING EVENTS** |  |  |  | | --- | |  |  |  | | --- | |  |      |  | | --- | | mist  [**MIST Center Kickoff Meeting**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK243jGvTlQd0KloebyBEK7q5jyqgyROTjq47vRMSKsLvw==) | | December 11th - December 12th, 2014  University of Florida, Gainesville, FL    https://origin.ih.constantcontact.com/fs186/1103157481682/img/342.png  MIST Center member organizations are expected to provide a representative who will cast votes on behalf of the organization. There is no specific limit to the number of attendees each member organization can send (within reason). Guest attendees (non Center members) are welcome to attend, but will be asked to sign a Non Disclosure Agreement (NDA).    Highlights:  \*Vision, capabilities, and value proposition of the MIST Center by MIST Center Directors  \*Overview of the NSF Industry/University Cooperative Research Center program by NSF Program Director  \*MIST Center project proposals by MIST faculty  \*MIST Center Student Showcase poster session  \*Project proposal voting and discussion    Click [**here**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK243jGvTlQd0KloebyBEK7q5jyqgyROTjq47vRMSKsLvw==) for more information.                                         [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) |  |  | | --- | |  |      |  | | --- | | purc  [**The PURC/World Bank International Training Program on Utility Regulation and Strategy**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3UElZqWXmmM76LWbVhewBZ7sFz1x4igF0bp2-tUMfiaN2_qp62jxvFSGb6Im8HvDsaMVQWvjTjb-SA585CyF02) | | January 12 - 23, 2015  Gainesville, FL    Since 1997, utility regulators, policy-makers and infrastructure managers around the world have traveled to Gainesville, Florida to participate in the PURC/World Bank International Training Program on Utility Regulation and Strategy. They learn problem-solving techniques, and exchange ideas and experiences during an international forum for the dissemination of relevant best practices and research.  The international training program is an intensive, two-week course specifically tailored to the professional requirements of utility regulators and regulatory staff. The course is designed to enhance the economic, technical, and policy skills required for implementing policies and managing sustainable regulatory systems for infrastructure sectors.  The program is a collaborative effort between the World Bank and PURC and is offered each January and June in Gainesville, Florida. Each program encompasses more than 50 sessions that include case studies, practical exercises and panel discussions with leading experts and international faculty.  Click [**here**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3UElZqWXmmM76LWbVhewBZ7sFz1x4igF0bp2-tUMfiaN2_qp62jxvFSGb6Im8HvDsaMVQWvjTjb-SA585CyF02) for more information.                                         [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) |  |  | | --- | |  |      |  | | --- | | international**[39th International Conference and Exposition on Advanced Ceramics and Composites](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1HEdD-wvCSg-KrT-woFcRRtrkBJzpAGnmHGxBLYIUdngmMb1sMMYEm89J_MjVnq--mJgyvxDF-L6q496gdnRBE2q0YSg-fas8zqEiMszfXO9omJ4_YX_gvnjGBGEFzwpSBjtgIfoqIV0zuLyaRC-bSwPNvIIUSqmQ9gRjsmbdHtCkcBmPutjeJ31GW0a6XOaubJqfTrkkQ8DGAzxADPtLbzTEUa_6eki7_k5RtEnhdd0zwZDo46rCfcU8XUJ56VWNoshgfPfBLyWEuzCnbMJtjDXPkLRcOOyZNFX_T631U29ZeDlY0k0r1" \t "_blank)** | | January 25- 30, 2015  Daytona Beach, FL  https://origin.ih.constantcontact.com/fs186/1103157481682/img/317.gif  The significant increases in demand of world energy consumption as well as clean and efficient energy resources have prompted the imperative searches of new materials and technologies. The technologies aiming for clean energy generation with zero-emission will require advances in materials developments for electricity generation as well as efficient and reliable energy storage. This symposium will focus on the advanced engineering ceramics and technologies that could help the global community to achieve the stated goals.  Click [**here**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK1HEdD-wvCSg-KrT-woFcRRtrkBJzpAGnmHGxBLYIUdngmMb1sMMYEm89J_MjVnq--mJgyvxDF-L6q496gdnRBE2q0YSg-fas8zqEiMszfXO9omJ4_YX_gvnjGBGEFzwpSBjtgIfoqIV0zuLyaRC-bSwPNvIIUSqmQ9gRjsmbdHtCkcBmPutjeJ31GW0a6XOaubJqfTrkkQ8DGAzxADPtLbzTEUa_6eki7_k5RtEnhdd0zwZDo46rCfcU8XUJ56VWNoshgfPfBLyWEuzCnbMJtjDXPkLRcOOyZNFX_T631U29ZeDlY0k0r1) for more information.                                               [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) |  |  | | --- | |  |      |  | | --- | | fesc  [**FESC Instructional Workshop - "Integration of Renewable Energy into the Grid"**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXcvDBslk_rEsorc9CQyC5pWPbFVQraTVdQqbQ17Ojv0oSAcUNEmwU9EeLvWzVpwtSU=) | | February 2 - 3, 2015  Orlando, FL  This instructional workshop targets newcomers to power systems and is designed to bring attendees up to speed on the issues related to the integration of renewable energy sources into the transmission system. Developing solutions to these integration challenges will enable higher penetrations of renewable generation sources and will critically impact the future growth of renewable energy.  Click [**here**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK37U94Q2M_0dysle83nat23H6U8HS3LAXcvDBslk_rEsorc9CQyC5pWPbFVQraTVdQqbQ17Ojv0oSAcUNEmwU9EeLvWzVpwtSU=) for more information.                                         [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) |  |  | | --- | |  |      |  | | --- | | global  [**Global Energy Outlook to 2040**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3tPYa0moidfFC_sjpCJLgfaGflRk5hrNyVOBaOy_9OwQt0Bd-2X_zDwTaARa3TNtZclOYPyNYsZPzzbeU2LfSKQaJkWfIGCA3J0hu3kMzGhw==) | | February 3, 2015  Florida International University, Modesto Maidique Campus  Miami, FL  The Global Energy Outlook to 2040 explores the global energy context within which the world will implement new energy policies to address economic growth, security and the environment. A special guest speaker from ExxonMobil will present an assessment of energy supply and demand through 2040. The speaker will discuss the link between economic progress and energy consumption and examine the underlying factors shaping energy supply and demand challenges around the world. In addition, the presentation will cover unconventional gas production knows as "fracking," the growing demand for power generation and what the energy industry is doing to address the twin issues of global warming and climate change.  Click [**here**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK3tPYa0moidfFC_sjpCJLgfaGflRk5hrNyVOBaOy_9OwQt0Bd-2X_zDwTaARa3TNtZclOYPyNYsZPzzbeU2LfSKQaJkWfIGCA3J0hu3kMzGhw==) for more information.                                         [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) |  |  | | --- | |  |      |  | | --- | | the  [**The Energy and Materials Research Conference - EMR2015**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK18yE-SXGOQBK5qmni3msq07mG5p5aJiOU=) | | February 25 - 27, 2015  Madrid (Spain)    https://origin.ih.constantcontact.com/fs186/1103157481682/img/340.jpg    EMR2015 will bring together researchers and professionals from a broad set of science and engineering disciplines with the aim of sharing  on the latest developments and advances in materials and  processes  involved in the energy generation, transmission-distribution and storage. The connection is clear between research into novel materials and new technological solutions or improvements in materials, and the development of cleaner, cheaper safer and more efficient energy technologies.    Click [**here**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK18yE-SXGOQBK5qmni3msq07mG5p5aJiOU=)  for more information.                                                        [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) |  |  | | --- | |  |      |  | | --- | | battery  [**The 32nd International Battery Seminar**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK00HfKwrDMI84ofKjyOhYuuXDlTT16qOf2jUAttYcyrvokpOVzuFfuLMwX1GXks1UA=) | | March 9 - 12, 2015  Ft Lauderdale, FL    In its 32nd year, this seminar is the leader in providing key industry speakers to discuss the state of the art of worldwide energy storage technology developments for portable, automotive and stationary power applications. This meeting provides not only broad perspectives, but also informed insights into significant advances in materials, product development and application for all battery systems and enabling technologies. In addition, this meeting is renowned for offering broad networking and exhibiting opportunities to the international battery community. As the longest running battery industry event in the world, this meeting has always been the preferred venue to announce significant new developments and showcase the most advanced battery technology.    Click [**here**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK00HfKwrDMI84ofKjyOhYuuXDlTT16qOf2jUAttYcyrvokpOVzuFfuLMwX1GXks1UA=) for more information.                                          [BACK TO TOP](https://ui.constantcontact.com/visualeditor/visual_editor_preview.jsp?agent.uid=1118783071508&format=html&printFrame=true#top) |  |  | | --- | |  |      |  | | --- | | the  [**The Battery Show - The Expo for Advanced Batteries**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK0R0FOpDdos3TpDaL92_rnNF1nRd1NtUkn6tPonx-uaa5zz1oNVDhyogHKQk6qovz2QBIi_Ccy51swhQ38tb5MPqp9NRWNzlQaD7mIxILyIro-4hEbu8onMSIuJOtJi_haILiYSJwyR6G70LOX6NtJR39ZNP7Bz2LkXlPbbUP4pYemUX_A_XltSsYIGaXCAagLRvINIIgr66gWdaxZARU5foTKUFBndPNCEbyBARNRI0e1mwOw7aAumMiZdZOxGkbwOP4zLlmFb6PbCdlggtIlaJ_qqj-01--pOmkMDbrOv_HFcs9alg1zrYv0evG014OEIf_4wvEAnBJulDr5WcjO1Z7r4sU0nr0bsxCz6307cf5VDzSQkwi_MVT7JF4hHS28B35YmLI6S8AVI6qfCgQjfWVUzqfQz-49qaEL8uMuz-Q_tn6KZ6x6_JzVJr6kVX8k3EUXVERUNkELtMdRq-crs_XAstb8HNH7tsoSqCk91csmGv7rmYCtE40ufOHrgoyV_byVXlOtI7HJrKV7Z6w-MunfqbcGgU8w=) | | September 15 - 17, 2015  Novi, Michigan    https://origin.ih.constantcontact.com/fs186/1103157481682/img/352.jpg    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**](http://r20.rs6.net/tn.jsp?e=001qKw1aWXcTVlncVScAoOXuVSil_Rq2hijpjkYE1GyP64hk4yzU9odmr93psT6TIofYDn5DvrEjK0R0FOpDdos3TpDaL92_rnNF1nRd1NtUkn6tPonx-uaa5zz1oNVDhyogHKQk6qovz2QBIi_Ccy51swhQ38tb5MPqp9NRWNzlQaD7mIxILyIro-4hEbu8onMSIuJOtJi_haILiYSJwyR6G70LOX6NtJR39ZNP7Bz2LkXlPbbUP4pYemUX_A_XltSsYIGaXCAagLRvINIIgr66gWdaxZARU5foTKUFBndPNCEbyBARNRI0e1mwOw7aAumMiZdZOxGkbwOP4zLlmFb6PbCdlggtIlaJ_qqj-01--pOmkMDbrOv_HFcs9alg1zrYv0evG014OEIf_4wvEAnBJulDr5WcjO1Z7r4sU0nr0bsxCz6307cf5VDzSQkwi_MVT7JF4hHS28B35YmLI6S8AVI6qfCgQjfWVUzqfQz-49qaEL8uMuz-Q_tn6KZ6x6_JzVJr6kVX8k3EUXVERUNkELtMdRq-crs_XAstb8HNH7tsoSqCk91csmGv7rmYCtE40ufOHrgoyV_byVXlOtI7HJrKV7Z6w-MunfqbcGgU8w=) 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](http://www.floridaenergy.ufl.edu) | | | |