The SPARK

CERT's Fall 2017 Newsletter

The **Center for Energy Research and Technology** is an interdisciplinary energy research center, created to foster collaborative research and development of new energy-related technologies. The center focuses on basic and applied research, outreach and extension activities and education.

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New Sources and Technology Displayed During Energy Day

Over 2,000 K-12 students enjoyed interactive exhibits and technology illustrating solar, wind and photovoltaic energy, bio-fuels, lighting, lithium -ion batteries and more during the 8th -annual Energy Day celebration hosted by the Center for Energy Research and Technology (CERT) at North Carolina Agricultural and Technical State University.

The event featured interactive exhibits led by university faculty, graduate students and partnering energy companies. Renewable energy, energy efficiency and sustainability were among the numerous opportunities open to students throughout the morning and afternoon sessions. Displays were also featured by Guilford County School students, CERT, the College of Engineering, and the university's NSF CREST Bioenergy Center. Energy Day provides students opportunities to see practical application of their classroom subject matter while enhancing and expanding teachers' and administrators' STEM curriculum.

Finding the Sweet Spot Where Reliable Energy, Lower Cost and Reduced Emissions Meet in North Carolina

Researchers at N.C. A&T are trying to shed light on how North Carolina can make smarter choices in power generation. Dr. Greg Monty, director of the Center for Energy Research and Technology and Dr. Marwan Bikdash, chair of the Department of Computational Engineering are trying to help North Carolina's power companies understand their options. The team has been modeling the state's energy usage to determine the best recipe for power generation. By inputting data for all plants in North Carolina (nuclear, coal, natural gas, hydro, solar, and wind) into their modeling resources, the team hopes to identify trends which will help power companies reduce costs, raise plant efficiencies and lower carbon emissions. The model incorporates fluctuations in the prices of oil, natural gas, and other resources, and recommend the best mix of power generation under a variety of scenarios. "No matter what the present administration's opinion of climate change might be, it is just a matter of time before our state faces pressure to examine its practices," says Dr. Marwan Bikdash. "In a way, this is the perfect time to address this. Without a high pressure mandate, we can carefully examine all the information, formulate a game plan and get a head start on creating cheaper, lower-polluting energy for the Tarheel state. The intent is to help leaders craft policy and practice that puts North Carolina in an energy leadership position in the nation."

CERT Leader Dr. Greg Monty Gives TED Talk

Downstream Consequences From Progress was the topic of Greg Monty's TED Talk presented at TEDxGreensboro in June.

Breakthrough technologies and industries have short term benefits and, often, downstream consequences. How do we look ahead to mitigate future problems and how do we solve the ones we have now in areas such as coal ash, pig waste, and nuclear waste? Greg's 20-minute segment can be viewed on YouTube here: https://youtu.be/RwliE6c4Taw

Two N.C. A&T Representatives Appointed to City of Greensboro's Community Sustainability Council

Two new appointments have been made to the City of Greensboro's Community Sustainability Council, and both are members of the N.C. A&T community. CERT's Dr. Vicki Foust is an At-Large representative, appointed by Mayor Nancy Vaughan. Jacques Pierre, N.C. A&T's energy and sustainability officer and the District 2 representative, was appointed by City Council Member Dr. Goldie Wells.

Faun Finley, Chair of the City of Greensboro Community Sustainability Council, welcomed the A&T representatives to the council. "We have experienced first-hand the knowledge, experience, passion, and commitment that both Vicki and Jacques bring to CSC. We have a strong team and I have no doubt that together we will create positive change for our community. This is truly an exciting time and I am humbled and honored to work with you."

The Community Sustainability Council was created by the City Council in 2008 as an advisory group to the City Council. Its mission is to research, advocate, coordinate, and provide outreach for local measures to reduce energy usage and carbon dioxide emissions, identify the costs of implementation and possible funding strategies, and to monitor the progress and effectiveness of measures adopted by the Greensboro City Council.

Area Science Teachers Benefit From CERT's Energy Educator Workshops

During the summer months, CERT invites North Carolina's K-12 science teachers to the N.C. A&T campus for its free Energy Educator Workshops. Teachers from across the Piedmont Triad are exposed to fun energy concepts, and are taught to use easy-to-implement, plug-and-play modules which help science teachers engage kids back in their classrooms.

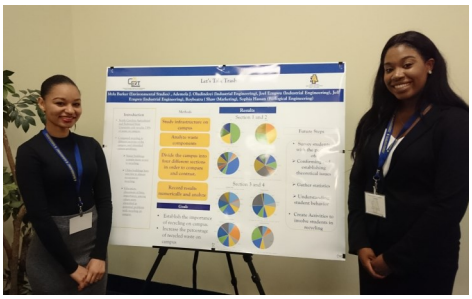
CERT's most popular teaching modules are the Heat Transfer Module and the Energy Transfer Module. They are video and software-based sessions, enhanced with hands-on experiential learning in the classroom. Teachers only have to invest about a half hour of prep time to teach a module, and the students really enjoy the fun, game-based atmosphere. All module materials and kits are loaned for free throughout the year from the "CERT Library."

Workshops are free, including meals and parking, and CEUs are earned. Visit the CERT website for the annual workshop schedule, and to register: [http://www.ncat.edu/research/dored-research-centers/cert/index.html.](http://www.ncat.edu/research/dored-research-centers/cert/index.html)

Energy and Sustainability Students Pursue Undergraduate Research

One hallmark for achieving institutional success lies in a university's commitment to create and expand learning experiences beyond the classroom. Undergraduate research, in any discipline, compliments and enhances the student experience, and CERT is proud to support several students as they pursue scholarly inquiry in the fields of energy and sustainability.

Each fall and spring the Office of Undergraduate Research showcases a wide variety of student research activity in their Research Symposia. Hundreds of student participate in the poster presentation and competition, where students are encouraged to submit their poster and compete for gift card prizes. Speakers, faculty mentors and university leadership are onhand to celebrate this most beneficial student activity.



Myla Barker and Sophia Hassan present their findings from a campus recycling infrastructure research project at the Undergraduate Research Symposium.

EMERGE in STEM GRANT SECURED!

CERT is proud to announce it has secured a $300k 2-year grant through the National Science Foundation to promote STEM-related events and resources throughout Guilford County, North Carolina. This project seeks to gather expertise, content and best practices to empower K-20 STEM learning throughout the region.