

IQ - ISEE Quarterly

An update from the Institute for Sustainability, Energy, and Environment

What's new in funding ...

The Levenick iSEE Fellows Program

The Institute for Sustainability, Energy, and Environment (iSEE) is ready to expand its base of research and scholarship at the University of Illinois at Urbana-Champaign thanks to a generous endowment from Stuart L. and Nancy J. Levenick of Peoria.

Mr. Levenick, who retired Feb. 1, 2015, as Group President of Customer & Dealer Support at Caterpillar Inc. after 37 years with the company, gave \$500,000 to the University of Illinois Foundation in late 2014 for the creation of the Levenick iSEE Fellows Program Fund.

The fund will support the Institute through resident scholars, research fellows, environmental fellows, and policy fellows, iSEE Director Evan DeLucia said.

"The Levenicks' gift will advance iSEE's mission," DeLucia said. "We envision these Fellows as an instrumental part of our efforts to conduct 'actionable research' — that is, work that leads to lasting, real-world solutions to the world's current and future sustainability-, energy- and environment-related issues. In addition, these

Fellows will support our goals in the areas of campus sustainability, education, and outreach. As future leaders in their communities and places of work, iSEE Fellows will guide efforts in these areas while on campus."

Mr. Levenick is a 1976 graduate of the University of Illinois at Urbana-Champaign with a Bachelor of Science degree in Forestry. He is a Sloan Fellow with a Master of Science degree in Management from the Massachusetts Institute of Technology. A former Illini football co-captain, All-Big Ten selection and a 1976 NFL draftee by the Baltimore Colts, he and his wife already have created the Stuart L. and Nancy J. Levenick Endowment Fund, which finances a scholarship for a walk-on Illini football player. In 2014, Mr. Levenick was awarded the Varsity "I" Association Achievement Award, the highest honor for a U of I letter winner for post-graduate accomplishments. He also has made generous gifts to the College of ACES.



The full story can be found on the iSEE website at <http://bit.ly/1HkeDEC>.

What's new in research ...

iSEE to Announce New Seed Funding for Projects

The Institute is set to announce in early June 2015 its choices of projects within its research themes for which it will provide seed funding.

The iSEE Steering Committee is preparing to review — and read external reviews of — several projects for funding of up to \$400,000 over three years.

The chosen projects will fit within one or more of iSEE's concentrations in Climate Solutions, Energy Transitions, Sustainable Infrastructure, Water and Land Stewardship, and Secure and Sustainable Agriculture. Two or three projects are

likely to be funded in this round.

Once funded, research will take place in the Primary Investigator's home department, and indirect costs generated from subsequent proposals derived from the seed grant are expected to track back to the PI's home department as stipulated by the new ICR model.

The Request for Proposals (RFP) was made in November 2014. In February 2015, the Steering Committee reviewed dozens of researchers' pre-proposal white papers and narrowed them to about a dozen it invited to submit full proposals.

In both review rounds, iSEE and its reviewers were looking for research teams composed of multiple disciplines, who propose to address globally significant challenges, and who have a plan for continued funding at the end of the seed grant period.

The newly funded projects will join three others funded in 2014 and already up and running: the Smart Water Disinfection Project; the Woody Polyculture Project; and the Stored Solar Stove Project. To read a few updates on those three projects, please turn to Page 2.

Stored Solar Stove team

The team led by Bruce Litchfield, a Professor of Agricultural and Biological Engineering, continues its work toward a sustainable method of cooking.

Litchfield and co-PIs Tami Bond, Professor of Civil and Environmental Engineering, and Madhu Viswanathan, Professor of Business, are heading a team that wants to offer a viable alternative to cooking without fire, without fuel, and without emissions. By using solar energy and finding the most efficient way to store it, cooking can be done anytime.

A recent trip to India (right) allowed

researchers to examine different methods by which people in the state of Tamil Nadu and Haryana prepare food.

The team recently ordered new prototypes and will soon begin testing how the newly built mechanisms will store solar energy — and cook. In addition to its iSEE funding, Litchfield and his team recently received \$10,000 from the Student Sustainability Committee to use toward a campus prototype; \$30,000 for lab trials from the Research Board at the U of I; \$10,000 from the Office of Public Engagement for outreach activities; \$50,000 from NSF I-Corps



for market research; and a 90 percent match for business start-up expenses from the University of Illinois Research Park.

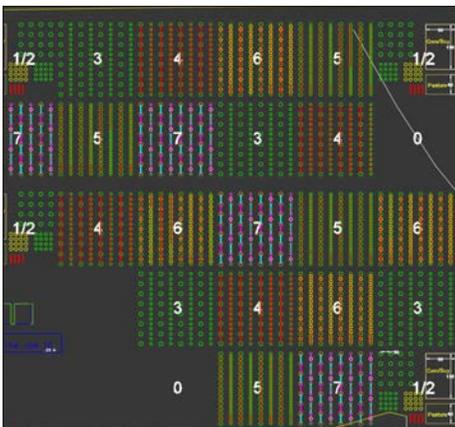


Smart Water Disinfection Project team

Civil and Environmental Engineering Professor Benito Mariñas and his team continue to work toward safer water in Africa and beyond by learning more about pathogen infectivity — and how to control it at a molecular level. The team is developing a smart, real-time sensor to help detect waterborne pathogens, which lead to more than 1.8 million deaths and 870 million cases of chronic malnutrition each year.

A recent trip to Africa had Mariñas' students sampling and testing water quality in several areas, including work (left) by Gabrielle Lovato in the Oruchinga Refugee Settlement in Insingiro, Uganda.

Mariñas' co-PIs on the Smart Water Disinfection Project are Yi Lu, Professor of Chemistry; Joanna Shisler, Associate Professor of Microbiology; and Madhu Viswanathan, Professor of Business.



Woody Polyculture Project team

Sarah Taylor Lovell and her team continue to plan for several plots on acreage at the Energy Farm south of the U of I main campus, on which they will plant complex mixes of trees, shrubs, and forage or hay.

The idea is to find alternative options to traditional row crops in the Midwest — combinations of plants that yield many food and fuel options, including fruits and nuts.

A recent diagram (left) shows tentative plans for planting thousands of plants and

trees as the big day draws near: It's tentatively scheduled for on or around May 1.

Lovell, an Assistant Professor of Crop Sciences, is working with co-PIs Nick Paulson, Associate Professor of Agricultural and Consumer Economics; Michelle Wander, Professor of Natural Resources and Environmental Sciences; Wendy Yang, Assistant Professor of Plant Biology; Jeremy Guest, Assistant Professor of Civil and Environmental Engineering; and Bruce Branham, Professor of Crop Sciences.

Climate Action Plan Coming Soon

Work continues on the 2015 update to the Illinois Climate Action Plan (iCAP), shepherded by the iSEE, with tentative plans to release a draft of the new Plan for public comment in late April or early May.

The Institute, which in 2014 developed a campus Procedure for Formulating and Evaluating Campus Sustainability Policies & Initiatives, is now using that procedure to update and evaluate the iCAP.

The work began in Fall 2014 as the six Sustainability Working Advisory Teams (SWATeams), with help from their consultation groups, began proposing new language and the iCAP Working Group (iWG) began drafting the new document, which will offer goals and proposed policies for years to come.

SWATeams, each made up of two faculty, two staff members and two students, have offered recommendations and draft language in each of their distinct areas: Energy Conservation and Building Standards; Energy Generation,

Purchasing, and Distribution; Transportation; Water and Stormwater; Purchasing, Waste, and Recycling; and Agriculture, Land Use, Food, and Sequestration.

From there, the iWG — made up of representatives from major stakeholder groups across campus and chaired by Ben McCall, iSEE Associate Director for Campus Sustainability — is building a draft document, soon to be released to the public for comment.

After assessing and incorporating public input, the iWG will produce a final draft for approval by the Sustainability Council, which is made up of top-tier leaders on campus and chaired by Chancellor Phyllis Wise. The approved text will be made into brochure form for wide release online (including the iSEE website) with a small number of print documents.

The 2010 iCAP pushed for campus carbon neutrality by 2050; stay tuned in the weeks to come for what the 2015 document will propose!



In Case You Missed It: Helium Recycling Program Expanded

The U of I Department of Physics has invested \$600,000 in new air compressors, increased gas storage capacity, an underground transportation pipeline, and a remote helium collection bladder to increase the amount of helium gas collected and recycled on campus.

Helium's primary application on campus is as a coolant for superconducting magnets, which carry a stable electrical current that scientists use to investigate the molecular structure of anything from pigments and building materials to pharmaceutical compounds and food flavors.

"It became apparent in the summer of 2013 that we needed to take control of our helium destiny," said Eric Thorsland, senior research engineer in the Department of Physics. "Our gas supply that we use to make liquid helium in Loomis Lab that summer was cut off."

Today, more than 50 percent of the helium used on campus is recaptured from magnets in Loomis, the Materials Research Lab, the Superconductivity Center and the Engineering Science Building. The Department of Chemistry had previously



Sonny An/iSEE

not recycled helium primarily because its labs are several blocks from Loomis.

During the winter break, a pipeline was drilled underground from the basement of the Chemical and Life Sciences Laboratory A building to the basement of Loomis — a tricky operation accomplished with engineering and coordination help from Facilities & Services. Soon, individual tubes will connect the exhaust from more than a dozen magnets in Noyes Lab, Roger Adams Lab, and Chemical and Life Sciences Lab to a large bladder in the basement of Chemical and Life Sciences Lab. As this bag fills with captured helium, a fan will

blow the gas through the underground pipe to the liquid helium facility in Loomis. Once there, the helium is pressurized and stored in tanks to await reliquification and redistribution to superconducting magnets around campus.

The expanded recycling system should capture as much as 95 percent of campus helium, and when the new system achieves 90 percent efficiency, the price will drop from the \$15 per liter it costs today to less than \$9 per liter, saving campus users more than \$211,000 annually.

To see the full story, visit the iSEE website at <http://bit.ly/1PIXkRc>.



What's new in outreach ...

Upcoming Events: Earth Week, iSEE Congress

The Institute continues to help sponsor and promote events on campus that promote sustainability, clean energy and eco-friendliness. Among two of the more notable:

- Earth Week 2015 is set for April 20-24 on the Urbana-Champaign campus. iSEE is co-sponsoring the keynote address on Earth Day (Wednesday, April 22),



featuring green marketing pioneer Jacquie Ottman (left). You can read more about her at <http://bit.ly/1laDGIu>.

After Ottman's address that day, iSEE will honor its Certified Green Office Program participants

for their actions in reducing energy and resource consumption in the workplace.

And Friday, April 24, also happens to be Arbor Day. The Institute is co-sponsoring that celebration, which includes a tree planting on the Quad.

A full Earth Week schedule can be found at <http://bitly.com/1Df7FxG>.

- Planning for iSEE Congress 2015 is well underway, and the schedule and speakers list has solidified during the Spring semester.

The second annual Congress — “Water Planet, Water Crises? Meeting the World’s Water-Food-Energy Needs Sustainably”



— will take place Sept. 14-16 at the Alice Campbell Alumni Center. Speakers will include Robert Glennon, Udall Professor of Law and Public Policy at the University of Arizona and author of “Unquenchable: America’s Water Crisis and What To Do About It” (2009) and the acclaimed “Water Follies: Groundwater Pumping and the Fate of America’s Fresh Waters” (2002).

Topics include water resources and climate change; the water-food-energy nexus; water, human health and ecosystems; water governance and policy; and water conservation and safety innovations.

Videos from the 2014 Congress, “Feeding 9 Billion,” (above) are now up on the iSEE YouTube page at <http://bit.ly/1DF-ci5H>.

What's new in education ...

iSEE, NRES to Award Climate/Public Health Research Scholarships

In late Spring, the Department of Natural Resources and Environmental Sciences (NRES) and iSEE will announce two new research awards for students of the University of Illinois Urbana-Champaign: the 2014-2015 Warren Lavey and Dr. Holly Rosencranz Research Awards in Climate Change and Public Health.

The process opened in late February. Interested undergraduate and graduate students were to submit applications and a letter of reference by April 20. Relevant research topics were defined broadly and included, but are not limited to:

- the impacts of climate change on incidence of cardiovascular, respiratory, infectious and other diseases;
- public health infrastructure preparedness for climate-related events;



- food/water security and safety in changing climates;
- effectively communicating to the public the connection between climate change and health;
- developing economic mechanisms targeting the public health impacts of climate change; and
- threats of climate change to parks as attractive spaces for healthy exercise.

These awards are intended to foster investigation of the various mechanisms interconnecting climate change and human health. Up to two undergraduate awards up to \$2,000 each will be available, for conducting either domestic or international research. One award of up to \$5,000 will be available to support a graduate student research project, also either domestically or internationally.

For more info, visit our website at <http://ow.ly/JEeL5>.