



IQ - ISEE Quarterly

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

What's new in research ...

New DOE Bioenergy Research Center Begins Hiring Process

Work is well underway to bring the Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) to life at the University of Illinois and 17 partner institutions.

This fall, the U.S. Department of Energy announced an increase in first-year funding for its newest Bioenergy Research Center from \$4 million to \$15 million; changing the overall funding of the five-year project to \$115M.

In addition, the Institute for Sustainability, Energy, and Environment (iSEE) was pleased to announce the hiring of Ank Michielsen as Program Manager for CABBI.




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Michielsen, who will also serve as a Funding Proposal Developer for iSEE, joined the team in September and has been busy compiling budgets and coordinating the hiring of other CABBI administrative staff and research coordinators.

Before moving to iSEE and CABBI, she was a project manager at the Carl R. Woese Institute for Genomic Biology at Illinois. In this role she managed several multimillion-dollar projects funded by the Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E). Those projects focused on improving sorghum and other crops for greater renewable energy potential.

Michielsen earned her B.S. in Plant Science and Rural Sociology and went on to earn her M.S. in Communication and Innova-



CABBI

CENTER FOR ADVANCED BIOENERGY AND BIOPRODUCTS INNOVATION

CABBI Site, Twitter Feed Launched

iSEE recently launched a website for the Center for Advanced Bioenergy and Bioproducts Innovation. Check out cabbi.bio. In addition, you can follow @CABBIbio on Twitter. Visit twitter.com/CABBIbio.

tion Studies from Wageningen University & Research Centre in the Netherlands. She earned an MBA from Open University in Great Britain.

iSEE has also begun hiring postdoctoral researchers, graduate students, lab technicians and support staff for each of its three research themes: Feedstock Production, Conversion, and Sustainability. Visit cabbi.bio/jobs for more information.

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What's new in research (continued) ...

In the Spotlight: Sam Lindgren

Sam Lindgren is a Ph.D. Candidate in Agricultural and Biological Engineering and a member of iSEE's Stored Solar Stove research team. While her teammates work to technically perfect the "Sun Bucket" solar-powered clean cooking device, she examines the communications and relationship-building needs for adoption of the device.

User-centered design is a big focus of the Solar Stove group — Principal Investigator Bruce Elliott-Litchfield and his teammates are committed to building a product that meets all the needs of the users. Even when the technology is right, Lindgren said, adoption doesn't always happen:

"(I've found that) there needs to be a lot of follow-up support and communication to keep people using something that's new," she said. "Even if someone is really interested in it, it's very easy to fall back into old habits."

Listening to women is by far the most important piece. All over the world — in countries developed or underdeveloped or somewhere in between — women do most of the cooking. Their perspectives and feedback are essential. What do they need, and what do they wish they could do that they can't do now?

Lindgren and her teammates have made several trips to communities in the Navajo Nation at the Four Corners region of the United States and to partner organizations in Haiti to observe women cooking, to learn the ways that they cook, and to see how their children interact in



the kitchen.

During visits with fire cookers, Lindgren enthusiastically shares about being a mom. She also shares that she frequently uses her own Sun Bucket to cook meals for her family.

Her own stove turned out to be not just a great data collection and product test opportunity, but also a way of sharing the solar stove research with the public. To share photos of meal prep with the research team, thus influencing the design of newer iterations of the device, Lindgren started a blog called "Cooking with Sun Buckets."

When she's not gathering data to drive user-centered design or testing the latest prototype on her home countertop, she is dialing in on her Ph.D. thesis: How do you — or should you — convince someone in a different part of the world that they should

change behaviors that have been part of their culture and their family for generations?

"I think that's a tricky and sensitive question," she said. "I think that the answer is often yes, especially when health risks from indoor air pollution are a local concern. But in terms of sustainability, we all need to be making changes."

Adults have opinions and worldviews that are long-established and difficult to change. So Lindgren is focusing her education and communications efforts on engaging younger generations to achieve sustainable change.

"I'm interested in whether or not kids' attitudes about sustainability or new cooking technology influence their parents' decision to try something else," Lindgren said. "And if so, what role does education play in changing kids' attitudes so they might affect change at home?"

Going forward, she is eager for the project to connect with additional communities of fire cookers so she can see another slice of women's perspectives in the world.

"We get to meet people, get to personally know them, and start to make adjustments based on their feedback," she said. "How can we make a better engineered solution to meet their needs?"

[Read the full profile of Lindgren on the iSEE website.](#)

[More about the Stored Solar Stove project.](#)

[Lindgren's Cooking with Sun Buckets blog.](#)

iSEE Research Team Earns \$2.43 million NSF Grant

To help explore particular aspects of the Critical Infrastructure and Transportation project that hit close to home in Illinois, Principal Investigator Ximing Cai and others were awarded \$2.43 million from the National Science Foundation (NSF) for a study titled "Advancing FEW System Resilience in the Corn Belt by Integrated Technology-Environment-Economics Modeling of Nutrient Cycling."

Funded by this award through the NSF Innovations at the Nexus of Food, Energy and Water Systems (INFEWS) initiative, Cai will work with Roland Cusick, Assistant Professor of Civil and Environmental Engineering; Benjamin Gramig, Associate Professor of Agricultural and Consumer Economics; Vijay Singh, Professor of Agricultural and Biological Engineering and the Director of the Integrated Bioprocessing



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Research Laboratory; and Gregory McIsaac, Professor Emeritus of Natural Resources and Environmental Sciences and Senior Research Scientist at the Agricultural Watershed Institute.

An overview of the study: "Food production, water supply, water quality, energy supply, and economic growth and financial stability in the Corn Belt depend on each other while competing for resources. To help decision makers in Corn Belt watersheds address such interrelated challenges and opportunities, we will develop an Integrated Technology-Environment-Economics Modeling (ITEEM) tool to be used to understand how changes in one sector may cause changes in other sectors.

[Read more on the project page.](#)

What's new in research (continued) ...

Campus as a Living Lab Workshop



Olivia Harris/iSEE

More than 100 Illinois faculty, staff, and administrators attended iSEE's event in early October to discuss more closely tying campus sustainability projects to research and education. The event culminated in iSEE announcing a seed funding program: Faculty can receive up to \$30,000 to be used toward submitting a \$1M-plus research proposal to a major granting agency for a project that would also be tied to a campus sustainability effort.

What's new in campus sustainability ...

Certified Green Office Program Seeks Participants

The iSEE Certified Green Office Program is back for a fourth year of helping campus offices and lab groups update their daily habits for a more sustainable university community.

Using our list of more than 30 suggested actions, you can discover ways to start an environmental update for your workspace. The more elective actions you complete, the higher certification you can receive.

So far, 31 offices have participated in the program, in which iSEE connected with more than 1,200 employees who contributed their part to reduce our carbon dioxide emissions. The latest to certify was Facilities & Services Customer Relations and Communications.

[Check out the newly rolled-out 2017-18 version of the program on the iSEE website.](#)

Illini Lights Out Program Continues



Olivia Harris/iSEE

In the Illini Lights Out events on Sept. 28 and Oct. 20, a total of more than 100 students have teamed up to switch off 5,400 fixtures, or nearly 12,000 light bulbs — saving the Illinois campus more than 10,000 kilowatt-hours of electricity and more than \$1,000. The remaining Fall semester events are Nov. 10 and Dec. 1.

What's new with the Student Sustainability Committee (SSC) ... A Busy Fall with Funding, Events

For the Fall 2017 funding cycle, the Student Sustainability Committee (SSC) received 34 diverse project proposals, and it already is funding seven student-led projects — such as building a 1,500+ mpg car or producing recycled 3D printing filament.

SSC looks forward to reading Step 2 applications from its project proposals that have budgets greater than \$10,000.

Beyond its funding activity, the Committee has planned and attended various programming opportunities on campus. SSC members joined this year's inaugural Fresh Check Day, a program hosted by

La Casa that brings awareness to mental health by showing students the various ways the community cares about them.

During Sustainability Week, SSC hosted a tour to the Energy Farm, exploring the new biomass boiler. Furthermore, SSC hosted “An Inconvenient Sequel” screening where former Vice President Al Gore participated in a live webcast Q&A session with students.

As SSC continues to evaluate project proposals and plan programming, members are looking forward to the Spring 2018 funding cycle. Have an idea? Submit a proposal by Feb. 5 to receive consideration.

[Get more updates on the SSC website.](#)



What's new in outreach ...

Stay Tuned: iSEE Critical Conversation in Spring '18

The world's toughest challenges are not owned by individual stakeholders, nor can they be solved alone. They have social, political, legal, economic, and technical dimensions.

To generate an intellectual forum for discovering solutions, the Institute's Critical Conversations will bring researchers, social and physical scientists, politicians, lawyers, industry leaders, and nongovernmental organizations into a dialogue that can move us forward. These “safe spaces” will let those with very different viewpoints explore commonalities, and they will be coupled with advanced communications strategies, engaging social and traditional media to get the word out.

iSEE is organizing its first Critical Conversation in Spring 2018. The topic: agricultural nitrogen runoff and its impacts for the Gulf of Mexico ecosystem. Researchers from the University of Illinois and external stakeholders will identify current gaps in scientific knowledge, key economic and social barriers, and market and policy solutions for sustainably achieving a significant reduction in nitrogen runoff.

Key outcomes of this meeting will include the development of an interdisciplinary research agenda to be developed in collaboration with external stakeholders and public-private partnerships to generate knowledge-based solutions.

Critical Conversations are supported by a generous gift from the Alvin H. Baum Family Fund, iSEE's founding benefactor. The Baum Fund is administered by Joel Friedman.

[Learn more about iSEE's Critical Conversations.](#)

Fall 2017 Events



Olivia Harris photos/iSEE



ABOVE: More than 100 people attended the Campus Sustainability Celebration event on Oct. 25 at the Alice Campbell Alumni Center. The event offered updates from iSEE's Sustainability Working Advisory Teams (SWATeams) on progress toward Illinois Climate Action Plan goals, and recognized offices, buildings, and initiatives that helped save campus energy and resources over the past year. **LEFT:** More than 210 people attended the opening keynote by former White House Science Advisor John Holdren at iSEE Congress 2017 — “Building Resilience to Climate Change.”