



ENERGY GENERATION, PURCHASING & DISTRIBUTION

Energy is by far the largest contributor to the campus' emissions inventory. The iCAP focuses on a detailed strategy of building energy conservation, de-carbonizing generation systems, and the addition of renewable energy sources. This "conserve-and-load" approach is achievable, affordable, and implementable. The 2015 iCAP calls for a reduction in building energy use of 30 percent by FY20.

Progress on efforts to de-carbonize our energy generation systems is monitored by the Energy Generation, Purchasing and Distribution (EGEN) SWATeam.

OBJECTIVES

1. The EGEN SWATeam, in collaboration with Facilities & Services and topical Consultation Groups, will lead an exploration of options for 100% clean campus energy during FY16, and submit recommendations through campus sustainability process.



Status:
In progress

- A recommendation to hire a consultant to study feasibility of electrifying campus operations was submitted to the Illinois Climate Action Plan (iCAP) Working Group. Review is underway. A formal recommendation to the Sustainability Council is expected December 2016.
- Construction is underway to install a 200kW biomass boiler at the Energy Farm. This system will initially provide all heat for the greenhouse onsite, replacing current propane heating system. In the future, more buildings may be added to the boiler system.
- A team at the Illinois State Geological Survey (ISGS, a division of the Prairie Research Institute) led by Illinois Professor Yu-Feng Forrest Lin is conducting a series of detailed observations of the geothermal profile on campus — including high-resolution temperature profiling and thermal analysis. The team will drill to 330 ft and install a geothermal loop and fiberoptic cables. Results will help determine the feasibility of implementing geothermal systems on campus by identifying costs and possible challenges.
- A contract is in place to perform a heat recovery chiller (HRC) study to identify potential location(s) for HRCs on campus, and assess opportunities for one system to serve multiple buildings. Preliminary review and assessment is expected to begin October 2016.

3. Expand purchases of clean energy. By FY20, obtain at least 120,000 MWh per year and by FY25 at least 140,000 MWh per year from low-carbon energy sources.



Status:
In progress

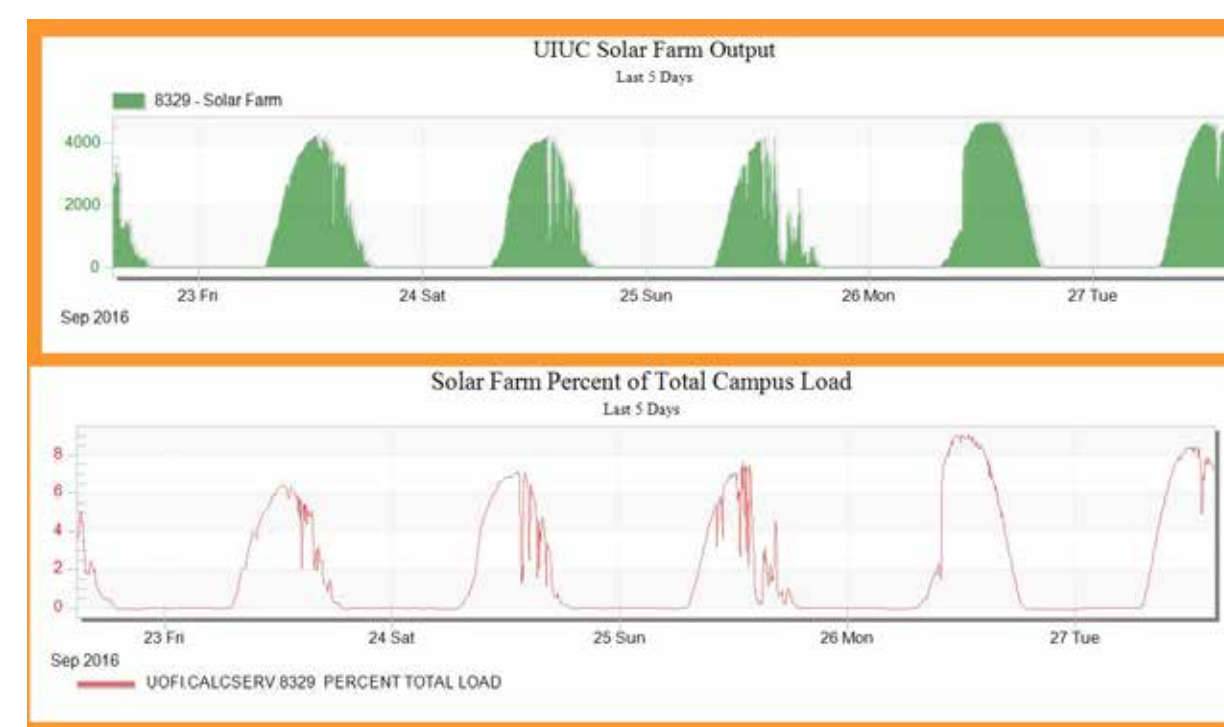
- Nearing the end of negotiations to enter into a power purchase agreement (PPA) for the purchase of approximately 25,000 MWh of wind power annually for 10 years.
- A recommendation was submitted to allow longer-term contracts for the purchase of renewable power. The Institute for Sustainability, Energy, and Environment (ISEE) is currently reviewing this request with campus legal counsel and Purchasing departments to determine feasible options and potential next steps.

2. Expand on-campus solar energy production. By FY20, produce at least 12,500 MWh/year, and by FY25 at least 25,000 MWh/year, from solar installations on campus property.



Status:
In progress

- Solar farm was put into operation in December 2015, and has produced 6,200 MWh of electricity.
- Total generation for on-campus solar in FY16 was 3,971 MWh/year. Existing installations — including Building Research Council (15kW), Business Instructional Facility (33kW), and Wasaja Hall (33kW) — are projected to produce 7,900 MWh/year in FY17.
- Several solar projects are in progress: 300kW system atop ECE Building (expected summer 2017); 1.2 MW system on North Campus Parking Deck (funding needs to be secured).
- Niharika Kishore, an Illinois masters student in Urban Planning, is working to identify locations for on-campus solar and is evaluating costs and benefits.

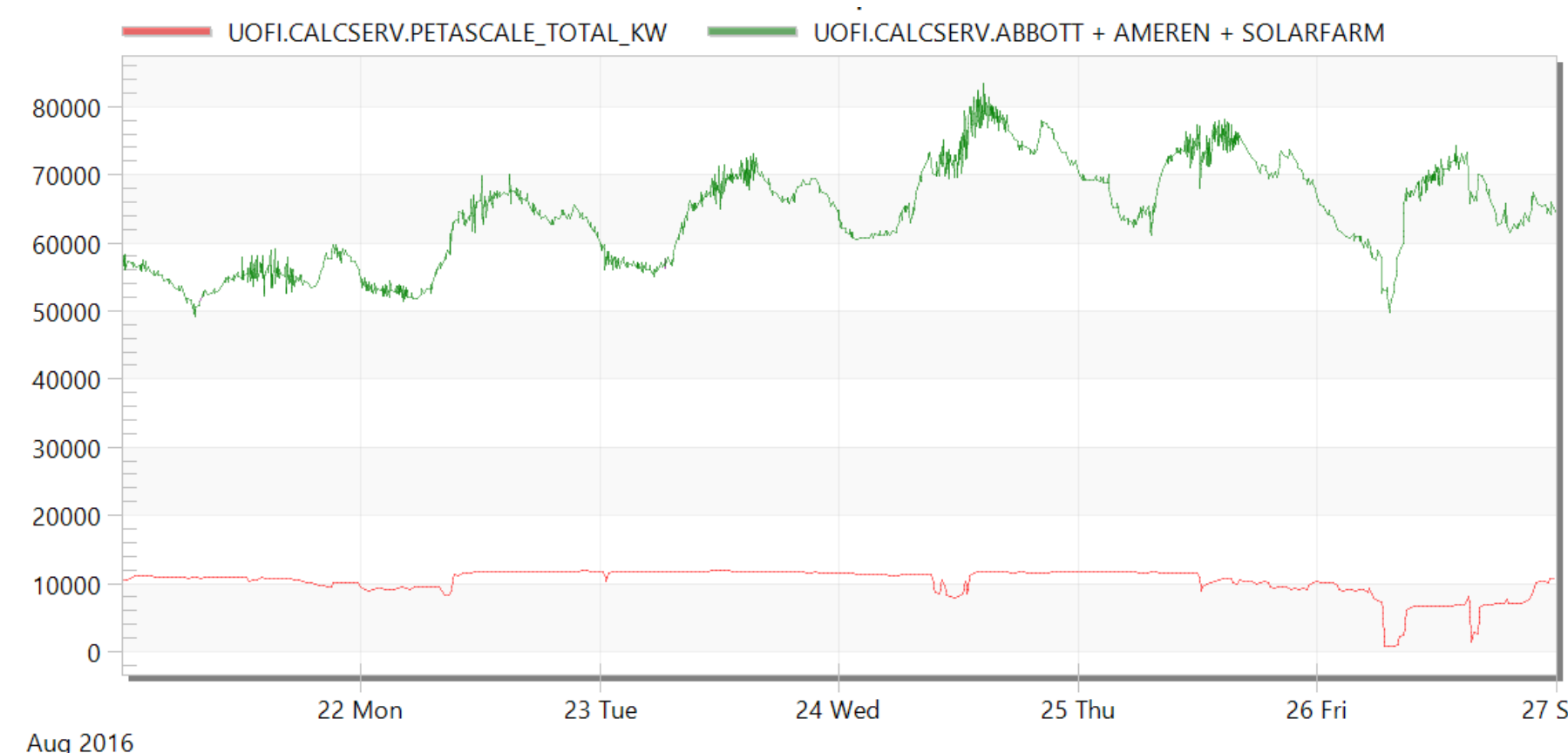


4. Offset all emissions from the National Petascale Computing Facility (and other successor facilities) by FY18.

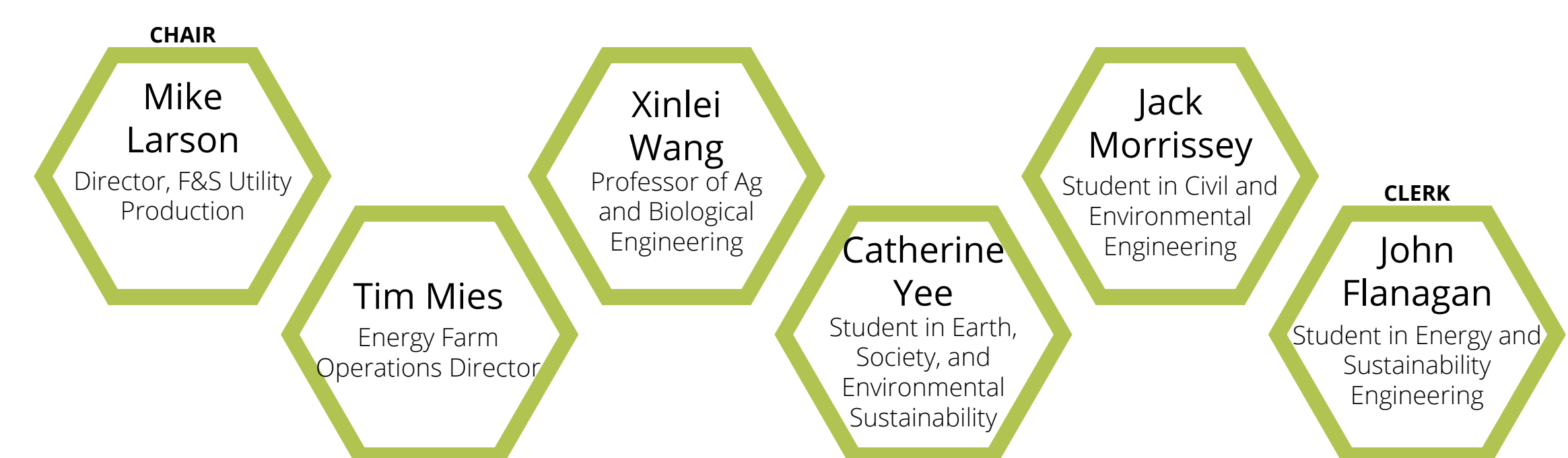


Status:
In Progress

- iSEE's Director, Evan DeLucia, is reviewing this objective with the National Center for Supercomputing Applications.
- Graph at right depicts total campus electricity demand in green and total Petascale electricity demand in red.



TEAM MEMBERS



ACKNOWLEDGEMENTS

The EGEN SWATeam would like to recognize Professor Scott Willenbrock for his participation and leadership on our committee. Scott was a charter member of this team, and led our group for the duration of his tenure. Scott's leadership and participation in the group will be missed, and we wish him the best in his new position as a Provost Fellow for Sustainability.