

UMASS CLEAN ENERGY EXTENSION

Quarterly Progress Report to MA Department of Energy Resources

Period ending June 30, 2016

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This Progress Report provides a summary of work accomplished by the UMass Clean Energy Extension (CEE) during the period April 1, 2016 to June 30, 2016.

During this reporting period, the Clean Energy Extension has established a pilot program engaging staff and students to support municipal participation in the Green Communities program, and has successfully concluded the hiring of two core staff members for engineering and market development. The CEE has continued to engage with early outreach and the pursuit of grant opportunities. This report provides a summary of progress in the administrative development of the extension, early outreach, and research activities.

1. Extension Administration and Management

Staff Hiring

The search for the Research Engineer/Fellow position was successfully completed in early April, with the hiring of Chris Beebe. Chris has provided engineering consulting services to DOER and the MassCEC in the past and brings to CEE valuable engineering and technical resources in the solar, biomass, and electrical system. Chris started work with CEE in early May and his position is currently set at half-time. With Lauren Mattison also committed to the extension at half-time, this brings the technical/engineering resource to one FTE.

At the very end of this reporting period, the Clean Energy Extension completed its search for a Market Analyst & Outreach Coordinator. Gregory 'River' Strong was hired and begins full time work with CEE in July. River has consulted in Vermont and other states for 15 years in clean energy and greenhouse gas reduction strategies for public and private sector clients. His combination of engineering and communications credentials and experience will play a key role as CEE expands its activities and proactive strategies to serve market sectors.

DOER ISA Amendment

DOER and the Clean Energy Extension, with the University OGCA, completed an amendment to the ISA in June.

2. Market Support and Extension Outreach Activities

The Clean Energy Extension continues to provide support and outreach as opportunities arise. With the core staff now coming into place, CEE expects to begin more proactive outreach strategies in targeted market sectors later in 2016. Our current support and outreach extends within UMass and to local municipalities, state agencies, and private sector businesses and institutions.

Public Events and Presentations

Event	Date and Location	Extension Presenter	Presentation Title	Audience	Estimated Attendance
Western Mass Green Consortium – Green Night	Northampton, MA. April 13	Ben Weil	Short update on Green Communities and UMass Energy Corps Internship Program	Professionals, builders, activists	50
Western Mass Green Consortium – Green Night	Northampton, MA. June 8	Ben Weil	Using Big Data to find Big Energy Savings	Professionals, builders, activists	80

Activities at University and State Agencies

Green Communities Technical Assistance – Pilot Program Launch

With support and guidance from DOER Green Communities western MA Regional Coordinator Jim Barry, the Clean Energy Extension launched a pilot program with CEE staff, faculty, and student interns. The program was developed and is overseen by Dwayne Breger and Ben Weil, and engages student interns and CEE engineers to provide technical assistance to towns engaged in the Green Communities program either a prospective applicants for designation or as Green Communities striving to meet their energy reductions. For the pilot, a student energy corps of paid summer interns was convened including one graduate student, one UMass undergraduate, and one intern from Greenfield Community College. The team worked with Jim Barry to understand the Green Communities program design particularly regarding Criterion 3 for energy tracking and reduction strategies, and master the use of MassEnergyInsight.

In coordination with Jim, CEE is providing assistance to five municipalities in western MA as summarized below. The summer pilot will remain active through August, with the intent of sustaining this program with a revolving corps of students. In addition to serving the communities, the student corps furthers a new strategic effort within the College of Natural Sciences to enhance workforce development opportunities for its students.

Town	Status	Technical Assistance
Ware	Planning to submit Oct 2016 designation grant application	Introductory meeting with Town Administrator and energy volunteer. Establishing MEI accounts, analysis of energy accounts and reduction strategies, review energy audits as available.
Southampton	Planning to submit Oct 2016 designation grant application	Introductory meeting with Town Manager, Finance Officer, and energy volunteer. Establishing MEI accounts, analysis of energy accounts and reduction strategies, review energy audits as available.

Amherst	2012 Green Communities Designation	Met with Sustainability Coordinator and Facilities Director and discussed opportunities for CEE to assist the Town in reaching its Green Communities program energy reduction goal.. Reviewed MEI accounts and energy reduction strategies to date; presenting further reduction strategies (technical and behavioral).
Greenfield	2010 Green Communities Designation	Evaluation and design recommendations for Town Hall energy conservation measure.
Monson	2011 Green Communities Designation	Meeting and walk through of Senior Center. Assessment of energy bills and reconciliation with expected savings from lighting retrofit.
DOER/RPAs	Coordination with DOER META Grant opportunities	Coordination with PVPC, FRCOG, and HCOG on supporting regional member communities, within context of DOER/GC META grant program.

MA Food and Beverage Processing Sector – with UMass Lowell, MassDEP, DOER and others
Following the initiative of UMass Lowell Center for Sustainable Production, and building on their success with state agencies to serve the water/wastewater treatment sector, the Clean Energy Extension participated in strategic discussions on an effort to offer clean energy and pollution reduction assistance to the food processing sector in Massachusetts. Led by Lauren Mattison, CEE helped the interagency/university group design, organize, and outreach the *Green Your Bottom Line in Food Processing: An Energy/Environmental Workshop* held on May 5th at the MA Division of Fisheries and Wildlife Field Headquarters in Westborough. The workshop attracted 45 attendees, including 12 food and beverage companies. The feedback from participants was supportive of its value and offered helpful ideas for a broader effort in this sector. CEE collaboration with UMass Lowell has led to a grant award to carry on further work with this sector (as reported below under Research Activities).

Clean Energy Extension Annual Conference

CEE is planning its 3rd annual conference offering a topical agenda of clean energy activities and opportunities primarily for municipal officials. The conference is scheduled for September 22 at the Beachwood Hotel in Worcester. A draft agenda with most speakers confirmed has been prepared and a conference website and registration process is nearly completed. CEE plans to solicit vendor sponsors and announce the Conference and open registration in early August.

DOE SunShot Grant Proposal with DOER – Residential Solar and Storage

The Clean Energy Extension collaborated with DOER, three utilities and Fraunhofer CSE on a substantial grant application to U.S. DOE to establish a pilot residential solar and storage effort in MA. CEE engaged with team members on the goals and scope of the proposal, and provided drafts of technical sections of the application. The DOER-led proposal was submitted in early May, and CEE assisted DOER in offering reply comments in early June in response to DOE’s initial review. [In July, beyond this reporting period, DOER was informed that DOE will not be funding our proposal.]

Completion of Green Communities and Renewable Thermal Case Studies

In collaboration with DOER, Lauren Mattison completed seven Green Communities case studies on communities successfully meeting their energy reduction requirements. These were posted

by DOER on their [website](#) in July. Lauren is continuing to work with DOER on completion of several case studies about use of renewable thermal technologies in Massachusetts.

U.S. DOE Industrial Assessment Center (IAC) Grant Application, support for CEERE

The UMass Center for Energy Efficiency and Renewable Energy in the Mechanical and Industrial Energy Department submitted a grant proposal to U.S. DOE for a five-year renewal of funding for the Industrial Assessment Center which provides energy audits for industrial customer throughout New England and New York. CEERE, led by Beka Kosanovic, is affiliated with CEE as a principal investigator and with sharing and collaborating engineering staff. In the application to DOE, CEE offered support for outreach and evaluation of renewable energy and energy storage opportunities in the industrial sector to complement CEERE staff expertise.

Offshore Wind Industry Meeting/Workshop

On April 8th, UMass hosted a panel on *The Future of Offshore Wind in Massachusetts*, with opening remarks by the UMass Chancellor and State Senate President Stan Rosenberg. Prior to the panel, Dwayne join the UMass engineering department hosts for an open discussion with the three companies with BOEM leases off Massachusetts (Deepwater Wind, DONG Energy, and OffshoreMW), and the industry collaborator Offshore Wind: Massachusetts.

iCons Class Participation

The Intergrated Concentration in Science ([iCons](#)) program at UMass recruits top tier undergraduate students across a diverse range of science and engineering disciplines and prepares them to be problem solvers, leaders and innovators. The global science and technology challenges of energy and climate are amongst the key subject areas of the program. Dwayne and Ben participated in Professor Scott Auerbach course as advisors and judges of student team projects and competitions.

School of Earth and Sustainability - Retreat

The University is launching a new interdisciplinary School of Earth and Sustainability in Fall 2016. The school will open new opportunities for energy and climate curriculum, student activities, and faculty collaborations. Dwayne has participated for his department and CEE on visioning for the school including a retreat on May 9th with all affiliated faculty and administration.

Visiting Environmental Studies Fellows from Uruguay and Mexico

CEE hosted a group of three visiting environmental studies fellows to campus on May 23rd in coordination with their host the Pioneer Valley Planning Commission. Dwayne organized a day agenda for the fellows including discussions with faculty, tour of the campus Central Heating Plant, and visits to a campus solar installation and the new wood construction Design Building.

DOER APS Regulation - Public Hearing

CEE facilitated the hosting of a DOER public hearing on campus on June 15th.

Businesses, Organizations, and Municipalities

The Clean Energy Extension staff held substantive direct interactions with the following municipalities, organizations, and businesses.

Entity and Attendees	Date and Format	Extension Staff	Purpose and Outcomes
Massachusetts Forest Alliance, Statewide Wood Energy Team (SWET); Nathan L'Etoile, Executive Director, Charlie Thompson, Board, Bryn Gingrich, Outreach Staff.	May 5 (meeting), May 16 (phone meeting)	Breger, Beebe	Discuss opportunities for collaboration on biomass thermal in support of MFA US Forest Service grant to establish a SWET.
Kyle Wilson, Archipelago Investments - Olympia Place, Amherst, MA	May 12; tour of 57-unit private student housing under construction proximate to UMass.	Breger	Review energy systems and discuss renewable energy options and program. Design and installation is mostly complete. Development utilizes efficient air-source heat pumps and other measures. Follow up on APS rulemaking..
Gala/Symposium for 150 th Electric Restructuring Roundtable, Boston	May 18, attendance and networking	Breger	Attended Roundtable and caught up with colleagues.
Linda Paquet, Petersham Energy Committee re: biomass SAPHIRE project	On-going communications in May; May 24 conference call with consultant	Breger, Beebe	Provided review and comparative evaluation of project costs from feasibility study and engineering design. Supported town in discussion of costs and cost reduction opportunities with design engineer. Project and SAPHIRE grant was abandoned due to excess costs.
Michael Lehan, Hyperion Systems; Kickoff and Advisory meeting for SunShot InSPIRE award, with NREL, DOER, MassDAR, USDA, others. Grant project concerns Dual-use PV on farmland; Essex Technical High School, Danvers	May 25, meeting and discussion	Breger, joined UMass Prof. Stephen Herbert who is a collaborator on grant project	Presentation of grant project scope of work and participants. Discussed role of broader group. Agreed to maintain engagement with project work.
Northfield Mount Hermon School, Gill, MA; Becca Malloy, Sustainability Coordinator, Rick Couture, Director of Plant Facilities.	June 16 Meeting at NMHS and tour of central plant	Breger, Beebe, Ben McDaniel (CEERE)	Review school's sustainability strategies and assess opportunities for further savings. CEE provided a Memo of findings and recommendations. Follow-up meeting is planned.
Energy Storage opportunities at MWRA Deer Island, Kristen Patneau and others, Environmental Defense Fund summer graduate intern	Phone communications, and June 17 meeting at MWRA	Breger, Mattison, Kosanovic (CEERE/IAC)	Collaboration with MWRA's summer EDF graduate intern to assess opportunities for storage to reduce utility demand charges.

3. Extension Research Activities

During this reporting period, the Clean Energy Extension has supported the following research activities.

UMass Lowell Grant - EPA Pollution Prevention Proposal to support MA Food Processing Industry

CEE contributed to a grant proposal led by UMass Lowell to the EPA Pollution Prevention Program for support of outreach and technical assistance to the MA food and beverage processing industry to reduce energy and pollution. CEE contributes technical support for the planned workshops and provides energy audits for processing facilities, in collaboration with the UMass IAC. [In early July, after this reporting period, UMass Lowell was informed by EPA that they were selected for funding. CEE has begun finalizing the scope and preparing for the contract administration.]

CEE Student Research Activities

GIS Database of MassDEP Permitted Boilers

A CEE undergraduate summer intern is using ArcGIS to map MassDEP permitted boilers and evaluate opportunities to target businesses and institutions for CHP, renewable thermal, and district energy opportunities. CEE was awarded a stipend from inaugural *Center for Agriculture, Food and the Environment (CAFE) Undergrad Summer Scholars* program to support the student.

Policy Issues and Options for Community Shared Solar

A graduate student in public policy is working with CEE on a policy paper examining the Community Shared Solar market, and policy considerations and options for differentiated support for community organized/owned projects and third-party owned projects with subscription off-takers.

Life Cycle Carbon Balance of Forest Removal for Solar PV Generation

CEE is working with an undergraduate summer intern to develop a model to evaluate the lifecycle carbon impact of removing forest to install solar PV generation.