

UMASS CLEAN ENERGY EXTENSION

Quarterly Progress Report to MA Department of Energy Resources

Period ending March 31, 2016

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This Progress Report provides a summary of work accomplished by the UMass Clean Energy Extension (Extension) during the period January 1, 2016 to March 31, 2016.

During this reporting period, the Clean Energy Extension has made substantial progress in preparing staff, offering seed research grants, and early outreach activities. 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 Fellow position is nearly completion. The Search Committee has identified a strong candidate and we are awaiting approvals to extend an offer.

The second core staff position for a Market Analyst & Outreach Coordinator has been approved and was posted on the University website on March 28. The job opportunity is listed on other targeted job bulletin boards and distributed through direct emails.

New Director for UMass Center for Agriculture, Food and the Environment

A new director of CAFE, Jody Jellison, arrived on campus in January. Dwayne introduced her to the emerging Clean Energy Extension at a meeting in her office on January 27.

DOER ISA Amendment

DOER and the Clean Energy Extension drafted amendments to the ISA which are now under review by the University OGCA.

2. Market Support and Extension Outreach Activities

The Clean Energy Extension continues to provide support and outreach as opportunities arise, but awaits additional staff before more proactive outreach activities. Our support and outreach extends within UMass and to local municipalities, state agencies, and business and consultant.

Public Events and Presentations

Event	Date and Location	Extension Presenter	Presentation Title	Audience	Estimated Attendance
Holyoke Data Center – Ribbon Cutting	2/29/2016, Holyoke, MA	Prashant Shenoy	MassNZ: Unveiling of Mass Net Zero Data Center (contains a solar and energy storage demonstration)	Holyoke Mayor, city officials, Holyoke Gas and Electric, UMass Officials, MGHPC	30
Western Mass Green Consortium: Green Night	02/10/16 Northampton, MA	Ben Weil and Lauren Mattison	The Green Communities Act - Seven Outstanding Green Communities, Seven Years Later - How Did they Do it?	Municipal officials, activists, renewable and energy efficiency implementers	65

Activities at University and State Agencies

Food Processing Sector – Outreach with UM Lowell, MassDEP, DOER and others

Dwayne and Lauren are participating in intercampus and state and EPA Region 1 discussions and planning for a concerted outreach to the MA food processing sector on solutions and resources/incentives available to reduce the use of energy, water, and toxics. The group has met a number of times in person and by phone. The group is now organizing a workshop for the sector on May 5 in Westborough. The Clean Energy Extension has contributed, with Alex Pollard from DOER, input on energy matters. Several extension and engineering staff will serve as a resource disseminating information on energy solutions and programs at the workshop.

Annual Clean Energy Extension Conference Planning

Ben Weil, Dwayne Breger, with support from Courtney Angen are engaged in the logistical and content planning of the third annual conference organized by the Clean Energy Extension. The conference is set for September 22 in Worcester, MA and will again be geared towards municipalities. A reservation and deposit has been made to the selected hotel venue. An initial draft of agenda topics has been prepared and remains under development.

UMass Green Workforce Development Initiative

Dwayne has engaged with faculty colleagues developing a strategic effort to improve the transition of students to the workforce in environmental and sustainability industries. He attended a planning meeting on March 4 led by consultant Kevin Doyle (NECEC, and collaborator on the MassCEC job report).

Building Construction Technology – Wood Structures

Dwayne has engaged with faculty in Environmental Conservation BCT program who were instrumental in making UMass a national leader in wood building construction. Amongst the first U.S. wood buildings is under construction at UMass. The design significantly reduces energy and GHG emissions associated with conventional building materials (concrete and steel), and sequesters carbon stocks for many decades. The Clean Energy Extension is engaged with BCT to develop a plan to outreach this technology and new building to targeted constituents.

Dwayne also participated in a meeting and tour of the new building on March 24 with BCT, EEA Bob O’Connor, DCR, and the MA Forest Alliance.

DOER Engagement

Ben Weil and Dwayne Breger met with Dan Knapik and Jim Barry on February 2 and discussed opportunities to support the Green Communities program. Dwayne supported Rob Rizzo to complete an evaluation of lifecycle GHG emissions of wood pellet boilers in accordance with the RPS Overall Efficiency and Greenhouse Gas Analysis Guideline. Lauren Mattison continues to progress on the Green Communities and Renewable Thermal Case Studies in collaboration with DOER staff.

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
Town of Sunderland, Energy Committee	January 21, Meeting in Sunderland	Dwayne Breger	Dwayne learned of concerns and limitations of the town in extending Mass Save offerings to the low income sector, which is facing multi-year wait times. Followed up with Peter Wingate of the Community Action (CAP) in Greenfield (1/27) and Jerrylyn Huckabee at DOER (2/2). Informed DOER of town frustrations and relayed information to Sunderland on program policies and design constraints.
Town of Leverett, Energy Committee	Email/phone and March 8 Meeting in Leverett	Dwayne Breger	Provided review and advice to Committee chair and full committee regarding vendor and green product options for community aggregation services, and for municipal and community solar development.
Mohawk Trail Woodlands Partnership	Attended Partnership Advisory meeting March 15, and FRCOG Planning Board meeting March 24.	Dwayne Breger	Provided introduction in context of DOER consultant presentations of wood resource assessment.
EBC Energy Resources Program	Attended March 29 EBC Workshop in Boston	Dwayne Breger	Workshop: Renewables and Reliability – Expanding Renewable Energy and Maintaining Grid Reliability. Networked, and volunteered for EBC Energy Resources Committee, Leadership Team.
University of Rhode Island, Energy Fellow Program	Conference call with URI Energy Fellows Program team on February 26	Dwayne Breger and Ben Weil	Discussed URI program and Clean Energy Extension considerations for a similar program in collaboration with UMass ECo/BCT students. Established communications and interest in collaboration.
Underground Energy, LLC	Meeting January 25 at UMass	Dwayne Breger, Beka Kosanovic, Ben McDaniels; and	Discussion of geothermal heating, and underground seasonal storage in aquifers clay/rock boreholes. Connected company with Cape Light Compact and Cape Cod Commission, where

		Rob Rizzo	Underground Energy is most keen on aquifer storage opportunities.
Amherst Nursery	Phone call January 26	Dwayne Breger	Offered review of solar programs and development activity as owner considers project development on local land he owns.
Franklin Beach Energy	Lunch meeting, March 4	Dwayne Breger	Networking meeting with Carter Wall to discuss Clean Energy Extension and work opportunities.
Rocky Mountain Wood	Phone calls, and meeting March 8 at UMass	Dwayne Breger; and Rob Rizzo	Provided information on regional wood pellet markets to assist the company's business plan development for wood pellet manufacturing supported by DOER renewable thermal infrastructure grant.
Meister Consultants Group	Conference phone call March 11; and Meeting March 14	Dwayne Breger	Provided technical information on biofuels market and MA DOER regulatory challenges in establishing biofuels minimum standard. Met with principal to discuss Clean Energy Extension and opportunities for collaboration.
Center for EcoTechnology	Meeting on March 15 in Northampton	Dwayne Breger	Networking meeting to discuss Clean Energy Extension and opportunities for collaboration.
City of Greenfield	Site visit and technical assistance on March 8.	Ben Weil	Extensive walk-through and ASHRAE Level II audit of the City Hall and The Green River Elementary School. Proposed repurposed VRF/heat pump replacement for failing steam system in City Hall enabled by significant envelope improvements. Proposed replacement of steam system with low temp hydronic retrofit and condensing gas boilers. Estimate energy savings 30% and 38% respectively. Estimate CO ₂ e reductions 58% and 38% respectively.
Town of Rowe	Energy Analysis of Elementary School	Ben Weil	Provided detailed regression-based analysis of new Rowe Elementary School energy usage to identify unusually high propane and electrical usage.

3. Extension Research Activities

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

GIS Database of MassDEP Permitted Boilers

The Clean Energy Extension has reached out to MassDEP and received its public database of over 7000 boiler and turbines permitted across its four state regions. The extension will use this database to develop a GIS depiction and analysis of the boilers to target businesses and institutions for CHP, renewable thermal, and district energy opportunities.

Support DOER Proposal to DOE – Residential Solar and Storage Program

The Clean Energy Extension has collaborated with DOER and the utilities in developing a concept proposal in response to a DOE FOA. The extension was helpful in bringing a municipal utility, Holyoke Gas and Electric, into the project proposal.

Coordination with UMass Lowell on EPA Pollution Prevention Proposal to support MA Food Processing Industry

The Clean Energy Extension is working with UMass Lowell Center for Sustainable Production who is taking the lead in preparing a proposal in response to EPA Pollution Prevention Grant RFP. The proposal, in response to the EPA Region 1 topic priorities, will target outreach to the MA food processing industry for reductions in energy, water, and toxic use and costs.

Geothermal Hot Rock Exploration

The Clean Energy Extension has provided assistance to State Geologist Stephen Mabee to review and advance a proposal to evaluate potential geothermal sites in Massachusetts with DOER.

Simulation Modeling of Thermal Energy Storage

The Clean Energy Extension, with the UMass Center for Energy Efficiency and Renewable Energy, has developed simulation modeling to evaluate and optimize thermal energy storage so as to optimize building heating and chiller operations while maintaining the system's ability to meet peak heating and cooling demands. Separate efforts involve the computational evaluation of latent heat thermal energy storage, using phase change materials. These research capabilities will be further advanced and available to support applications for renewable thermal, CHP, and energy storage.

4. Clean Energy Extension – Faculty Seed Grants Round 2

The Clean Energy Extension executed a call for a second round of seed grants for faculty research. The call reached out to other UMass campuses. Resulting from this call, the reviewers agreed to support three research projects, as listed below. Abstracts and further details on these projects will be provided on the Clean Energy Extension website.

Research Topic	Faculty Awardees	Award
Energy Storage Options and Integration with Offshore Wind in Massachusetts	James Manwell and Jon McGowan, Professors, Mechanical and Industrial Engineering, UMass Amherst	\$49, 896
Massachusetts Biochar Economics Study	David Timmons, Assistant Professor of Economics, UMass Boston	\$34,101
Smart Solar for a Smarter Grid	Prashant Shenoy, Professor, Information and Computer Science, UMass Amherst	\$50,673