

## UMASS CLEAN ENERGY EXTENSION

### Quarterly Progress Report to MA Department of Energy Resources

Period ending June 30, 2025

Contact: Dwayne Breger, Director, [dbreger@umass.edu](mailto:dbreger@umass.edu) 413-545-8512

This Progress Report provides a summary of work accomplished by the UMass Clean Energy Extension (CEE) during the period April 1, 2025 to June 30, 2025.

During this reporting period, CEE has welcomed a new staff member, Griffin Pelaia, who brings energy and agricultural engineering expertise and experience. Griffin will lead up our work under a cooperative agreement with USDA Natural Resources Conservation Service (NRCS) to provide farm energy conservation assessments and audits. CEE will be losing River Strong at the end of this reporting period. River has served CEE since its earliest days, and has contributed substantially to our strategic planning, communications, and project work. During this reporting period, CEE has posted a job position for a Municipal Clean Energy Extension Educator to support our MEI and municipal support activities. In preparation for Dwayne Breger's retirement at the end of August 2025, the university has established a search committee for a new director which is actively reviewing applications.

### Externally Funded Project Activities<sup>1</sup>

*In this section, we provide updates and progress on projects for which CEE has received substantial funding support from outside the DOER Interagency Service Agreement (ISA). We recognize that these activities still rely critically on the ISA for enabling CEE to pursue external funds and to sustain our staff and office needs generally.*

#### **Impacts of Dual-Use Solar on Crop Productivity and the Agricultural Economy in Massachusetts and Beyond**

**Prime Funding: U. S. Department of Energy**

CEE, in collaboration with state solar industry partners, state agencies (DOER and MDAR), American Farmland Trust, and UMass collaborators, is leading a \$1.8M research project for *Impacts of Dual-Use Solar on Crop Productivity and the Agricultural Economy in Massachusetts and Beyond*, funded by the U.S. Department of Energy, Solar Energy Technology Office.

This quarter, our team continued the research on the site trial data analysis, including the preparation of three publications: a review article "Agrivoltaics: Connecting Agriculture and Renewable Energy - Insights into Microclimate, Physiological, Biochemical and Yield Responses: A Review" was submitted to *Frontiers in Horticulture*; a research manuscript was

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<sup>1</sup> Note on External Funds and CEE: An important strategic objective of CEE is to attract funds beyond our ISA with DOER. These external funds are tied to specific scopes of work and displace a portion of CEE core staff salaries from DOER funds; however, the bulk of these funds are typically used to extend CEE's capacities with other faculty, graduate students, consultants, and expenses tied to the project scope.

completed from first year physiological and biochemical data to summarize and interpret the findings from the prior growing season; and work progressed on a manuscript “Spatial and Temporal Variation in Photosynthetically Active Radiation (PAR) and Air Temperature Under Solar Arrays in a Dual-Use Agrivoltaics System in Hadley, MA”, which the team plans to submit to the journal *Agronomy for Sustainable Development*. For our economic impacts research, we obtained our designs for the graphics for the online choice experiment and contracted with a data firm to conduct the experiment, and our resource economist presented “On-Farm Research of Innovative Practice: The Case of Agrivoltaics” at the Agriculture Food and Human Values Conference in Corvallis, OR, June 18-22, 2025. We planned and initiated site trial data collection for the 2025 agricultural year at our cranberry sites and our site in Hadley planted this year in sweet corn. As previously reported, CEE requested a one-year no-cost time extension on this award to allow the team to monitor the site trials for another agricultural year and to complete our analysis of site trial data and economic impacts. Our request, while approved by our technical managers, has been frozen in the DOE Contracts office. CEE has secured emergency funding from the university to support our post-docs during this time and to continue priority research work “at risk”. We continue to submit detailed quarterly reports on the project to US DOE and contribute to the DOE Solar Energy Technologies Office on their broader agrivoltaics efforts.

### **Offshore Wind Energy Professional Graduate Certificate Program**

***Prime Funding: UWW Registration Fees; Mass Clean Energy Center, OSW Workforce Development Program (see related MassCEC grant below).***

CEE continues to develop and manage the program in coordination with the UMass Department of Environmental Conservation, the College of Natural Sciences (CNS), and University Without Walls (UWW).

During this quarter, CEE concluded the Spring 2025 program course (ECO 611 *Offshore Wind Energy: Environmental Impacts, Siting, Permitting, and Stakeholder Engagement*), with enrollment of 40 students. We also held the Summer 2025 program course (ECO 612 *Offshore Wind Energy: Project Economics, Deployment, and Business Logistics*), with enrollment of 27 students.

### **Preparing for Success: Restructuring Program Website and Branding, and Opening Undergraduate Pathways (for the UMass Amherst Offshore Wind Professional Certificate Program)**

***Prime Funding: Mass Clean Energy Center, OSW Workforce Development Program.***

CEE was awarded a grant from MassCEC to 1) work with a professional website developer and program branding vendor to complete an overhaul of our program’s public-facing materials to be more effective with our target markets, and 2) develop a course to prepare undergraduate students at UMass for offshore wind and other clean energy career paths.

During this period, CEE worked with B Strategic Communications to develop and finalize marketing materials, including a new template for our regular promotional newsletter, a postcard, and text and a shortened video for a LinkedIn campaign. Additional materials included a communications content document and an outreach calendar to organize

promotional efforts. Website content was further refined, in particular to communicate the transferable skills and relevance of this program to a wider clean energy audience. We attended and tabled at Oceanic's 2025 International Partnering Forum in Virginia Beach, VA, connecting with many prospective students and potential collaborators.

### **Supporting Diversity and Inclusion in the OSW Professional Workforce: Continuing the OSW Career Access Scholarship Program**

*Prime Funding: Mass Clean Energy Center, OSW Workforce Development Program*

CEE was awarded a grant from MassCEC to support two cohorts of 6 OSW Career Access Scholars from diverse and disadvantaged communities to participate in our Offshore Wind Professional Certificate program.

This quarter, CEE provided support for twelve Access Scholars during the spring semester and eleven during the summer semester. Six of these scholars completed the program at the end of the summer semester. One scholar from the spring cohort decided not to continue the program. The funds thus made available were used to support a current student who had begun in the spring and needed tuition support to complete the certificate program.

### **Providing Clean Energy Extension to the Massachusetts Farm Sector**

*Prime Funding: U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS)*

CEE was awarded a grant from USDA NRCS to provide technical assistance and support Massachusetts' farms with actionable recommendations and implementation support to reduce their energy use and energy costs. This grant will support a new half-time CEE staff position, and the other half of the full-time position will be funded by the UMass Center for Agriculture, Food, and the Environment to meet UMass Agriculture Extension's need for an agricultural engineering resource.

CEE conducted a competitive hiring process for the *Farm Energy and Agricultural Engineering Specialist* position and extended an offer to Griffin Pelaia, who joined the team on May 19. Since his appointment, efforts have focused on onboarding, aligning project objectives, and establishing coordination with key federal and state partners. Pelaia has met with representatives from the Massachusetts Department of Energy Resources, the Massachusetts Department of Agricultural Resources, the Center for EcoTechnology, the USDA Natural Resources Conservation Service, and American Farmland Trust to initiate collaboration on agricultural energy initiatives. He has also engaged regularly with the UMass Agricultural Extension to integrate his role into existing programmatic efforts.

### **Offshore Wind & Wildlife Research & Collaboration**

*Prime Funding: Regional Wildlife Science Collaborative for Offshore Wind (RWSC)*

Through a funded contract, CEE senior research fellow Zara Dowling serves as coordinator for RWSC's Bird & Bat Subcommittee, coordinating and facilitating research and information-sharing on issues relevant to offshore wind energy and bird and bat conservation along the U.S. Atlantic Coast.

This quarter, we held three meetings of the RWSC Bird & Bat Subcommittee. We incorporated feedback and finalized coastal/offshore bat acoustic monitoring guidance. We also met with experts and researchers to complete a full draft of acoustic bird monitoring guidance, which was made publicly available for review. We continued development of guidance on use of radar and lidar offshore for bird/bat studies. We also reviewed proposals for bird research through RWSC funds.

## **U.S. DOE Offshore Wind Academic Center for Reliability and Resilience of Offshore Wind (ARROW) Center of Excellence**

***Prime Funding: U.S. Department of Energy, Mass Clean Energy Center***

The Wind Energy Center at UMass was selected to lead the Academic Center for Reliability and Resilience of Offshore Wind (ARROW), a multimillion-dollar national Center of Excellence to accelerate reliable and equitable offshore wind energy deployment across the nation and produce a well-educated domestic offshore wind workforce. The Center of Excellence includes 7 other academic institutions and 3 national laboratories. CEE supports the educational mission of the ARROW scope of work.

CEE contributed to biweekly meetings with the ARROW leadership team. CEE provided updates on its Offshore Wind Professional Certificate and has introduced opportunities for the program to be integrated with the engineering curriculum of ARROW graduate students.

## **Green Communities and Municipal Support**

*In this section, we provide updates and progress on our activities directly serving Massachusetts municipalities in coordination with the Green Communities program. These activities are funded by DOER under the scope of our ISA.*

### **MassEnergyInsight Technical Support**

***Prime Funding: OptiMiser, as subcontract with DOER Green Communities***

CEE provides user support services to Green Communities MassEnergyInsight (MEI) users in partnership with DOER and OptiMiser, LLC.

During this quarter, CEE successfully addressed 84 requests for user support across 44 municipalities and other entities. CEE participated in 10 regular team meetings with DOER and OptiMiser. We published two user newsletters and continued ongoing efforts to keep documentation up to date, including the online FAQ. We attended *Leading by Example* webinars to learn about Large Building Energy Reporting (LBER) and hosted two office hours sessions on LBER. We continued the hiring process for a new, full-time *Municipal Clean Energy Extension Educator* position, which is intended to include responsibility for day-to-day MEI support. CEE is pleased to be able to continue our MEI technical support under the new 3-year contract between DOER and OptiMiser, effective July 1, 2025.

### **Other Municipal Support**

This quarter, we finalized greenhouse gas inventories for the communities of Granby and Williamsburg on behalf of the Pioneer Valley Planning Commission and presented these inventories to representatives of the participating communities. We continued to advise on the

development of an online greenhouse gas inventory dashboard by a Zana Cranmer at Bentley University (<https://ma-ghgi-tool.streamlit.app>). We spoke in a panel with Cranmer and Aimee Powelka (EEA) at the MassEnergize conference in April entitled *Setting Goals and Measuring Progress: Data for local climate action strategies*. We continued to participate in a coalition led by Massachusetts Climate Action Network, which is working on development of climate goals for each municipality.

## Other Project Activities and Initiatives

*In this section, we provide updates and progress on projects and initiatives that CEE pursues using funding primarily supported under the scope of our ISA.*

### **ASTGU (Dual-Use Solar) Pre-determination Application Review for DOER SMART**

During this quarter, CEE and extension staff reviewed one dual-use pre-determination application.

### **Pollinator-Friendly Solar Certification Program**

CEE's Pollinator-Friendly Solar Certification Program encourages the establishment of native plants and other ecologically friendly practices at solar PV facilities to benefit pollinators and other wildlife. Certified sites become eligible for the Pollinator Adder in the state's SMART solar incentive program.

During this reporting period, we conducted vegetation surveys at pollinator-friendly solar facilities that have completed three growing seasons of vegetation establishment. We also conducted comparable surveys at some conventional solar facilities to allow for comparisons in vegetation composition and growth. In addition, through a UMass CAFE funding opportunity, we hired an undergraduate summer scholar to deploy 40 trail cameras and 20 audiorecorders at conventional and pollinator-friendly solar sites to better understand wildlife use of these sites.

### **Clean Energy in the Cultural Sector**

CEE is assisting the UMass Arts Extension Services (AES) to support their project funded by a *MassCEC FY23 and FY25 EmPower Massachusetts Innovation & Capacity Building Grant*. The project is working with Massachusetts non-profit small arts and cultural organizations in their clean energy transition, resiliency, and community and sustainability goals. CEE is providing technical support on an organizational and site survey to understand organizational goals and collect energy data.

During this period, contracting for the AES-led FY25 EmPower Implementation Grant award was finalized. Titled *Clean Energy in the Cultural Sector: Technical Assistance Support*, the project will focus on supporting small- to medium-sized, BIPOC-led and/or -serving arts and cultural organizations in developing comprehensive clean energy action plans. The initiative builds on a successful pilot program and aims to expand support to a cohort of 6-8 cultural organizations located in the Commonwealth. With project contracting being finalized, CEE and AES collaborated on the recruitment and hiring of Project Coordinator and Graduate Student positions, as well as the recruitment of cultural organization partners.

## Business and Community Outreach and Support

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

Entity and Attendees	Date and Format	Extension Staff	Purpose and Outcomes
DOER, Boston University, UMass Lowell re. Clean Energy and Environment Legacy Transition (CELT)	April 1, virtual	Breger, Dowling, Mattison, Strong	Discussion of CEE collaboration with the CELT Initiative, a multi-year project with UMass Lowell and Boston University to help municipalities decarbonize and grow the uptake in networked geothermal.
MIT Renewable Energy Facility Siting Clinic graduate students	April 1, virtual	Dowling	Discussion of past solar siting work with Wendell by UMass CEE to help inform MIT work with Wendell.
Ashfield, MA MVP Solar Energy Tour	April 4 Ashfield, MA	Strong	Municipal Vulnerability Preparedness tour and discussion of Ashfield's solar energy facilities.
Boston University, Bentley University	April 14 and June 2, virtual	Mattison	Discussion of municipal energy projects at each university and potential collaboration
MCAN and partners	April 17, virtual	Mattison	Developing local climate goals
ACT Educational and Workforce Development Roundtable	April 24 and May 29, virtual	Breger	Engage and support ACT efforts to support equitable clean energy workforce.
UMass Energy Transition Symposium	April 25, in person	Breger, Strong	Panel Discussion and poster presentations highlighting energy transition research by students over academic year.
Maine Bat Working Group	May 2, virtual	Dowling	Presentation of offshore bat acoustic monitoring guidance and other bat research coordination along the U.S. Atlantic Coast.
MassCEC staff	May 7, virtual	Breger, Dowling	CEE input on Mass Solar for All plans
MassCEC Offshore WindWorks Community of Practice Meeting	May 14, Millbury, MA	Breger, Strong	Participated in CoP meeting and networking event.
MDAR	June 4, CEE office	Breger, Pelaia, Strong	Meeting with MDAR staff to introduce CEE's <i>Farm Energy and Agricultural Engineering Specialist</i> (Pelaia) and review aligned MDAR energy programs.

## Public Events and Outreach Activities

*In this section, we itemize significant public-facing events and outreach activities in which CEE participated.*

Event	Date and Location	Extension Presenter/ Attendee	Presentation Title/Topic	Audience	Estimated Attendance
MassCEC Climatetech – Regional Roundtable at UMass	April 8, UMass	Breger, Strong	Co-hosted with UMass Research and Engagement office	UMass and western MA climatetech community	150
2025 International Partnering Forum, Oceanic	April 29-30, Virginia Beach, VA	Strong, Kraus	Exhibit booth	Offshore wind industry professionals	2,000 - 3,000
MassEnergize Conference	April 30, Waltham, MA	Mattison	<i>Setting Goals and Measuring Progress: Data for local climate action strategies</i>	Massachusetts municipal energy staff and advocates	50
Navigating the State Funding Landscape - Opportunities and Requirements	May 7, virtual	Breger	Presented on CEE experience navigating state funding	UMass faculty and research support offices	30

## Prospective Activities and Proposals

*In this section, we provide updates and progress on proposals and collaborations that CEE pursues for prospective funded work to support CEE directly or in collaboration with activities led by other units on campus.*

### **National Science Foundation – Municipal Energy and Emissions Modeling for Evidence-Based Local Strategies**

CEE contributed to a proposal led by Bentley University, in which our team would create a suite of resources to enable municipal governments in Massachusetts to collaboratively develop evidence-based climate action strategies appropriate for their localities and aligned with state-mandated GHG emissions targets.

### **DOER Green Communities – Regional Energy Planning Assistance Program**

CEE collaborated with MassEnergize and local community organizations on a proposal to DOER REPA to support a community-led clean energy accelerate adoption of clean energy technologies across the western Massachusetts towns of Amherst and Pelham, and beyond.

### **University-based Proposals and Initiatives**

CEE is engaged in university programs and initiatives, including:  
Energy Transition Institute, Steering Committee

Wind Energy Center, Advisory Committee  
 ELEVATE (graduate energy transition research program)  
 Chancellor's Sustainability Advisory Committee, Decarbonization Subcommittee

## Student Engagement

*In this section, in keeping with our mission to support students and workforce development, we list graduate and undergraduate students who have engaged with CEE during reporting period. Given confidentiality concerns, we provide only the students' initials in this publicly accessible report.*

<b>Student Initials, Status</b>	<b>Department</b>	<b>Extension Staff Mentor</b>	<b>Project Description</b>
M.D., Graduate Student	Environmental Conservation	Breger, Strong	Support pedagogy and instruction of OSW Certificate program courses.
B.S., undergraduate Independent Study	Environmental Conservation	Breger	Mentored student on MassPIRG campaign to reduce use of commercial fluorescent lighting for LEDs.
A.A., Graduate RA	G.I.S.T.	Dowling	Develop materials to support RWSC Bird & Bat Subcommittee
E.R., Graduate RA	Organismal and Evolutionary Biology	Dowling	Conduct analyses to support Offshore Bat Working Group and RWSC Bird & Bat Subcommittee
K.O., Graduate RA	Landscape Architecture	Dowling	Assist with vegetation surveys at solar PV facilities
C.Z., undergraduate summer scholar	Environmental Conservation	Dowling	Study wildlife use of solar arrays using trail cameras and audio recorders