

ACUPCC Climate Action Plan Interim Report

University of Massachusetts Lowell - 2015



Learning with Purpose

Submitted:
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Note: Most text responses had a character limit of 1000 characters there were limitations on numeric responses

Section A: General Statement of Progress

General Statement of Progress

Since the Climate Action Plan was signed by UMass Lowell's Chancellor in January 2012, the Climate Action Plan (CAP) Steering Committee has been an active and committed team aggressively driving its implementation. The CAP Steering Committee is organized with leaders from Academia and Staff including subcommittees for Administration and Finance; Energy Project Identification; Sustainability; Academic; Student Life; Transportation and Public Relations with senior administration oversight and support. The CAP Steering Committee was recognized in 2015 by the Governor of Massachusetts with a Commonwealth Citation for Outstanding Performance due to UMass Lowell's commitment to sustainability, climate change, and resiliency.

As part of our growing reputation for excellence and commitment to continuous improvement, UMass Lowell took its vision for sustainability further through the creation of the UMass Lowell Office of Sustainability in January 2015. The creation of the Office of Sustainability dovetails with the current UMass Lowell 2020 Strategic Plan in which sustainability has been incorporated as a strategic priority. The first major initiative undertaken by the Office of Sustainability was UMass Lowell's first submission under the AASHE Sustainability Tracking, Assessment & Rating System (STARS) which resulted in UMass Lowell being recognized as a STARS Silver Institution based on our reported accomplishments in campus sustainability.

Between FY2011 and FY2015, full time equivalent (FTE) student enrollment has increased by 18% and the physical size of the campus has grown by 24%. The total campus greenhouse gas (GHG) emissions per FTE student have decreased by more than 15% since the CAP was adopted at UMass Lowell. UMass Lowell has already achieved its FY2020 Phase 1 Interim GHG Reduction Goals established in the CAP for Scope 1, 2, and 3 emissions. In addition, UMass Lowell has reduced its Energy Use Index (EUI) (KBTU/SF) by 13.8% since FY2011 and 29% since FY2004.

UMass Lowell is actively implementing a major energy efficiency initiative under the Massachusetts Division of Capital Asset Management and Maintenance and the Department of Energy Resources Accelerated Energy Program (AEP). The UMass Lowell project is the AEP's largest to date involving more than 200 energy savings measures. The project includes \$27 million in upgrades to 32 buildings that will have a lasting impact on the university's GHG emissions.

UMass Lowell is proud of the progress we have made toward sustainability and environmental stewardship on our campus and we are looking forward to continually advancing our efforts. Our commitment to sustainability serves as a means to attract the best talent and engage the entire campus community to help our students become leaders in a changing world.

Section B: GHG Emissions & Reduction Targets

Brief Climate Action Plan Summary

Climate Neutrality Target Date 2050

Steps towards climate neutrality- Interim Targets (Emission type(s), Year, percent reduction, Baseline year)

[Click to view the Climate Action Plan official document](#)

[Click to view the ACUPCC Climate Action Plan Reporting Page](#)

These are the University's GHG Mitigation Interim Milestones as stated in the Climate Action Plan (v. Jan. 6, 2012):

Time Frame	Scope 1 + 2 Performance Standard (MT eCO ₂ /1000 SF)	Scope 3 Performance Standard (MT eCO ₂ /FTE)	Goal Net GHG Emissions (MT eCO ₂)
FY 2020	8.0	1.9	60,565
FY 2030	6	1.5	47,100
2050	0	0	0

Due to limitations we had to publish a less specific plan on the web. It is listed as follows:

Emissions	Target Date	Target % Reduction
Scope 1, 2, 3 Emissions	2020	20%
	2030	38%
	2050	100%

- Note: % Reduction is relative to 2011 Baseline

See the [2015 Greenhouse Gas Emissions Report](#) (submitted 12/22/2016) for a detailed breakdown of our interim emissions relative to the 2011 baseline

GHGs for University of Massachusetts Lowell

Year	Gross Emissions	Net Emissions	FTE	Total Bldg. SF	[action]
2007	47,438.3	44,956.3	7,723.0	2,642,569.0	[view]
2010	47,737.0	47,737.0	9,255.0	2,911,773.0	[view]
2011	51,136.8	51,136.8	11,246.0	3,417,134.0	[view]
2013	50,217.0	50,217.0	12,377.0	3,640,134.0	[view]
2015	54,349.06	54,637.28	13,294.0	4,243,745.0	[view]

GHG Summaries

Change in GHG gross emissions

6910.76 MTCDe increase

Gross FY2015 Emissions = 54,086 MT CO₂e which represents a very slight increase since FY2011. Net FY2015 emissions (including offsets) have decreased slightly since FY2011. However, both the campus student population (+18%) and the physical size of the campus (+24%) have significantly increased during the same period. GHG emissions per FTE have decreased by more than 15% since the CAP was adopted at UMass Lowell. UMass Lowell has also already achieved the Phase 1 FY2020 Interim Reduction Goals established in the CAP. Purchased electricity, on-campus stationary combustion, and student commuting account for over 80% of FY2015 GHG emissions. UMass Lowell has instituted aggressive programs to reduce these emissions in pursuit of the goals and objectives identified in the CAP.

Change in GHG emissions per 1000 sq ft building space

-5.14472142857

Since FY2011, UMass Lowell has enjoyed a period of immense physical expansion. The physical size of the campus has increased by 24% during this time including the addition of many LEED Certified Buildings and sustainability-focused renovations, retrofits and upgrades. Fuel combustion emissions per square foot have decreased by 19.3% since FY2011 through energy conservation and efficiency projects including a switch to natural gas, power plant upgrades and campus-wide efficiency projects. Electricity consumption has also decreased by 2.7% during this time period per 1000 square feet of building space. Energy efficiency projects such as the Accelerated Energy Program have also made a major contribution to this reduction.

Change in GHG emissions per full time enrollment (FTE)

-2.0542307351

The University's Scope 3 emissions per FTE have decreased significantly since FY2011. Overall, commuting emissions per FTE have decreased by 32%. One of the main reasons for this decrease is the success of the Transportation Demand Management Program at UMass Lowell. Increased on campus housing, biking, walking, carpooling and public transit have also contributed. Improvements in commuting survey methods have also resulted in more accurate emission estimates since 2011.

Section C: Education, Research and Community Engagement

Curriculum

How is your institution making climate neutrality and sustainability a part of the curriculum and other educational experiences for all students?

UMass Lowell takes an extremely proactive approach to climate protection through its academic programs. UMass Lowell's Climate Change Initiative (CCI) brings faculty, students, and communities together to address climate change. The Initiative draws its members from all six Colleges and Schools of UMass Lowell and from departments and disciplines as diverse as environmental science, public health, engineering, education, management, sociology, art, and others. The goal of the CCI is to address climate change through education, research, and developing solutions to transition to a more sustainable and resilient society.

The CCI utilizes an annual Climate Change Teach-In as a catalyst on climate change and sustainability issues on campus and beyond. Internationally renowned climate scientists, policy experts, and activists have been featured speakers including Dr. Michael Mann, Kerry Emanuel, Paul Kirshen, Bill Moomaw, Jennifer Francis, Bruce Anderson, John Sterman, and Elizabeth Sawin, as well as experts in climate communication and social movements (Geoffrey Haines-Stiles, Eli Kintisch, Wen Stephenson and Craig Altemose). The event is webcast and draws viewers from around the United States.

The CCI also partners with Climate Interactive to utilize a simulation called World Climate which provides resources to lead and engage people in thought-provoking, mock United Nation climate negotiation simulations. The World Climate exercise enables participants to experience the dynamics that emerge as nations negotiate to reach a global agreement on climate change and to develop a deeper understanding of how to address climate change. The exercise is framed by current climate change science, through the interactive, systems thinking application called C-ROADS . The model empowers participants to find out how their decisions impact the global climate system in real-time.

UMass Lowell has also established an Academic Subcommittee of its 2020 Strategic Plan. One of the committee's key missions is to encourage strong research, education, and outreach programs to educate students, faculty, their broader communities, our elected officials, and other stakeholders about sustainability, climate change mitigation and resiliency.

With support from the University leadership and in dialog with the Climate Change Initiative (CCI) the committee's goals are: to integrate sustainability and climate change as a recurring and emphasized theme across the curriculum; to strengthen faculty capacity for sustainability and climate change education and research; to expand climate change- related collaborations with other UMass campuses and with regional needs; and to leverage synergies between the

University's emissions reductions activities and its academic mission.

Learn More About Education Initiatives:	See UMass Lowell's Association for the Advancement of Sustainability in Higher Education's (AASHE's) Sustainability Tracking, Assessment and Rating System (STARS) Report View
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Co-Curriculum

Learn More About Co-Curricular Initiatives:	See UMass Lowell's Association for the Advancement of Sustainability in Higher Education's (AASHE's) Sustainability Tracking, Assessment and Rating System (STARS) Report View
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Research

If applicable, how is your institution expanding research efforts toward the achievement of climate neutrality research?	Industry leading sustainable research continues to grow and bring in more grants through our various research centers including the Climate Change Initiative, Center for Wind Energy, Toxics Use Reduction Institute, Lowell Center for Sustainable Production, Center for Sustainable Energy, Center for Electric Car and Energy Conversion, and the Center for Work, Environment, and Human Development.
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Learn More About Research Initiatives:	See UMass Lowell's Association for the Advancement of Sustainability in Higher Education's (AASHE's) Sustainability Tracking, Assessment and Rating System (STARS) Report View
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Community Engagement

How is your institution expanding community outreach efforts toward the achievement of climate neutrality?	The City of Lowell's continued revitalization has included a strong focus on sustainability that is grounded in community diversity, progressive urban renewal and hands-on experiential learning. Lowell, a designated Massachusetts Green Community, is a living lab connecting sustainable planning, sustainable tourism and community driven design. UMass Lowell is a key partner in the City's revitalization and economic development. By educating the next generation of sustainability leaders and by acting as a model and resource within the Lowell community, UMass Lowell's community outreach efforts greatly contribute to our pursuit of climate neutrality. UMass Lowell has won high marks for its commitment to promoting the public good, having earned the prestigious Carnegie Foundation's classification as a "community-engaged campus." In 2014 – for the fifth consecutive time – UMass Lowell was named to the President's Higher Education Community Service Honor Roll, which recognizes the university for its community-service programs and for raising the visibility of effective practices in campus-community partnerships. As part of this honor, UMass Lowell students, faculty and staff were praised for the 168,000 hours of academic and non-academic service they provided in the community. UMass
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Lowell recently launched incentives for university employees to move into the City of Lowell, fueling its economic growth and identity as a college town. The 'Live in Lowell' program provides one-time reimbursements to new UMass Lowell faculty and staff that rent or buy homes in the city. Existing faculty and staff who choose to move to the city are also eligible. Employees living and working in the same place strengthens their commitment and engagement in the community and reinforces UMass Lowell's community outreach efforts which are critical toward the achievement of climate neutrality.

In November 2015, the City of Lowell, in partnership with UMass Lowell secured a \$13.4 million federal TIGER grant, that will help pay for the repair or replacement of eight of the city's canal bridges, including several that serve as vital links to the campus. This grant will have a positive impact on transportation related GHG emissions both for the University and the City through more direct transportation links and added amenities for bicyclists and pedestrians. Both parties recognized the strong sustainability focus of this grant and worked collaboratively with a strong focus on community outreach to secure the funding.

In the last year, several sustainability events held on campus afforded students an opportunity to be exposed to state legislators with influence in affecting sustainability and environmental policy. For example, UMass Lowell hosted talks by Massachusetts' State Senator Mike Barrett and State Legislator Marc Pacheco. Furthermore during Earth Day we kicked off the Accelerated Energy Program and featured guest speakers including Massachusetts Energy and Environmental Affairs Secretary Matthew Beaton, Division of Capital Asset Management and Maintenance Commissioner Carol Gladstone, Massachusetts Department of Energy Resources Acting Commissioner Dan Burgess, and state Representative Rady Mom.

Finally, UMass Lowell's Climate Change Initiative provides multi-disciplinary, climate-change education as public service to the people of Massachusetts. An example is Climate Education in an Age of Media (CAM) - The CAM Project leverages ongoing initiatives of three key partners, UMass Lowell's Climate Change Initiative, Media Arts Studio at Cambridge Educational Access TV (Cambridge Public School System), and TERC (educational non-profit), to build an innovative climate change education program that reaches high school teachers and students and university students, as well as their broader communities. Online resources and evaluation are provided by our partners, SERC and Sage Fox Consulting Group, respectively. As a method of disseminating student media production as a teaching method, educators and professional development offices are encouraged to use these resources to run workshops in their local area. The resources include powerpoint presentations, video and audio recordings of project PIs presenting them, as well as handouts and other printed materials. http://cleanet.org/cced_media/index.html

Learn More About Community Engagement Initiatives: See UMass Lowell's Association for the Advancement of Sustainability in Higher Education's (AASHE's) Sustainability Tracking, Assessment and Rating System (STARS) Report [View](#)

Section D: Energy & Finances

Energy Efficiency Projects

Number of Energy Efficiency Retrofit Projects planned, but not yet implemented	144
Number of Energy Efficiency Retrofit Projects completed since signing the ACUPCC	39
Number of buildings that have received a green building certification since signing the ACUPCC	1
Number of green buildings planned or scheduled for completion in the next 2 years	5
For all buildings, the certification/rating used is	USGBC: LEED

Renewable Energy

The annual output capacity for each renewable energy system utilized by your campus (in kWhs).	Solar Output	280,000 kWh
	Wind Output	0
	Biomass Output	0
	Fuel Cell Output	0
	Geothermal Output	0
	Landfill Gas Output	0
	Annual Renewable Energy Purchased	726,135 kWh
Other GHG mitigation efforts that you would like to share or highlight. If available, please include a link to a webpage or press release.	UMass Lowell has contracted at five off-site locations for 15.9 MW of virtual net metering credits (NMCs). The NMC contracts represent a cost avoidance of over \$1.15 Million on our FY15 Energy Budget.	

Financial Data

Savings...

Has your Climate Action Plan and/or related sustainability efforts saved your institution money so far, e.g. by reducing operational expenses? Yes

Amount spent on CAP projects: Dropdown List \$10-20 M

Estimated amount saved to date from implementing your CAP projects Dropdown List \$1-10 M

Funding...

Additional information on secured outside funding: We are including the Accelerated Energy Program (AEP), which is a program to be funded by the state for an estimated \$25,000,000 performance contract. It will cover over 130 energy projects campus-wide .

Finance Methods...

Financing Methods utilized for Mitigation or Renewable Energy Projects

Please check all that apply:

- Borrowed against endowment
- ✓ Efficiency Services Agreement (ESA)
- Managed Utility Service Contract (MUSC)
- Power Purchase Agreement (PPA)
- ✓ Renegotiating Purchased Utilities Agreements
- Revolving Loan Funds
- Tax Exempt Lease Purchase Agreements (TELP)
- Student Green Fees
- Energy Performance Contract (EPC)
- ✓ Other

Investing Utility Rebates. The University created a Parent Energy Project account that is funded by third party incentive programs. The University was approved for \$1.6 Million in incentive funds by National Grid; a balance of over \$1.27 Million is currently in the account. The University has contracted at five off-site locations for 15.9 MW of virtual net metering credits (NMCs). The NMC contracts will represent a cost avoidance of over \$1.15 Million on our FY 15 Energy Budget.

Learn More:

See UMass Lowell's Association for the Advancement of Sustainability in Higher Education's (AASHE's) Sustainability Tracking, Assessment and Rating System (STARS) Report [View](#)

[Click here to see the published report on the ACUPCC website](#)