University of New England
Climate Action Plan 2017

UNE UNIVERSITY OF NEW ENGLAND

INNOVATION FOR A HEALTHIER PLANET

Acknowledgements

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January 23, 2017

Dear members of the University of New England community:

Consistent with University of New England's Core Values, I signed the American College and University Presidents' Climate Commitment (ACUPCC) in November 2008. This pledge of carbon neutrality is an acknowledgement of the significant environmental, health, social and economic impacts of global warming and climate destabilization caused by humans. Our Core Values name healthy environments and sustainability as well as social justice, service and civic engagement, among several others, which speak directly to the matter of climate change. Contributing the university's commitment to protect the environment and human health through this climate pledge was a natural affirmation.

In the years since signing the commitment, we have realized success with several initiatives, which lead us toward a sustainable future:

- Developed a Green Revolving Fund to finance projects on campus that reduce energy consumption and emissions
- Created alternate modes of transportation for students and employees, including our inter-campus shuttle, the use of Zipcars, a bike-share program, and electric vehicle charging stations
- Improved our built infrastructure with two LEED certified buildings, a building automation control project that eliminates more than 500 tons of emissions annually, LED lighting retrofits in 19 buildings and most parking lots, a solar hot water system on the Biddeford Campus Center and a solar electric system on the Portland Campus
- Hosted renowned environmental luminaries, including Bill McKibbon and Mitchell Thomashow, to campus and encouraged members of the wider community to take on active roles in safeguarding our environment, and
- Supported crucial faculty and student research that will help Maine adapt to changing oceans, invasive species and rising sea levels

These accomplishments bolster us for the coming chapter of UNE's history, in which we take brave steps forward in meeting our obligation to our students to recover the health of the planet. Rethinking traditional ways of doing business is the basis of innovation - another of UNE's Core Values. We must apply this innovative spirit to all of our practices to ensure that we protect and preserve human, environmental and fiscal health, evidenced by our adopted tagline, "Innovation for a Healthier Planet".

I offer this Climate Action Plan, developed by a representative team of our faculty, staff and students, as a roadmap for our journey toward a carbon neutral future. The UNE community has so much to offer toward this goal. This plan outlines a holistic approach, with community at its core. We can all do our part to examine our uses of energy and resources and contribute new ideas to shrink our carbon footprint. Together we will rise to this challenge and model ethical stewardship of our environment.

Sincerely,

Danielle N. Ripich,
President

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Introduction

Climate Change -

This is a critical moment in human history. The threat of climate change to environmental and human health requires action at all levels and deep, thoughtful responses from political, cultural, and educational leaders if catastrophic consequences are to be avoided. Since the Industrial Revolution, a significant increase in the concentrations of three main gases – carbon dioxide, methane and nitrous oxide – has been the result of persistent fossil fuel combustion. These gases have accumulated in the Earth's atmosphere and contributed to the rise of global surface temperatures, with the average global temperature rising by nearly one degree in just over 100 years, according to NASA's Goddard Institute for Space Studies (GISS)[1]. Scientists have observed and recorded resultant climate variables such as temperature, sea level rise, and precipitation that indicate anthropogenic global climate destabilization which will have significant and costly implications for future generations. Unchecked, climate destabilization will remain an existential threat to humanity.

The Intergovernmental Panel on Climate Change (IPCC), the authoritative and collaborative scientific body on climate change, asserts in the Climate Change 2014 Synthesis Report:

- Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. The period from 1983 to 2012 was likely the warmest 30-year period of the last 1400 years in the Northern Hemisphere.
- Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are unprecedented in at least the last 800,000 years.[2]

The IPCC also identifies significant future risks and impacts caused by a changing climate:

- Risk of severe ill-health and disrupted livelihoods resulting from storm surges, sea level rise and coastal flooding; inland flooding in some urban regions; and periods of extreme heat.
- Systemic risks due to extreme weather events leading to breakdown of infrastructure networks and critical services.
- Risk of food and water insecurity and loss of rural livelihoods and income, particularly for poorer populations.
- Risk of loss of ecosystems, biodiversity and ecosystem goods, functions and services.

Indeed, climate change promises to be one of the defining environmental and social problems of our lifetimes and one that demands collective action.

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[1] Hansen, J., R. Ruedy, M. Sato, and K. Lo. 2010. "Global Surface Temperature Change". *Reviews of Geophysics* 48 (4): 1-29. Accessed April 4, 2017. http://dx.doi.org/10.1029/2010rg000345.

[2] Intergovernmental Panel on Climate Change. 2014. *Climate Change 2014: Synthesis Report. Contribution Of Working Groups I, II And III To The Fifth Assessment Report Of The Intergovernmental Panel On Climate Change*. Geneva, Switzerland: IPCC. Accessed April 4, 2017. https://www.ipcc.ch/report/ar5/syr/.

Colleges and universities play a crucial role in educating citizens, and their leadership in the larger society should not be understated. Institutions must be instrumental in advancing civilization's tracking of the climate challenge through four key roles: educating citizens, as a foundry for research, and piloting as well as modeling effective operational practices. Higher education must lead by example. It is incumbent upon institutions to use the intellectual, technological, and cultural resources at their disposal to work toward solutions to the climate challenge that can be then scaled to larger society and human civilization as a whole. As Drew Gilpin Faust, President of Harvard University, and John L. Hennessy, President of Stanford University from 2000-2016, wrote, "Universities must 'walk the walk,' acting as pioneers in embracing the new technologies and policies that will be needed to sustain our ecosystem."[3]

University of New England -

The University of New England is an innovative health sciences university grounded in the liberal arts, with two distinctive coastal Maine campuses as well as a campus in Tangier, Morocco, unique study abroad opportunities, and a student body of more than 10,000 undergraduate, graduate/professional, and online students. UNE has internationally recognized scholars in the sciences, health, medicine and humanities; offers more than 40 undergraduate, graduate, and professional degree programs; and is home to a world-class marine science center and Maine's only medical and dental schools. It is one of a handful of private universities with a comprehensive health education mission including medicine, pharmacy, dental medicine, nursing and an array of allied health professions. Both graduate and undergraduate students engage in research and scholarship alongside dedicated faculty who are committed to their academic and professional success.

The university has adopted the motto "Innovation for a Healthier Planet". Dedication to sustainability is one of the core principles of the College of Arts and Sciences.[4] To embody this dedication and ensure that UNE is abiding by its principles, the UNE President, Danielle Ripich, in 2008 joined the American College and University Presidents' Climate Commitment, rebranded by its parent organization, Second Nature and now known simply as the Carbon Commitment.

Carbon Commitment (formerly ACUPCC) -

Recognizing that Colleges and Universities play a unique leadership role in our society, a group of 12 presidents came together after the Association for the Advancement of Sustainability in Higher Education (AASHE) conference in October 2006 and agreed to become founding members of the American College and University Presidents' Climate Commitment (ACUPCC). These founding presidents rallied support among their peers for a commitment toward achieving climate neutrality

[3] Faust, Drew Gilpin, and John L Hennessy. 2014. "What Universities Can Do About Climate Change". *The Huffington Post*. Accessed March 30, 2017. http://www.huffingtonpost.com/drew-gilpin-faust/post_8366_b_5871214.html.

[4] University of New England. 2013. *The Core Curriculum Handbook*. Ebook. 1st ed. Biddeford, Maine: College of Arts and Sciences of the University of New England. Accessed April 4, 2017. http://www.une.edu/sites/default/files/Core%20Handbook%202014-15.pdf.

among institutions of higher education. University of New England President, Dr. Danielle Ripich, joined the list of signatories of the ACUPCC on November 3rd, 2008.

In 2015, Second Nature rebranded and expanded the ACUPCC to form the Climate Leadership Commitments. These changes built on the history of the ACUPCC, and were informed by a strategic planning process with extensive feedback and input from signatories and partners. As part of the expansion and relaunch, the ACUPCC was rebranded as the Carbon Commitment. To date more than 600 presidents and chancellors have signed climate commitments. For the complete text of the Carbon Commitment please see Appendix A: Carbon Commitment.

Greenhouse Gas Emission Inventory

The Sustainability Coordinator, in consultation with the Environmental Council, chose Clean Air-Cool Planet's (CA-CP) Campus Carbon Calculator (CCC) as the tool for the 2005-2010 greenhouse gas emissions inventory. The Campus Carbon Calculator adheres closely to standards set forth by the World Resources Institute's and World Business Council for Sustainable Development's Greenhouse Gas Protocol[5] and is specifically designed for colleges and universities. The Campus Carbon Calculator is a Microsoft Excel-based spreadsheet, with an accompanying user guide and toolkit, available at no cost online. An updated version is released annually in August with revised emissions factors. In 2014 University of New Hampshire's Sustainability Institute assumed ownership of the CCC. The latest version of the Campus Carbon Calculator (v9) was used for this 2011-2016 report.[6]

Carbon footprint analyses calculate total carbon emissions as Metric Tons of Carbon Dioxide Equivalent (MTCDE). This is a unit derived from the Global Warming Potential (GWP) of seven greenhouse gases: carbon dioxide, methane, nitrous oxide, halogenated fluorocarbons, ozone, perfluorinated carbons and hydrofluorocarbons. While each gas has a detrimental effect on the earth's atmosphere by trapping heat from the sun, the GWP indicates that the last six gases each has a relative detrimental effect in comparison to carbon dioxide. For example, carbon dioxide has a GWP of 1, while methane has a GWP of 23 and nitrous oxide has a GWP of 296.

Climate Action Plan

The Carbon Commitment stipulates that signatories develop a Climate Action Plan within two years of signing the commitment which includes:

- A target date for achieving climate neutrality as soon as possible;
- Interim targets for goals and actions that will lead to climate neutrality;
- Actions to make climate neutrality and sustainability a part of the curriculum and other educational experiences for all students;

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[5] World Resources Institute and World Business Council on Sustainable Development. 2004. *The Greenhouse Gas Protocol: A Corporate Accounting And Reporting Standard*. Ebook. Revised ed. Washington, United States of America: World Resources Institute and World Business Council on Sustainable Development. Accessed May 6, 2008. http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf.

[6] University of New Hampshire. 2006. *Campus Carbon Calculator* (version 9.0). Windows. Durham, New Hampshire: University of New Hampshire Sustainability Institute. Accessed July 15, 2016. http://sustainableunh.unh.edu/ccc-download/

- Actions to expand research or other efforts necessary to achieve climate neutrality;
- Mechanisms for tracking progress on goals and actions.

UNE's Carbon Monitoring Task Force developed this roadmap, updating and learning from the university's original Climate Action Plan issued in 2011, to guide the university toward the auspicious goal of carbon neutrality.

Carbon Monitoring Task Force

UNE established a Carbon Monitoring Task Force to oversee and guide the development and implementation of a comprehensive carbon reduction strategy. The Carbon Monitoring Task Force is charged with making recommendations on energy demand, procurement, production, renewable technology implementation, emissions reductions, and energy and resource conservation. Short and long-term energy needs of the UNE community are considered in addition to funding sources, budgetary constraints, cost and benefit analysis of renewable energy production, best practices in higher education energy consumption, projected growth, energy regulations, and the mission of UNE. This task force membership is comprised of the following positions: Provost, Vice President of Campus Services, Facilities Director, Assistant Vice President of Campus Planning, Director of University Budgeting, member of the Institutional Advancement team, Director of Environmental Health and Safety, Sustainability Coordinator, Environmental Studies Department faculty member, Environmental Council member, and a student representative. The UNE Carbon Monitoring Task Force also assumes responsibility for monitoring progress toward the accomplishment of the Climate Action Plan.

Greenhouse Gas Emissions Inventory Results and Discussion

At the core of the Climate Commitment is the pledge to reduce emissions of greenhouse gases over time, eventually becoming a carbon neutral institution. The foundation of such an effort lies in the systematic inventory of greenhouse gas emissions from all sectors of the university.

Reporting Period -

The reporting period of this greenhouse gas emissions inventory covers the fiscal years of 2010 to 2016 for the University of New England. The fiscal year begins June 1 and ends May 31, very closely mirroring the academic calendar, which ends mid-May.

Organizational Boundaries -

University of New England greenhouse gas emissions inventory includes two of its three campuses; Biddeford and Portland, Maine campuses are included, while the campus in Tangier, Morocco is not. However, the air travel data for students, faculty and administration traveling to Morocco is included in this inventory. Inclusion of the emissions resulting from electricity purchases on the Tangier campus are expected for fiscal year 2018.

Operational Boundaries -

Greenhouse gas emissions are reported in metric ton carbon dioxide equivalents (MTCDE) and broken down into three scopes. The scopes include the following sources:

- Scope 1 -Emissions from Owned or Controlled Sources:
    - Heating Fuels
    - Transportation Fuels
- Scope 2 - Purchase Electricity
- Scope 3 - Indirect Emissions from Travel and Waste Management:
    - Commuting (faculty, staff and students)
    - Air travel (program and business)
    - Bus travel (athletic program and shuttle services)
    - Solid Waste
    - Wastewater for the Biddeford Campus
    - Electrical Transmission and Distribution Losses

For more detail on data collection methods see Appendix B: Greenhouse Gas Emissions Inventory Methods.

Campus Population -

University of New England has seen substantial student population growth during this inventory period, as was predicted in the 2010 CAP. UNE graduated its largest undergraduate class in spring 2016 and enrolled its largest first-year undergraduate class in fall 2016. Over the six-year reporting period, undergraduate, graduate and doctorate programs at UNE have all seen growth each year. While the online program had 3,976 enrolled students in the fall semester of 2016, which is 140% growth since 2010, the greenhouse gas emissions inventory includes only those students who take classes on Biddeford and Portland campuses.

Campus Building Square Footage -

Similarly to the increase in student enrollment, UNE has experienced tremendous growth in physical space. In-use square footage reached over 1,019,000 in 2016, a 27% increase over building space in the CAP baseline year of 2010. New buildings include:

Biddeford Campus:

- Harold Alfond Forum, athletic complex and ice arena - 106,500 SF
- Sokokis Hall, suite-style 300 bed residence - 104,813 SF

Portland Campus:

- Oral Health Center, dental medical clinic and academic space - 40,300 SF
- Innovation Hall, purchased and a small portion put into use in 2016 - 1,1518 SF

Additionally Goodard Hall on the Portland Campus was completely renovated and put back into service after remaining vacant for many years. Other renovations, including the Welcome Cottage and Leonard Hall took place during the inventory period, however, their square footage was included in the previous inventory. There were three small residence-style houses that were demolished to make space for the Oral Health Center in Portland, including 746 and 750 Stevens Avenue and 1 College Street.

Net Emissions Trend -

Figure 1 depicts the trend in scopes 1 and 2 emissions since 2005, the first year for which reliable data was available for carbon footprint analysis. Emissions were analyzed from 2005 to 2011 using Clean Air-Cool Planet's Campus Carbon Calculator and the national average fuel mix emissions factors were used for scope 2. Beginning in 2012 the University of New Hampshire's Sustainability Institute took over management of the calculator tool, emissions factors were updated and the New England regional grid was chosen to more accurately reflect scope 2 emissions. We present the results of both calculations for comparison with the previous report. Between 2010, the 2010 CAP baseline year, and 2016, greenhouse gas emissions increased 15% for scopes 1 and 2.

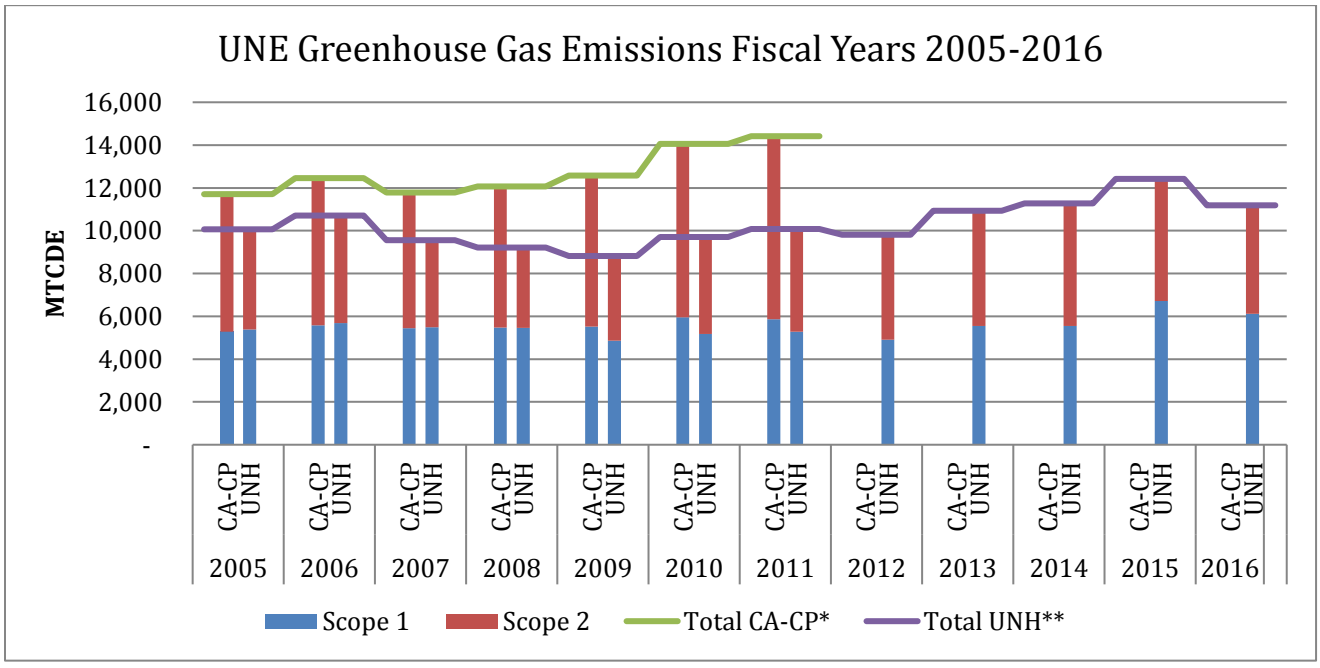


*Figure 1 – Net Scope 1 and Scope 2 Emissions, 2005-2016 * Clean Air – Cool Planet's Campus Carbon Calculator v6.7 used 2005-2011; ** University of New Hampshire's Campus Carbon Calculator used starting 2012 and historical data re-entered using NEWE regional fuel mix for scope 2 emissions*

While enrollment and square footage have climbed, the university's emissions per full-time equivalent (FTE), on-campus student population, and per in-use square footage have decreased slightly, as seen in Figure 2. Net emissions of scopes 1, 2 and 3 per on-campus student FTE decreased by 18% since the 2010 baseline. Similarly, net emissions of scopes 1, 2 and 3 per in-use square footage decreased by 7% over the same time period.

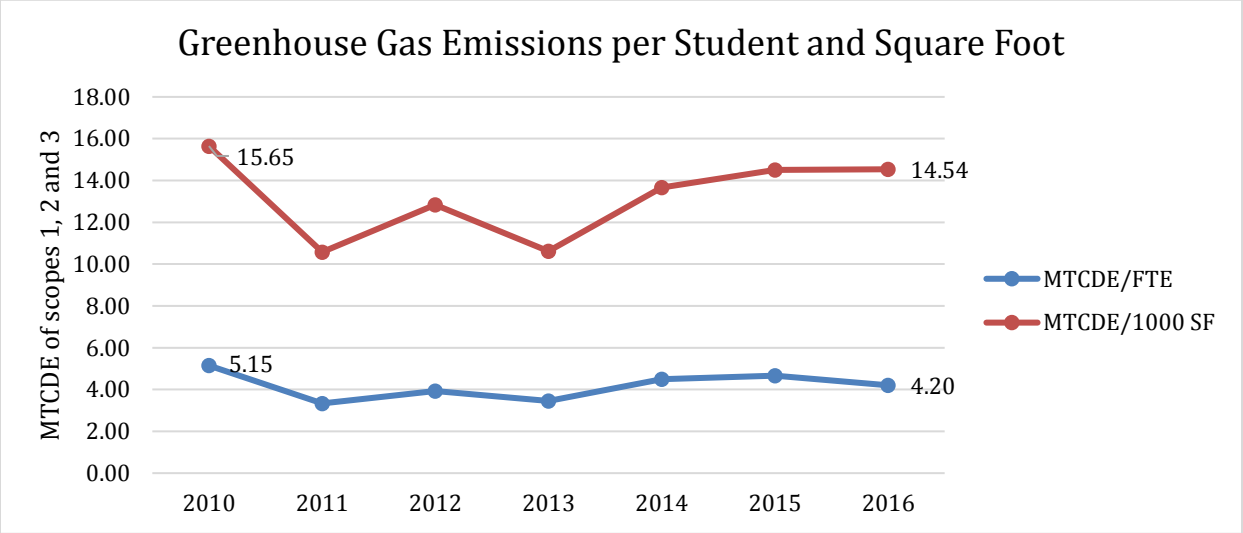
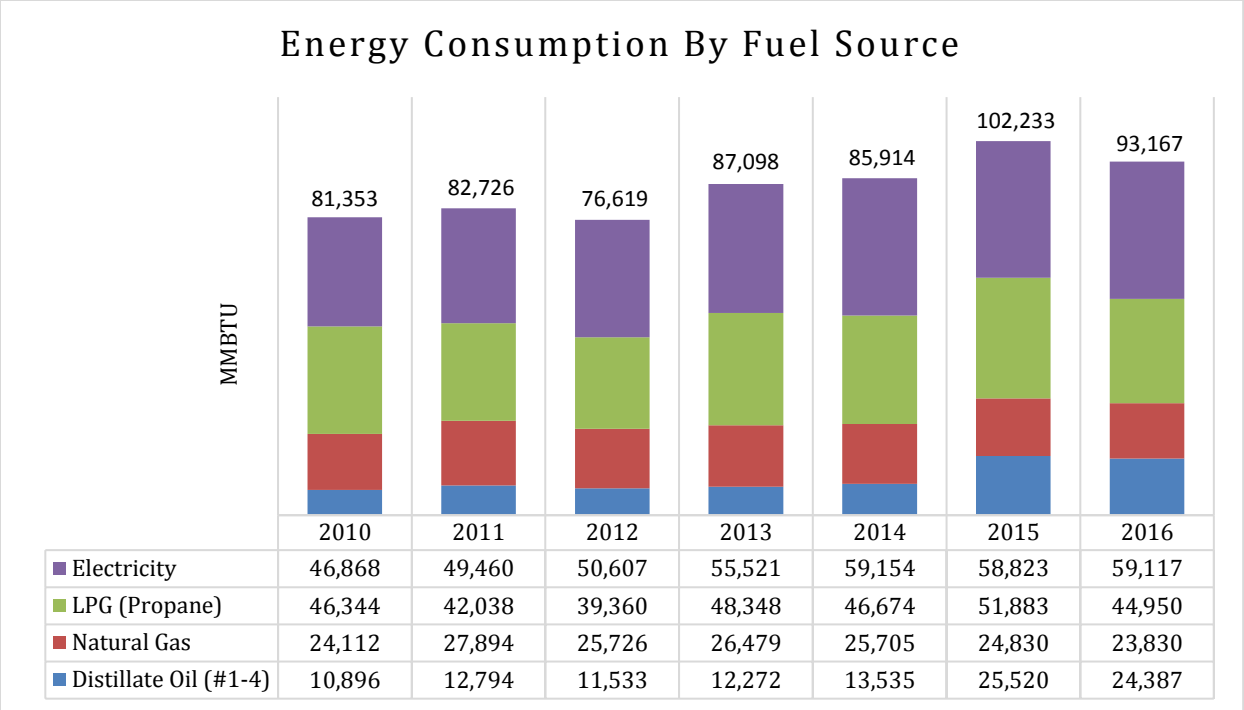


Figure 2 – Scopes 1, 2 and 3 Greenhouse Gas Emissions Per On-Campus Student FTE and Per 1,000 In-Use Square Footage 2010-2016

Fuel/MMBTU Trends -

60% of UNE's emissions result from on-campus stationary sources (heating and fleet fuels) and electricity purchases (scopes 1 and 2). These emissions are most directly under the control of the university. Figure 3 depicts the energy content consumed in MMBtu (one million British Thermal Units) for all heating and electricity for the inventory and reporting period. There was a 14.5% increase in the total MMBtu consumption for heating fuels over the six-year reporting period, and a 26% increase in MMBtu consumption for electricity. Thus, even though UNE has reduced per student and per square footage emissions, total consumption has surpassed the savings, resulting in a larger carbon footprint overall. Also note that heating oil consumption increased significantly in 2015 and 2016 due to a propane shortage in the winter of 2015-16, contributing to an increase in emissions from this higher carbon fossil fuel source.



	2010	2011	2012	2013	2014	2015	2016
Electricity	46,868	49,460	50,607	55,521	59,154	58,823	59,117
LPG (Propane)	46,344	42,038	39,360	48,348	46,674	51,883	44,950
Natural Gas	24,112	27,894	25,726	26,479	25,705	24,830	23,830
Distillate Oil (#1-4)	10,896	12,794	11,533	12,272	13,535	25,520	24,387

Figure 3 - Energy Content In Fuels Used During Inventory Period

2016 Net Emissions -

Table 1 depicts net emissions for each scope in 2010 and 2016. 2016 scope 1 emissions accounts for 33% of total emissions; 2016 scope 2 accounts for 27% of total emissions; and 2016 scope 3 accounts for 40% of total emissions.

Scope	Source	2010 MTCDE	2016 MTCDE	% of 2016 total emissions
1	On-campus stationary sources	4,974	5,873	31.3%
1	Direct transportation	179	237	1.3%
2	Purchased electricity	4,543	5,069	27.0%
3	Faculty and staff commuting	1,666	1,893	10.1%
3	Student commuting	2,881	2,890	15.4%
3	Business air travel	967	1,659	8.8%
3	Directly financed travel	130	167	0.9%
3	Study abroad air travel	285	470	2.5%
3	Solid waste	-	(12)	-0.1%
3	Wastewater	12	10	0.1%
3	Transmission and distribution losses	281	512	2.7%
	Total Emissions	15,918	18,768	

Table 1 - 2010 & 2016 Net Emissions by Scope and Source

2016 Scope 3 Emissions by Source -

Figure 4 depicts the breakdown of 2016 scope 3 emissions by source. The three largest portions of scope 3 emissions come from student commuting, faculty/staff commuting and business air travel, respectively. University of New England has invested heavily in increasing alternative transportation options for commuting. These areas continue to be a challenging source of emissions to reduce due to the individual nature of commuting behaviors. For this reporting period, business air travel increased 87% to approximately 3.4 million miles in 2016.

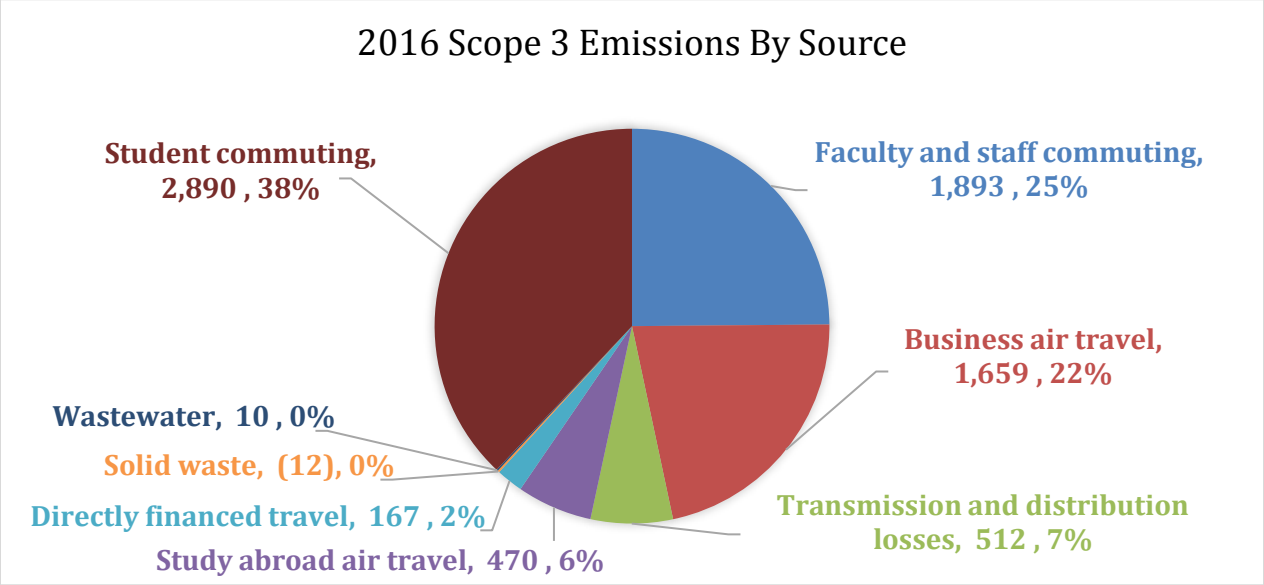


Figure 4 – 2016 Scope 3 Emissions by Source

Carbon Neutrality Goal and Interim Target Discussion

The 2010 Climate Action Plan outlined a goal of reaching carbon neutrality by 2040. UNE's Carbon Monitoring Task Force (CMTF) recommends maintaining this date, but modifying the interim targets that were established in the first plan. While the plan originally called for reduction goals every six years, the newly branded Carbon Commitment, supported by Second Nature, calls for updated plans every five years. Therefore the next interim target for reductions will be aimed at the 2021 greenhouse gas emissions inventory, and the updated Climate Action Plan reporting on progress will be released in early 2022.

UNE's 2010 CAP used predictions that relied on the assumptions of scopes 1 and 2 being tied most directly to MTCDE per building square footage and scope 3 emissions being tied most directly to MTCDE per student FTE. These predictions of "business as usual" emissions increases were then used to inform decisions about setting interim reduction targets. Table 2 shows the "business as usual" 2010 prediction for each scope's emissions in 2016, as well as the target reduction for each scope and the 2016 actual emissions calculated. Even though actual emissions increased overall by 12% between 2010 and 2016, UNE achieved 6% reduction from the model prediction with increases in square footage and student enrollment.

	2010 Actual	2016 BAU Prediction	2016 Target	2016 Actual
Scope 1	5,170	6,437	5,149	6,110
Scope 2	4,543	5,751	4,601	5,069
Scope 3	6,925	7,799	7,410	7,589
Total	16,638	19,986	17,159	18,768

Table 2 - 2010 Climate Action Plan Predictions for Business as Usual, Target Reductions and Actual Emissions for 2016

Projected Growth, Emissions and 2021 Target

Construction or expansion of an additional 198,250 square feet is underway or planned within the next few years. This includes: Alumni Hall renovation of 12,610 SF, 1075 Forest Avenue purchase of 6,000 SF, Danielle N. Ripich Commons construction of 60,340 SF, Harold Alfond Forum expansion of 36,892, Biddeford Campus Business Office expansion of 6,960, and Innovation Hall purchase and reconstruction of 75,448 SF.

Since the university anticipates this further growth in square footage and similar student enrollment increases, members of the CMTF feel it is necessary to set an aggressive next interim target. Using similar assumptions as the last predictive model, emissions could potentially increase by nearly 36% in the next five years. If 2016 emissions per square foot (14.54 MTCDE/SF) are applied to anticipated building growth (198,250 SF), scope 1 and 2 emissions may increase by 5,765 MTCDE. If 2016 emissions per student FTE (4.2 MTCDE/FTE) are applied to an annual 1% increase in on-campus student enrollment growth, resulting in an additional on-campus student population of approximately 228 students by 2021, scope 3 emissions may increase by 957 MTCDE.

Reducing emissions slightly from 2016 levels to 18,000 MTCDE by 2021 would represent a reduction of roughly 29% from these "business as usual" predictions. Table 3 represents the MTCDE predictions for each scope and indicates our overall reduction target by 2021.

	2016 Actual	2021 BAU Prediction	2021 Target
Scope 1	6,110	8,993	
Scope 2	5,069	7,952	
Scope 3	7,589	8,546	
Total	18,768	25,491	18,000

Table 3 – 2016 Climate Action Plan Predictions for Business as Usual Emissions for 2021 and Target Reduction

Climate Action Plan Mitigation Strategies

Carbon emission reduction strategies take many forms, but can be broken into two broad categories: those that address infrastructure and those that address behavior. Typically some form of infrastructure provisions are necessary to encourage sustainable behavior adoption. Infrastructure and behavior changes can be described within the more specific categories of energy, waste, transportation, financing, education and community outreach. For the purposes of organizing this CAP, first an explanation of community-based social marketing is provided, and a discussion of the university's progress since 2010. Then an outline of the process used to engage campus stakeholders in the Climate Action Planning process and the proposed strategies for expanding on previous initiatives and successes are described.

Community-Based Social Marketing as Approach for Behavior Adoption

Community-Based Social Marketing (CBSM) is an approach to influencing pro-environmental behavior adoption within a community. Doug McKenzie-Mohr, author of Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing, draws upon social psychology research to outline five steps that can be applied to sustainability challenges where human behavior is involved. His book is available free on his website (www.cbsm.com) and includes articles, case studies, and a forum where the larger community can see CBSM strategies in action.

Briefly outlined, the steps in CBSM include: selecting a desired behavior, identifying barriers to and benefits of the desired behavior, developing strategies that will specifically remove the identified barriers and promote the identified benefits, piloting those strategies and then engaging in broad-scale implementation. Doug McKenzie-Mohr cautions that, "Campaigns that rely solely on providing information often have little or no effect upon behavior". This is why the strategies he describes address removal of perceived barriers to behavior adoption and promotion or enhancement of perceived benefits of the desired behavior.

The graduation requirement for all College of Arts and Sciences students to take the first-year course, *Introduction to Environmental Issues,* is evidence of UNE's core value of environmental stewardship. The existence of this requirement establishes a social norm and expectation, one of CBSM's strategies, of stewardship at UNE. However, since social psychology research shows that education is not enough, the other strategies are crucial when looking to influence the behaviors of UNE's students. To encourage pro-sustainability behaviors in our university community, each of the behavior-related mitigation strategies described below must include elements of the CBSM strategies, tailored specifically to the barriers and benefits of each. These strategies will include commitments, prompts, social norms and diffusion, effective messages, incentives and increasing convenience.

Progress to Date: 2010 CAP Implemented Initiatives

UNE's 2010 Climate Action Plan was an ambitious attempt to identify priorities for both infrastructure and behavioral change that would move us toward our carbon-neutral goal. Building on these initiatives and learning from experience is key to moving forward. Below is a summary of initiatives that have been implemented since the 2010 CAP.

Energy

Energy Efficiency Projects -

In 2010 a 50% grant funded project with Efficiency Maine, with costs exceeding $308,000 and yielding a capital recapture period of just over one year, concentrated specifically on building automation controls on the Biddeford Campus to reduce energy consumption. Several LED lighting retrofits have been implemented in the last six years, including a project totaling nearly $270,000 in 2013 that was 45% grant funded and reduced electricity consumption in 12 buildings and most parking lots on both Maine campuses. Efficiency projects have been proven to quickly pay for themselves while reducing climate damaging emissions.

BioHeat in Buildings That Burn Oil -

In 2006 a student proposal, endorsed by the Environmental Council, resulted in the pilot project of burning BioHeat in the boiler at 592 Pool Road. This fuel switch was expanded to all independent building boilers that burned #2 heating oil for approximately seven years. Originally B20 (referring to the percentage of recycled vegetable oil mixed with the heating oil: 20%) was used, gradually decreasing to B5 as BioHeat became more expensive. Purchases of BioHeat peaked in 2014, but ceased completely in 2015 due to cost differential.

LEED Certified Buildings -

UNE earned LEED (Leadership in Energy & Environmental Design) silver certifications for two buildings constructed during the development of the first climate action plan: College of Pharmacy (2009) and Sokokis Hall (2010). Sustainable features of these buildings include building automation controls, high recycled content in building finishes, attention to stormwater management, high efficiency heat recovery and ventilation systems.

Image 1 - College of Pharmacy

Capital and Deferred Maintenance Decision-Making -

The 2010 Climate Action Plan called for a carbon emissions reduction and energy efficiency criteria to be added to the capital and deferred maintenance (CAP-DM) decision-making matrix. This was achieved in 2012 when "cost-effective measure/energy efficiency" was added to the third tier of prioritization, along with "university could stop". This additional criterion institutionalized a sustainability metric that is instrumental in determining funding for capital projects at the university. To view the decision matrix, see Appendix C: CAP-DM Decision Matrix.

Waste

Bottled Water Purchase Reduction -

In 2011 the Environmental Council and Sustainability Office lead the charge to replace the five gallon office water bubblers with water filtration units. Over 70 units were replaced between the two campuses to reduce the purchase and consumption of bottled water. In March 2012, a UNE student interning with Food and Water Watch, urged Dr. Ripich to pass a water resolution. The University Council adopted the proposed Water Resolution unanimously, encouraging the university community to avoid bottled water use. The text is included in Appendix D: Water Resolution. In fall 2016 the Environmental Council endorsed a project that was funded by the president's office to install water filters on the common area kitchen sinks in all ten residence halls on the

Image 2 - Water filtration unit

Biddeford Campus. Signs encourage students to use these for great tasting water and discourage them from purchasing bottled water.

Transportation

Nor'easter Express -

While UNE has had a relationship with Sh-Zoom, the community transit committee, for many years, in 2008 UNE ramped up the subsidy to provide increased service from the Biddeford Campus to downtown Biddeford. The Nor'easter Express offers hourly trips between the Biddeford campus, the Saco Transportation Center, and limited convenient locations in the Biddeford and Saco community. The Nor'easter shuttle provides resident students transportation access to shopping, recreation, or connection to Boston via the train station. This allows residential students to experience their community and meet their needs, without the use of a personal vehicle, further reducing GHG emissions.

ZipCar -

UNE partnered with ZipCar in 2008 to provide a car sharing option for students. ZipCars can be rented by the day or by the hour, providing the flexibility and the convenience of having a temporary, personal vehicle, when public transportation may not be an option. Having this option available and providing free ZipCar hours for first-year students who chose to not bring a car to campus, incentivized residential students to be car-free on campus, reducing the need to expand parking with increased student population.

Image 3 - Zipcar

River Ferry -

UNE made headlines in 2012 when it instituted a river ferry to carry passengers across the Saco River from Camp Ellis to the Biddeford Campus. Participants in the program loved the experience, and appreciated the 9 miles it avoided in their daily commutes. The program was discontinued in 2014 due to the high cost and low ridership, but this innovative and unique form of public transportation was featured in news reports on NPR, blogs, and several newspapers.

Intercampus Connector -

Environmental Council advocacy in for a shuttle between campuses resulted in creation of the Intercampus Connector in 2014. With multiple trips per day, students, faculty, and staff are able to attend class, get to work, or use the shuttle to reach either city for other reasons. The 54-passenger coach stops at Portland and Saco park-and-ride locations along the highway, providing a convenient option for commuters to use a public transportation option that bring them directly to their desired campus. The Intercampus Connector serves many purposes including connecting the two campuses and reducing parking congestion on the Biddeford Campus by students from physical therapy and dental medicine commuting to Biddeford for Gross Anatomy classes. While this activity increases the calculated carbon footprint of the university, it reduces single-occupancy vehicle traffic and the need to increase parking capacity.

Zagster -

UNE partnered with Zagster, a bike-share company, in 2016 to provide a fleet of 22 bicycles to the Biddeford Campus. The bike-share program provides a convenient transportation option around campus. This program replaced the bike give-away program that was rolled out in 2008 as an incentive for students to leave their cars at home. After several years of implementation,

Image 4 - Zagster

vandalism, abandonment of bikes and severe bike-rack congestion became overwhelming issues for campus security and facilities personnel. The bike-share program has been favorably received, with 355 registered members on campus and almost 2,400 rides in the first semester.

Electric Vehicle Charging -

In 2015-'16 two Level 2 electric car-charging stations were installed on each campus, and four corresponding parking spaces were reserved. Incentives for low-emissions vehicles includes free charging at the stations and reserved parking. There are currently six cars registered in the program. In response to student request and petitioning, the university president allocated funding for solar PV panels to be installed on each campus to offset the potential electricity consumption of these charging stations being used throughout the day.

Financing

Green Revolving Fund -

The Carbon Monitoring Task Force worked diligently to advocate for the creation of a Green Revolving Fund (GRF) and was successful in March 2015 with help from the Sustainable Endowments Institute (SEI). Additionally, UNE signed onto the Billion Dollar Green Challenge with SEI in July of that year and set a goal of growing the GRF to $326,000 by 2021. For the full text of the Billion Dollar Green Challenge agreement, see Appendix E: Billion Dollar Green Challenge. UNE's president, Danielle Ripich, seeded the fund with $25,000 and the CMTF established guidelines to follow that outlined project criteria, approval process, proposal components, expected project savings, mechanism for payback of loan, and strategies for growing the GRF. To view the GRF guidelines, see Appendix F: Green Revolving Fund Guidelines.

The first projects approved for use of GRF funds were LED retrofits of 935 light fixtures in two residence halls on the Biddeford Campus. The primary focus over the past two years has been to grow the fund through donations within the capital campaign. Recently the decision was made to roll money from the returnable bottles and cans collected on campus into the GRF as well to further integrate sustainability initiatives. This has the potential to grow the fund by approximately $1,000-2,000 annually.

Education and Community Outreach

Eco-Rep Program -

The UNE Eco-Rep program employs 5-8 students on average annually through the federal work study program. Eco-Reps are student leaders who engage peers in sustainability activities throughout the year. Activities have included residence hall energy competitions, water taste tests, environmental speakers and documentary film screenings, maintenance of campus gardens, peer education about waste reduction and energy conservation, among many others. The Eco-Rep program has become a tremendous asset to the sustainability initiatives at UNE.

Green Office Program -

The Sustainability Lab (ENV 240) class in the spring 2015 semester developed a Green Office Program for use in academic and business departments at UNE. Categories of assessment include energy conservation, waste reduction, alternative transportation and sustainability involvement. The Green Office program is anchored in community-based social marketing theory and incorporates the use of prompts, commitments, public recognition, social norming and diffusion, effective communication and incentives.

Stakeholder Engagement

Image 5 - World Cafe participants

UNE utilized a community development strategy to foster a culture of responsibility and solution-oriented thinking to tackle the challenge of updating the Climate Action Plan. On October 18, 2016, the Sustainability Office and Innovation Hub at the University of New England collaborated to host a World Café event that gathered 40 faculty, staff, administration, students and alumni to discuss their priorities for inclusion in the 2017 Climate Action Plan.

Strategy ideas harvested from the World Café brainstorming session were presented in survey format to the entire UNE community in November 2016. Nearly five hundred people participated in the survey. The results were ranked to show the priority order of each mitigation strategy. The Carbon Monitoring Task Force met to review the ranked results and determine which strategies seem feasible and will propel the institution toward its goal of carbon neutrality by 2040. For more information about World Café Community Foundation and the process undertaken at UNE's event and to review the ranked results of the survey, see Appendix G: World Café: Event Process and Mitigations Strategy Results.

Proposed Mitigation Strategies

Energy

Historically the university's annual energy consumption, converted to MMBtu for comparison purposes, has fluctuated with several factors including efficiency projects, number of heating or cooling degree days and program needs. However, the general trend of consumption has been an increase of roughly 14.5% for heating energy and 26% for electrical energy over the six years of this reporting period. **In 2016 nearly 60% of all emissions stemmed from energy consumption alone, which is why the most influential mitigation strategies must target our heating fuels and electricity consuming operations**. The following solutions address energy consumption at UNE:

Energy Efficiency Project with ConEdison Solutions -

UNE has partnered with ConEdison Solutions recently to investigate a comprehensive energy efficiency proposal. The options being considered include combined heat and power systems (cogeneration), further LED retrofits, building automation controls for the Portland Campus and upgrades to the Biddeford Campus, solar thermal, solar electric, boiler plant upgrades with potential fuel switching, and window replacement. At the time of this CAP drafting, it is too soon to know whether this exploration will yield a comprehensive project, or what will be included if it does, however, the university is committed to an in-depth exploration of all possibilities.

"UNE Green" Standard for Buildings -

Since 2010 many of the design methods used in the construction of our LEED certified buildings have become standard practice in our new construction projects. Recognizing that third-party verification is an expensive undertaking beyond construction costs is causing our Campus Planning department to lean toward a "UNE Green Standard", rather than submission to the US Green Building Council for LEED certification. The Carbon Monitoring Task Force and Energy Subcommittee are committed to better defining that building standard within the next five years. The group further recognizes the importance of branding our building standard for use within the UNE community, so that building occupants and the campus community understand the

environmental impact and energy reduction focus of building features. This is crucial because it contributes to the social norm and campus culture of sustainability.

BioHeat in Buildings that Burn Oil -

Building on the prior experience of BioHeat use (2007-2015) in buildings with stand-alone oil boilers, Campus Services will monitor BioHeat prices and revitalize this practice as a means to reduce fossil fuel emissions to heat buildings.

Net-Zero Building on Ram Island -

UNE acquired Ram Island in Saco Bay in 2016. This one-acre island has a small building which will host laboratory and field classes as students study the intertidal flora and fauna as part of the Marine Science and Environmental Science programs. Renovation of this building is well-suited to a demonstration project of a net-zero structure. Since utilities would be exceptionally challenging, early concepts of the structure include renewable energy for power and zero-waste operations, including composting toilet facilities. Development of a net-zero structure, in which students learn and study the environment, will increase the viability of expanding similar systems to on-shore structures in the future.

Image 6 - Ram Island

Large-Scale Solar Photovoltaic -

UNE's Environmental Council and UNE student interns with Focus the Nation have proposed large-scale solar projects over the past four years using various funding mechanisms include Power Purchase Agreements (PPA) and Community Solar Farms. UNE's growth and uncertain future development locations have resulted in hesitation to install a large-scale solar PV project. Recognizing the intangible benefits contributing to recruitment and retention of millennial students and the environmental benefits of solar as a renewable energy, UNE is committed to the installation of a large-scale solar PV installation of undetermined size on one or both of its Maine campuses within the next five years.

The return on investment of solar PV is significantly greater in Morocco, where UNE has located its newest campus. Solar panel and installation labor costs are lower than in the U.S. and solar gain is greater than in Maine, making solar electricity more attractive economically in Tangier, Morocco. Administration has recently vetted some solar proposals and agreed to go forward with a roughly $187,000 solar PV array during the fiscal year 2018. This array is projected to produce roughly 1/3rd of the electricity consumed by the UNE campus in Morocco.

Solar Thermal on Sokokis Hall -

UNE's 2010 Climate Action Plan included solar thermal (domestic hot water) system installation on Sokokis Hall once summer occupancy created the demand, which is necessary for the integrity and maintenance of the system. Sokokis Hall is positioned well for the inclusion of solar domestic hot water in many aspects. The building is UNE's only LEED silver certified residence hall, creating a campus expectation for the building to be innovative in its environmental design. Furthermore the building was constructed with a solar domestic hot water system planned for the future, as there are pipe chases between floors in the building, and space was left in the mechanical room for the water storage tanks. With the construction and expanded summer use of the Harold Alfond Forum athletic complex and accompanying sports camps for children, Sokokis Hall has experienced

increased summer occupancy and a solar thermal system makes financial and operational sense. Over the next five years, UNE will research size requirements, system and installer logistics, seek external supplemental funding and install a solar thermal system on Sokokis Hall, thereby reducing propane consumption in that building.

Waste

Waste reduction, reuse, and recycling reduce overall greenhouse gas emissions by minimizing the amount of energy that must be used in the production and transportation of goods. Similarly, composting food waste reduces methane emissions from landfills. UNE's Sustainability Lab class (ENV 240) conducted a study of the recycling rate on the Biddeford Campus in 2016. The study showed that of the 577 tons of material disposed of on the Biddeford Campus, roughly 35% of measured and estimated waste was disposed of in a sustainable manner.

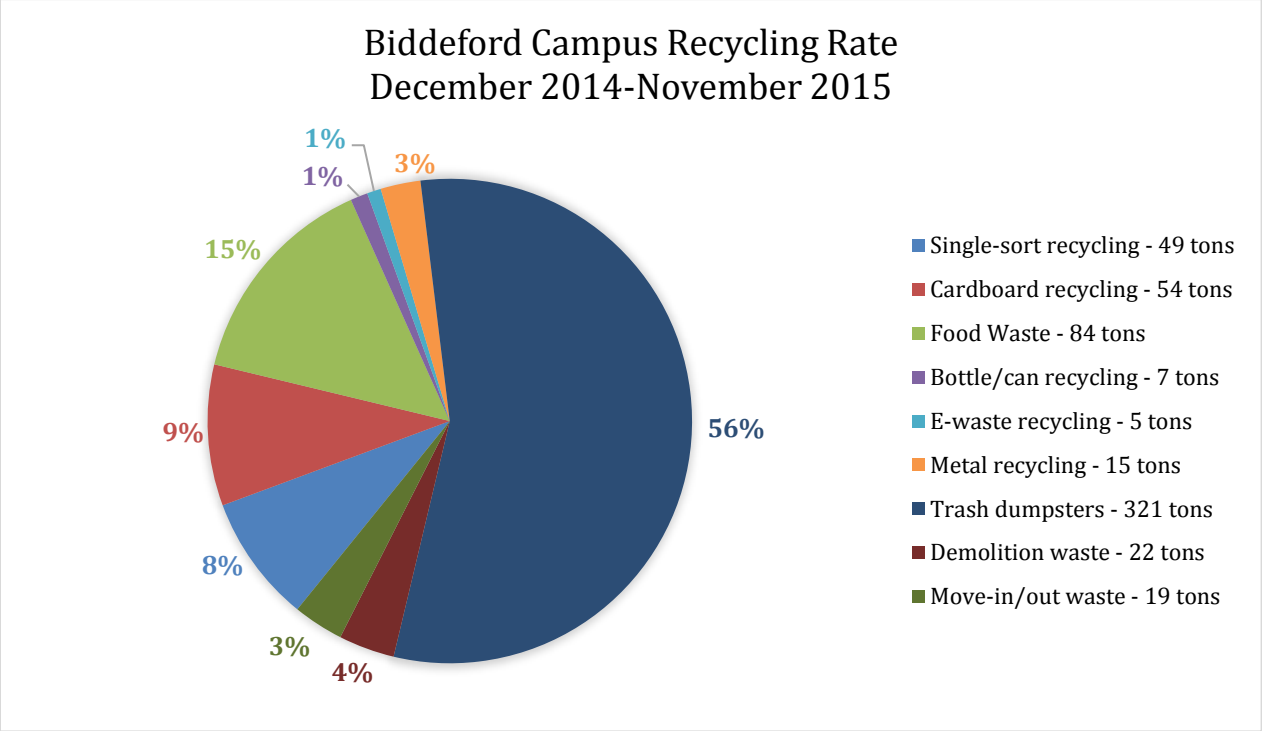


Figure 5 – Biddeford Campus Recycling Rate December 2014 to November 2015

The Sustainability Lab students also conducted a waste characterization study by examining the contents of a residential dumpster on campus. The contents of the dumpster had been an accumulation of 48 hours' worth of material from roughly 287 students. Roughly 38% of what had been deposited in the dumpster was recyclable material. Another 17% of material in the dumpster was compostable. Using community-based social marketing (CBSM) strategies, students then developed new signage for recycling stations to prompt and inform community members to recycle appropriately. Building on these efforts, several of the waste reduction efforts outlined below will rely heavily on CBSM strategies

Image 7 - Sustainability Lab after waste characterization study, spring 2016

Reusable Cup Incentives -

Following the World Café survey results, the UNE community's top choice for a climate mitigation strategy was a reusable cup incentive program at all Sodexo-managed sites where take-out is permitted. Presumably this was a favored choice because of the simplicity of the strategy and appeal of incentives. Sodexo purchases roughly 7,000 coffee cups monthly for Decary Café alone, creating a significant environmental impact, only a fraction of which is represented in the carbon footprint analysis. Although Sodexo, UNE's food service provider, has long offered discounts for reusable mug use, few people seem to be aware of the incentive. UNE's Environmental Council and Sodexo look forward to partnering to make this incentive more widely known by the UNE community.

Default Double-Sided Printing -

Information Technology Services (ITS) manages the printers in all computer labs and libraries on both campuses. All of these printers have been set to double-side printing automatically. Additionally, "Eco-Print" was instituted in 2016 and requires students to swipe their identification cards before printing, leading to a reduction of paper wasted at the printer from duplicate print-jobs. However, there are numerous shared and individual desk-top printers throughout the university that do not currently have double-sided printing set as a default. UNE's Environmental Council and Sustainability Office endeavor to work with the campus department and PCCI (Portland Computer Copy, Inc.) to set all remaining printers to double-side if possible.

Swap Shop -

Reusing is the first objective in a successful recycling system. UNE plans to open a swap shop that will allow the community to find items such as furniture, office supplies, books, and technology. The shop will provide an opportunity to reduce the need to buy new supplies and focus on asset management and resource conservation. The Sustainability Office will work through the logistics of using an electronic format to start the program and then work with the Environmental Council and Facilities Management to determine a physical location of the swap shop with the goal of opening within the next five years.

Composting in Residence Halls & Offices -

As stated above, the waste characterization study found that 17% of the trash in the residential dumpster was compostable material (e.g. food scraps, napkins, wood stir sticks, etc.). While this does not reflect compostable waste generated in academic and business offices on campus, many faculty and staff at the World Café stressed the desire to be able to compost while at work. Clear support was expressed for campus composting in the results of the World Café survey. While food scraps from the dining hall on the Portland Campus have been composted with a commercial service for several years, Biddeford Campus' dining hall scraps have been sent to a local pig farm for decades. Recently operations have changed to include a commercial composting service for the Biddeford Campus as well. This will make the program expansion to include residence halls and offices easier to implement. The Sustainability Office plans to introduce this program in fall 2017 semester.

Transportation

Since faculty, staff and student **commuting accounts for 63% (nearly 4,800 MTCDE) of UNE's Scope 3 greenhouse gas emissions**, it is an area of appropriate focus. New technologies and fuel options mean that alternative transportation modes provide real potential for reducing GHG

emissions at UNE. Commuters on both the Biddeford and Portland campuses will benefit from having more choices to travel to classes and work. The following strategies, identified in the World Café exercise and affirmed in the community survey, will build upon UNE's current transportation options.

Electronic Ride-Share/Carpool Application -

Student enrollment at UNE is increasing and so is the need for parking. Both campuses currently experience significant parking frustrations. Innovative solutions, described above, have prevented UNE from significantly increasing impermeable paved lots. To prevent further development of parking lots, the Environmental Council and Sustainability Office commit to investigating web-based and mobile ride-share applications that have the capacity to serve the UNE community exclusively. Carpooling safety, reliability, convenience and cost are the main considerations that will be used in the decision-making process when choosing a ride-share application.

Commuter Vanpools -

The same reasons for investigation of an electronic ride-share/carpool application exist for supporting commuter vanpools. The Environmental Council and Sustainability Office will investigate the possibility of emulating or partnering with the Maine Department of Transportation's GOMaine vanpool program. Safety, reliability, convenience and cost will be evaluated when comparing logistical alternatives.

Incentivize Low Emissions Vehicle Use -

The Environmental Council and Sustainability Office will work with Safety and Security Department and Business office to investigate the budget implications of offering free or reduced-price parking permits for electric and hybrid vehicles. This strategy aims to support individual choices to purchase low-emissions vehicles.

Image 8 - Solar panel installation for electric vehicle charging station on Portland Campus

Alternative Fuels in Shuttles -

The Nor'easter Express currently runs on B20 fuel, a blend that contains 20% biodiesel (recycled vegetable oil) and 80% diesel fuel. This alternative fuel produces fewer greenhouse gas emissions, thereby increasing the sustainability impact of public transportation. The Intercampus Connector and Bishop Street Shuttle on the Portland Campus are contracted shuttle services through Custom Coach and Limousine, and currently use 100% diesel fuel. Campus Services commits to influencing the use of alternative fuels in the Intercampus Connector and Bishop Street Shuttle in the next contract negotiation with Custom Coach and Limousine.

Cross-Category Initiatives

Sustainable Athletic Supports and Venue Expansion -

UNE recently announced the decision to expand athletic offerings to include women's rugby in 2017, men's football in 2018 and women's crew in 2019, necessitating the expansion of athletic support facilities. Concurrently with the program expansion, the artificial turf on the Biddeford Campus is nearing the end of its useful life. We expect to install a new playing field with artificial turf to support the stickball sports, such as softball and field hockey, inside the Sokokis track, and resurface the existing turf area with a carpet to support football. Sustainable disposal (i.e., reuse or recycling) of our current turf is targeted as a high priority. Additionally the identification of

sustainable options for purchase of two new artificial surfaces is important to Campus Planning and the UNE community. Attention will also be paid to LED lighting on the playing fields and exploration of energy efficiency turf heating bed to reduce the need for plowing.

Sustainability Criteria Contract Integration -

Integrating sustainability criteria into vendor contracts has the power to institutionalize sustainability across all sectors of the university. The university partners with many external vendors for supplies and services, including but not limited to dining services, technology, office supplies, cleaning chemicals and materials, design and construction services, landscaping services, among many others. Within the next five years the CMTF will create an ad-hoc group to work with the Business Office to evaluate the impact of Requests for Proposal (RFP) language that favors sustainability criteria. The cross-functional group will make recommendations for boilerplate language that can be used in future RFPs and vendor contracts.

Financing

Travel Offsets -

A carbon "offset" for UNE represents a reduction in greenhouse emissions elsewhere to compensate for emissions produced here at UNE. Purchase of offsets is a means of financially contributing to a project that reduces emissions somewhere in the world, such as renewable energy or carbon sequestration projects. Carbon offset prices vary widely, based on project cost, size, type and location, value-beyond-carbon, and oversight, governance and verification standard of the project, among other factors. CarbonFund.org issued a Responsible Purchasing Guide[7] for carbon offsets that identified the 2008 average price below $10 per metric ton of carbon dioxide equivalent.

Growing the Green Revolving Fund is a priority for the CMTF as a means to further reduce our own emissions, and another method to accomplish this would be to create an internal offset program for university-sponsored travel. The CMTF proposes, and will advocate for, offsets to be used to further reduce UNE's own emissions by investing in the Green Revolving Fund, rather than financially supporting a carbon-reducing project elsewhere on the globe.

As an example of the financial impact that this could pose for the university, in fiscal year 2016, UNE paid for approximately 3,440,000 miles of air travel for business and academic programs, and another 974,000 miles of air travel through the study abroad program. An estimated 0.24 pounds of carbon dioxide equivalents are produced per mile of air travel, according to Blue Sky Model[8]. Blueskymodel.org is an open-source estimate of carbon emissions, striving for transparency in carbon footprint calculations. To offset the university's air travel alone in 2016, at $10/MTCDE would amount to nearly $4,806 in offsets.

An ad-hoc group of the CMTF will undertake working through fee scenarios with departments and Business Office to find an amenable formula to offset all university-sponsored travel emissions. Whether it be a small, flat fee per plane ticket or reimbursed miles traveled, or percentage of ticket purchase price, or some other fee structure, the implementation of this offset program will introduce the concept of carbon offsets to the university community at a low overall cost, and benefit the investment in our energy efficiency infrastructure.

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[7] Responsible Purchasing Network. *Responsible Purchasing Guide: Carbon Offsets*: Responsible Purchasing Network, 2011. Accessed April 7, 2017, http://www.responsiblepurchasing.org/purchasing_guides/carbon_offsets/purchasing_guide.pdf

[8] "1 Air Mile," Blue Sky Model, Accessed April 7, 2017, http://blueskymodel.org/air-mile.

Education and Community Outreach

Image 9 - Green Office certification awarded to College of Arts and Sciences Dean's Office, spring 2017

Green Office Program Proliferation -

As of January 2017, two departments have been certified in the Green Office Program and four have registered for the program. Within the next five years the Sustainability Office endeavors to achieve 50% participation in the Green Office Program. We will accomplish this by offering credit-bearing internships in the Sustainability Office focused primarily on providing assistance with the certification process and departmental outreach.

Climate Change Minor -

As a university community, UNE is engaged in education at all times in many ways. Co-curricular programming, centers of excellence, faculty and student research and service learning within the community all contribute to furthering sustainability education and community outreach. A significant feat within the 2010 Climate Action Plan was the creation of a climate change minor at UNE. This was accomplished recently, and is best described through a press release from the Department of Communications.

> "As climate change promises to be one of the defining environmental and social problems of our lifetime, the University of New England is poised to educate tomorrow's leaders in the climate change battle by offering an innovative, interdisciplinary minor in Climate Change Studies.
>
> The Climate Change Studies minor at UNE is designed to equip students with a fundamental understanding of the issue of climate change from diverse perspectives, providing education on the scientific, social, political, psychological and ethical dimensions of the issue. Open to all students in the College of Arts and Sciences, the minor comprises classes drawn from an array of UNE departments, including Environmental Studies; Business; Biology; Political Science; Chemistry and Physics; Marine Sciences; Society, Culture and Languages; and History and Philosophy.
>
> According to Climate Change Studies Program Coordinator Bethany Woodworth, Ph.D., a comprehensive understanding of climate change is essential to a growing number of careers in many professional realms. "It is vitally important that business students are able to incorporate climate change into business models, that urban planners understand the challenges of how to plan for changing conditions, that political science students understand the policy implications, that sociologists grasp the impacts of climate change on human societies; and that marine scientists grapple knowledgeably with the implications of climate change for our ocean economies," she explained. "UNE's minor in Climate Change Studies will help prepare students for a myriad of professions that directly or indirectly relate to understanding, combating, and adapting to climate change."

Housed in UNE's Department of Environmental Studies, the new minor in Climate Change Studies consists of both required courses and electives from the categories of policy, natural science and social science."

Planetary Health Alliance –

"The Planetary Health Alliance is a consortium of over 60 universities, NGOs and other partners with a shared mission – supporting the growth of a rigorous, policy-focused, transdisciplinary field of applied research aimed at understanding and addressing the human health implications of accelerating anthropogenic change in Earth's natural systems." With financial support from the Rockefeller Foundation, the PHA is educating future generations of planetary health scholars, supporting their research efforts and forming a networking community for the sharing of information. The Alliance is working toward improving the funding for research and outreach to global health and environmental leaders who generate action and policy. To accomplish this auspicious goal, the PHA has divided it into three intersecting segments: research, education and policy, and encourages the flow of knowledge between these multidisciplinary fields.[9]

Image 10 – UNE students at Inaugural meeting of the Planetary Health Alliance; left to right: Samantha Schildroth and Caroline Cooper, Environmental Studies and Medical Biology dual majors, and Meghan Dahlquist, Health, Wellness and Occupational Studies major

University of New England recently joined the Planetary Health Alliance and looks forward to collaborating with other organizations similarly concerned with the human health impacts of global environmental change. The Marine Science Center, Department of Environmental Studies, College of Osteopathic Medicine and College of Health Professions all have research and/or curriculum that supports the mission and goals of PHA and will benefit from the shared resources and policy work undertaken by the PHA community.

[9] "About Us", Planetary Health Alliance, Accessed April 5, 2017, https://planetaryhealthalliance.org/about/.

Conclusion

The University of New England is an innovative, dynamic institution that has grown quickly to be a leader in higher education in Maine and in the Northeast. In a few short years the student body and building footprint have grown at remarkable rates. UNE's rapid expansion and strategically significant campus locations position the university to be an influential leader in the future of sustainability in higher education. The university's ability to address the environmental impacts of its growth can be a local, regional, and global leadership model. UNE is committed to responsible stewardship of its own and the Earth's resources, as evidenced by the pledged goal of carbon neutrality through the President's Carbon Commitment.

This Climate Action Plan lays the groundwork for effective mitigation strategies: it addresses continued growth in physical space, programs, and enrollment. It organizes strategies by categories of energy, waste, transportation, financing and education and community outreach. Elements of the strategies are open to refinement, as collaboration with stakeholders necessitates room for modification and enhancement. UNE will continue its work toward accomplishing the objectives of this plan and the inherent goal of reducing carbon emissions and refining the implementation plan to adequately resource the outlined strategies.

David Orr wrote "What Is Education For?" in 1991 and stated that, "All education is environmental education. By what is included or excluded we teach students that they are part of or apart from the natural world." Teaching our students that they are part of this natural world is of critical importance when considering the consequences of climate destabilization. This curriculum is as much the "how" and "where" we educate UNE's students, as it is the "what". UNE endeavors to teach environmental stewardship by example and throughout all aspects of campus life.

Appendix A: Carbon Commitment

18 Tremont Street, STE 930, Boston, MA 02108 | 617.722.0036 | commitments@secondnature.org

Climate Leadership Statement

We, the undersigned presidents and chancellors of colleges and universities, believe firmly in the power, potential, and imperative of higher education's key role in shaping a sustainable society. Not only are we deeply concerned about the increasing pace and intensity of global climate change and the potential for unprecedented detrimental impacts, but we also understand that technology, infrastructure, global interconnectedness, and our greatest asset – engaged, committed, smart students – allow us to explore bold and innovative solutions and to lead in climate action and sustainable solutions.

We have begun to experience the effects of climate change in our communities and we understand that these effects are projected to become more severe and damaging. We recognize that mitigation and adaptation are complementary strategies for reducing the likelihood of unmanageable change, managing the risks, and taking advantage of new opportunities created by our changing climate.

We believe colleges and universities must exercise leadership in their communities and throughout society by providing the knowledge, research, practice, and informed graduates to create a positive and sustainable future. Along with other aspects of sustainability, campuses that address the climate challenge by reducing greenhouse gas emissions and by integrating resilience into their curriculum, research, and campus operations will better serve their students and meet their social mandate to help create a vital, ethical, and prosperous civil society.

We further believe that exerting leadership in addressing climate change will reduce our long-term energy costs and the costs of climate disturbance, increase our quality of life, attract excellent students and faculty, and build the support of alumni and local communities.

We have resolved to take action in one of the following Climate Leadership Commitments. We believe carbon neutrality and resilience are extremely high priority areas of action for all institutions and we aim to lead the nation in these efforts. We urge others to join us in transforming society towards a sustainable, healthy, and more prosperous future.

Carbon Commitment

1) Develop a Climate Action Plan to achieve carbon neutrality *
    a. Within two months of signing this document, create internal institutional structures to guide the development and implementation of the Plan

b. Within one year of the implementation start date, complete a greenhouse gas emissions inventory and identify near term opportunities for greenhouse gas reduction. Report these in the first annual evaluation of progress
c. Within two years of the implementation start date complete the Plan, which will include:
    i. A target date for achieving carbon neutrality as soon as possible
    ii. Interim target dates for meeting milestones that will lead to carbon neutrality**
    iii. Mechanisms and indicators for tracking progress
    iv. Actions to make carbon neutrality a part of the curriculum and other educational experiences for all students
    v. Actions to expand research in carbon neutrality
d. Review, revise if necessary, and resubmit the climate action plan not less frequently than every five years

2) Submit an annual evaluation of progress
    a. Within one year of the implementation start date, and every year thereafter, complete an annual evaluation of progress
    b. Make the action plan, annual evaluation of progress (including greenhouse gas inventory), publicly available by submitting them to Second Nature's reporting system for posting and dissemination

* The plan may be designed to augment an existing sustainability plan, written as part of a new sustainability plan, or as a standalone plan. An online guide is available that provides information on successful institutional structures, helpful templates on climate action plans, useful indicators of progress, guidance for reporting and much more.

** Assistance for developing interim milestones and a number of example tangible actions are available online and are regularly updated.

Appendix B: Greenhouse Gas Emissions Inventory Methods

Inventory Methods and Data Collection

Demographic Data Collection -

The Office of Institutional Research and Assessment provided data for student enrollment, using the "credit method" to determine full-time equivalencies (FTE), which reflect unduplicated enrollment for the academic period. FTE of on-campus students in 2016 were 4,469, which is a 45% increase over this reporting period.

Campus Planning provided square footage data for in-use buildings.

Scope 1 Emissions -

Heating Fuels:

- Data for gallons of heating fuel (#2 and #4 heating oil, BioHeat, propane and natural gas) was obtained from the Utility Direct software tool maintained by Facilities Management.
- The central heating plant on the Biddeford Campus is dual-fuel capable and primarily is fueled by propane, but has been switched to heating oil during times of propane shortages.
- The central steam plant on the Portland Campus is primarily heated by natural gas.
- Both campuses also have buildings that are not connected to the central plants and are heated by oil, propane or natural gas through stand-alone boilers or roof-top units.

Transportation Fuels:

- Data for gallons of fleet vehicle fuel (unleaded gasoline, diesel and BioDiesel) was obtained from the Utility Direct software tool maintained by Facilities Management.
- Fleet vehicles are fueled with gasoline or diesel with Wright Express cards at local fueling stations.
- Off-road diesel for generators and outdoor tanks for heating fuel is included in scope 1 transportation emissions.

Scope 2 Emissions -

Purchased Electricity:

- Data for purchased electricity, reported in kilowatt-hours (kWh), was obtained from the Utility Direct software tool, which is maintained by Facilities Management.

Scope 3 Emissions -

Solid Waste:

- Waste Management is the contracted hauler for solid waste on the Biddeford and Portland campuses. While dumpsters scattered throughout both campuses are not weighed as they are emptied, Waste Management conducts a three-week audit in October or early November each year. These representative weights are used to estimate solid waste quantities for the year.
- In 2013-14 Maine Energy Recovery Co. (MERC), a refuse-derived fuel incinerator, ceased operations in Biddeford. After MERC shut-down, Waste Management used a landfill that provided methane recovery and flaring for a short period of time for the trash from the Biddeford Campus. For the entire period of this emissions inventory the Portland Campus

trash has been taken to EcoMaine in Portland for mass burn incineration. The trash from the Biddeford Campus is now brought to Eco-Maine as well.
- Single-sort recycling is offered throughout both campuses and brought to EcoMaine for sorting and recycling. Both campuses also recycle metal, motor oil, batteries and ink and toner.

Wastewater:

- UNE owns a wastewater treatment facility on the Biddeford Campus, operated by Woodard & Curran. The facility has seen large fluctuations in volume of treated water, ranging from 25 million gallons in 2010 to 20 million gallons in 2016. Several water efficiency measures in campus operations are responsible for the decrease.

Directly Financed, Outsourced Travel:

- Air travel data was obtained through Atlas Travel reports from the Business Office. Distances were calculated between airport codes using the Terrapass website prior to 2015 and Webflyer's mileage converter in 2015 and 2016.
- UNE subsidizes transportation from its Biddeford Campus to the Saco Transportation Center with ShuttleBus from September through May. ShuttleBus uses biodiesel in the Nor'easter Express shuttle. The shuttle schedule was used to calculate approximate mileage traveled by the bus.
- Athletic travel was calculated using the competition schedules for each sport. The athletic department contracts with Custom Coach and Limousine to provide coach service.
- In Fall 2014 the Intercampus Connector began service between the Portland and Biddeford campuses. Custom Coach and Limousine provides service with a 54 passenger bus and makes four round trips daily when classes are in session. The shuttle schedule and dates of operation were used to calculate approximate mileage traveled by the bus.
- The Business Office provides data monthly on personal mileage reimbursement.

Faculty, Staff and Student Commuting:

- Commuter data was calculated for 2010, 2012, 2014-2016.
- Parking permit data, obtained from the Department of Safety and Security, was used to calculate commuter mileage. Google's Maps was used to determine distances between home addresses and the respective campus that each individual travels to on a regular basis.
- Each year a certain percentage of faculty and staff use their on-campus address for their parking permit, and similarly a certain percentage of our commuter students use their parents' home address. To include those commuters, the average daily mileage commute of all other permit holders is applied to those with incorrect addresses.

Transmission and Distribution Losses:

- Electricity produced from power plants and transmitted over the grid to electrical substations and then distributed to customers are subject to losses. The difference between the electricity produced at the power plant and the electricity sold to customer accounts for electrical transmission and distribution losses. In 2016 the transmission and distribution losses amounted to 512 MTCDE, roughly 10.1% of the emissions resulting from UNE's electrical purchases.

Appendix C: CAP-DM Decision Matrix

University of New England
Capital and Deferred Maintenance
Prioritization Matrix

	1	2	3	4	5	6	7	8	9	10	
10	46	56	65	73	80	86	91	95	98	100	Univ. stops functioning / Life Safety or Legal Compliance
9	37	47	57	66	74	81	87	92	96	99	Coll. or Dept. can not function / Facility damage or deterioration
8	29	38	48	58	67	75	82	88	93	97	Univ. could stop / Cost-effective measure / Energy efficiency
7	22	30	39	49	59	68	76	83	89	94	Coll. Or Dept could stop / Mission support / Carbon footprint reduction
6	16	23	31	40	50	60	69	77	84	90	Service degradation / Delayed deferred maintenance
5	11	17	24	32	41	51	61	70	78	85	Enrollment enhancement / Deferred maintenance
4	7	12	18	25	33	42	52	62	71	79	Service desirable / Project completion
3	4	8	13	19	26	34	43	53	63	72	Department growth
2	2	5	9	14	20	27	35	44	54	64	Department request
1	1	3	6	10	15	21	28	36	45	55	Individual request
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
% Degradation	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	

Individual request
Improves department identity
Purchase improved equipment
Required for research
Enhances a department
Replaces out of date equipment
Effects the ability to teach
Could effect retention / recruitment
Did effect retention / recruitment and could effect accreditation
Will effect accreditation, student contract requirements, could not teach

FCAP Priority Designations
- Priority 1 - Immediate
- Priority 2 - High
- Priority 3 - Medium
- Priority 4 - Low
- Priority 1 - Delayed

1/28/2011

Appendix D: Water Resolution

University of New England Bottled Water Resolution

WHEREAS, the Core Values of University of New England name healthy environments and sustainability as well as social justice, service and civic engagement, among several others, which speak directly to the matter of water conservation; and

WHEREAS, University of New England has a long history of advocating environmental and sustainable responsibility; and

WHEREAS, University of New England formerly purchased more than 20,000 gallons of bottled water per year; and

WHEREAS, U.S. plastic water bottle production requires between 32 and 54 million gallons of oil, and three out of every four of those bottles end up in landfills or in an incinerator; and

WHEREAS, the cities of Biddeford and Portland provide tap water that is fresh, clean and healthy and is readily and conveniently available in every building facility of UNE; and

WHEREAS, the cities of Biddeford and Portland extensively test municipal water supplies and must meet rigorous purity standards; and

WHEREAS, the cost of bottled water can be as much as 1,000 times the cost of tap water,

NOW, THEREFORE, BE IT RESOLVED that the University of New England encourages all faculty, staff and students to consider alternatives to the purchase of bottled water; and

BE IT FURTHER RESOLVED that the University of New England encourages the utilization of refillable containers at its facilities and functions; and

BE IT FURTHER RESOLVED that the University of New England encourages faculty, staff and students who do use bottled water to recycle those bottles; and

BE IT FURTHER RESOLVED that the University of New England encourages its food service partner, Sodexo, to provide tap water as a default for all catering events and provides only bottled water for events, where tap water is not logistically feasible; and

BE IT FINALLY RESOLVED that the University of New England supports efforts to educate the campus community regarding the value and benefits of using municipal water systems for all its water needs.

Adopted by University Council March 2012

Appendix E: Billion Dollar Green Challenge Agreement

Agreement: Principles and Action Plan

Whereas *Greening the Bottom Line* documents the proven track record of green revolving funds at more than 90 institutions in the United States and Canada,

Whereas this research and other case studies show the environmental, educational and financial benefits of investing in these efficiency improvements,

Whereas our positions as nonprofit institutions support our contributing to educational and community leadership,

Whereas green revolving funds have proven to be safe investments with relatively high rates of return,

Whereas over the course of 10 years, a cumulative one billion dollars initially invested in green revolving funds may be repaid and invested 2-3 more times, thereby generating total investments of between two and three billion dollars,

Now therefore, be it resolved that our institution will commit to finance and implement a Green Revolving Fund and join The Billion Dollar Green Challenge.

To advance this initiative, we will pursue one of the two following action plans:

1) Enlarge or maintain a green revolving fund already in existence, so that the fund size will either continue to surpass, or will surpass within six years, the smaller of:

- One percent of the institution's endowment value, OR
- One million dollars

As part of this plan, at least 50 percent of money saved through a project investment by the revolving fund will return to the fund to be re-invested in future projects— at least until the full cost of the project has been repaid. To qualify, our existing fund must also be operational and have mechanisms in place to identify projects and make investments.

2) Initiate the process of creating a green revolving fund that will meet the requirements listed above. Our progress will be tracked according to four quarterly benchmarks within the indicated time periods—starting from the first three months after our institution joins The Challenge:

- ***Within Three Months***: Form a multi-stakeholder working group, or assign an existing group (which may include faculty, staff, students, administrators, or trustees), to lead the process of establishing the fund guidelines and operating procedures.
- ***Within Six Months***: Complete an energy audit for approximately 10 percent or more of the building square footage on campus. Audits may be conducted by consultants, university staff, or students with faculty or staff support. The six month benchmark encourages schools to fill out a GRF Plan of Action— a few short questions that will help SEI assess your progress in the GRF creation process and offer targeted support.
- ***Within Nine Months***: Formalize a guiding document to outline the operational procedures for the fund including the process for reviewing project proposals, making investments, and tracking savings.
- ***Within Twelve Months***: Approve fund investment in at least one project and begin to add data to the Green Revolving Investment Tracking System (GRITS).

As participants in The Billion Dollar Green Challenge, we commit to invest in energy efficiency, water conservation or renewable energy improvements at our institutions, with the goal of saving energy, reducing carbon emissions, lowering energy expenses, and creating regenerating funds for future sustainability upgrades.

Danielle Ripich — **Signature**

7/29/15 — **Date**

Danielle N. Ripich, President — **Name, Title**

$ 326,000 — **Size of Fund**

University of New England — **Institution**

UNE Green Revolving Fund — **Name of Fund**

Yes — **New Fund? (Y/N)**

Appendix F: Green Revolving Fund Guidelines

GREEN REVOLVING FUND MANAGEMENT GUIDELINES
UPDATED: MARCH 13, 2015

Purpose

To ensure proper oversight of all funds invested in the energy efficiency projects financed through the University of New England Green Revolving Fund (GRF). This includes loan disbursement and repayment to the GRF.

General

The University of New England Green Revolving Fund (GRF) is an investment fund that finances energy efficiency projects on campus to reduce energy consumption, and consequently carbon emissions. Some of the captured utility savings are reinvested for use in future efficiency projects. The fund provides capital for special projects conducted by Facilities Management that reduce environmental impact and can repay the fund with cost-savings within five years.

Project Criteria

The projects approved to be funded by the GRF must meet the following criteria:

- Produce financial savings that will pay for the initial cost of the projects within five years. Shorter payback periods are preferred.
- Quantifiably improve the environmental sustainability of UNE.
- Use loan funding cost effectively as measured by the environmental impact reduction per dollar.
- Provide educational benefit.

Approval Process

Recognizing that project ideas may come through multiple avenues and from varied campus constituents, this policy and procedure seeks to streamline a process whereby proposals are reviewed and approved for funding. All projects should seek to maximize the overall benefits of sustainability in a financially responsible manner.

1. Applicants will submit project proposals to the Energy Sub-Committee for review. During this review, the Energy Sub-Committee will determine feasibility of and alignment with GRF project criteria (outlined above), university mission, facilities capabilities and campus planning. The Energy Sub-Committee will verify likely project payback, and then work with the Assistant to the Vice President for Operations to propose a GRF repayment structure that is beneficial to the GRF and university operating budgets. The Energy sub-committee will prioritize projects, if there are multiple projects slated for consideration. (Note - members of the Energy Sub-Committee include: Facilities Manager for Biddeford Campus, Facilities Manager for Portland Campus, HVAC Supervisor, Assistant VP for Campus Planning and Sustainability Coordinator)

2. The Energy Sub-Committee will present a budget analysis to the Vice President for Operations for approval.
3. The Carbon Monitoring Task Force (CMTF) will make the final decision on project proposals and loan awards. (Note – members of the CMTF include: Provost, Vice President for Operations, Facilities Director, Assistant Vice President for Campus Planning, Department of Environmental Studies faculty member, Environmental Council Co-Chair, Environmental Health and Safety Director, student representative, Fiscal Affairs Representative, Institutional Advancement representative and Sustainability Coordinator)

Proposal Components

All proposals must include the following:

- Project Summary
  - Current Conditions
  - Project Description
  - Initiative Goals
  - Expected Results/Project Metrics/Resources Saved
  - Persons Impacted (include acknowledgement of consultation)
  - Personnel Involved (include acknowledgement of consultation)
  - Potential Risks or Uncertainties
  - Contingency Strategy
  - Attachments (i.e. spec sheets, etc.)

- Project Budget
  - One Time Expenses
  - On-Going Expenses
  - Available External Grants/Gifts/Rebates/Incentives
  - Capital Recapture Period Analysis
  - Terms of Payment Plan

- Project Timeline
  - Duration of Project
  - Estimated Project Phases/Benchmarks

Project Savings

Yearly savings will be calculated based on the pre-project costs for the relevant utilities/commodities and an estimate of the post-project utility/commodity usage and projected rates/prices. In the situation where the project will be performed where lack of building specific meter data exists, the repayment calculation will need to be based on estimated savings. Savings can be shared between the utility budget and the GRF, thus creating a cushion in the utility budget to hedge against under-performing projects.

Payback

In most cases, capital recapture period (the time it takes for a project's savings to cover initial capital cost) for projects financed by the GRF must not exceed 5 years. Repayment of the GRF loan will be accomplished by 100% of the calculated savings reinvested into the GRF. Once the loan is

repaid, the utilities operating budget will realize the savings. The loan disbursement and repayment schedule will be established in advance of any disbursements being made. The Assistant to the Vice President for Operations will be responsible for repaying the designated portion of the cost savings to the GRF on a pre-determined date, on an annual basis (at a minimum). Bundling of projects will be considered, using average payback on the various project savings. Any financing structure that may cause the GRF to deviate from its stated mission will not be permitted.

GRF Growth

The establishment of the GRF is recognition of the importance of energy efficiency as a fiscal responsibility of the university, and enables UNE to make efficiency a priority even when budget constraints may not otherwise allow. To this end it is in the university's best interests to grow the GRF to meet the anticipated demands of increasing energy cost pressures. The following three approaches are the focused growth methods for the GRF:

1. Rebates/Incentives – At least 50% of all rebates received for GRF efficiency projects will be captured and reinvested in the GRF.
2. Donations – Campus constituents, including but not limited to Institutional Advancement, Sustainability Office, Environmental Council and CMTF, will spread awareness about the philanthropic opportunities of the GRF.
3. Grant funds – Some of the utility savings that are realized as a result of leveraging GRF loan funds as a match for grant projects will be reinvested into the GRF.

Appendix G: World Café Mitigation Strategies Ranked by Community Survey

The World Café Community Foundation (TWCCF) is a nonprofit organization that developed the principles of The World Café. TWCCF philosophy is that positive change can take place when people come together through constructive conversation. The World Café is a method for creating holistic dialogue by guiding participants through a series of questions that result in collective solutions.

On October 18, 2016, UNE's World Café participants sat in small groups and were provided with a series of successive prompts to discuss:

1. How do you currently experience sustainability broadly at UNE?
2. How is your glocal* community responding to the specific issue of climate change?
3. What does UNE's response to climate change look like and what carbon mitigation strategies will UNE be employing by 2022?

* glocal: reflecting or characterized by both local and global considerations; acknowledges the impact of globalization and technology in "shrinking" the world and deepening awareness of interconnectivity.

The questions were created to allow participants to first consider their own sustainability habits. By then thinking about how their wider community takes responsibility for global issues of climate change, they were then asked to refocus their attention back to UNE, but with a look to the future. Recognizing that conversation can take many creative forms, participants were encouraged to draw out their ideas using paper, markers, and sticky notes at their tables.

The World Café method assumes that by creating dialog in this way people have the capacity to find solutions to the biggest challenges. After all the questions were discussed, diagramed and recorded, the results were synthesized onto poster paper and displayed during a gallery walk. The entire exercise demonstrated that the participants' ideas were valued and underscored the need for future acts of their civic engagement. The event was a success on many levels because it showed the power of collective effort, evidenced by a range of creative solutions for inclusion in the Climate Action Plan.

The World Café event was the first step to foster community engagement in climate change resilience. The harvested results of the World Café were used by the Sustainability Office to develop a survey for the wider campus community. The survey included all of the ideas developed from the World Café participants and was emailed to all students, faculty and staff. Survey participants were asked to rank the listed mitigation strategies on an implementation timeline: support immediate implementation, support implementing within five years, support implementing in five to ten years, or do not support implementation. The mitigation strategies were categorized into low, intermediate, or high yield reductions, with the intention of helping to educate the community's prioritization.

Nearly five hundred people participated in the survey. The results were ranked to show the priority order of each mitigation strategy. The Carbon Monitoring Task Force met to review the ranked results and determine which strategies seem feasible and will propel the institution toward its goal of carbon neutrality by 2040.

World Café – Results of Survey, November 2016

3 = support immediate implementation,
2 = support implementing within five years,
1 = support implementing in five to ten years, or
0 = do not support implementation

#	Initiative	Rank
1	Encourage participation in beverage discounts for reusable mugs at Sodexo retail locations	2.79
2	Install more motion/occupancy sensors for lighting	2.68
3	Install double-sided printing on all printers across campus	2.66
4	Adhere to tight sustainability guidelines for building the intended football stadium (zero waste stadium, powered by renewable energy, sustainable design, etc.)	2.64
5	Establish an on-campus "swap shop" to share resources between offices and students and reduce waste and duplicate purchases	2.63
6	Implement composting in residence halls	2.55
7	Implement composting for offices	2.48
8	Establish an electronic ride-share application for carpooling within the UNE community	2.46
9	Seek LEED(Leadership in Energy & Environmental Design) certification for all new buildings	2.44
10	Increase incentives for departments to become Green Office certified and set goal of 100% certification	2.43
11	Expand green roof installations to buildings that are structurally adequate	2.42
12	Use alternative fuel bus (bio diesel) for Bishop Street shuttle, and Intercampus Connector, similar to Nor'easter Express	2.42
13	Establish and incentivize an institutional zero-waste goal	2.40
14	Support commuters in establishing van-pools from park and ride locations	2.40
15	Increase video conference capabilities and require use of technology rather than driving for meetings whenever possible.	2.39
16	Include sustainability criteria in all contracts with vendors	2.38
17	Provide on-campus housing for Portland Campus students	2.37
18	Require that intercampus meetings that require physical attendance be scheduled around the Intercampus Connector schedule	2.32
19	Use BioHeat in buildings that are currently burning oil for heat (BioHeat has a percentage of recycled vegetable oil mixed in and produces fewer emissions)	2.32
20	Purchase alternative fuel vehicles for the university fleet (security, mailroom, rental, facilities, etc.)	2.31
21	Create "net zero" buildings (buildings that produce as much energy as they consume)	2.29
22	Establish a central purchasing department to reduce duplication and waste	2.27
23	Undergo extensive energy efficiency project and building automation control upgrade to facilities	2.26
24	Install large-scale solar PV (electric) system	2.25
25	Install large-scale solar thermal (hot water) system	2.25

26	Install a community solar farm on UNE land (solar panels are paid for by community members who don't have space at home and their electricity is offset by the solar system; UNE either leases or donates the land)	2.25
27	Include sustainability criteria in all job descriptions for university employees	2.23
28	Purchase offsets for all airline travel sponsored by the university	2.14
29	Provide smaller buses with more frequent departures for shuttle services (Bishop Street, Nor'Easter Express & Intercampus Connector)	1.96
30	Curb building expansion	1.72
31	Invest in continuing the natural gas pipeline down Route 9 to the Biddeford Campus	1.55
32	Implement pay-to-print to reduce printing waste	0.98
33	Raise parking permit fees to provide disincentives of single-occupancy vehicles	0.69

Unknown Feasibility

Include Tangier Campus in greenhouse gas emissions inventory and sustainability initiatives (to date Tangier has not been included in our inventories because we don't have operational control over utilities; however, air travel emissions have been included)	2.31
Investigate feasibility of using geothermal energy to heat and cool buildings on both campuses	2.27
Investigate feasibility of using tidal energy to produce electricity for Biddeford Campus	2.26
Investigate feasibility for installing wind turbines on Ram Island	2.05
Investigate feasibility of using methane production from BC Wastewater Treatment Plant for building heat	2.02

Other initiatives mentioned in comments that specifically address CAP:

- Heat with Biomass
- Install cogeneration systems
- Hire an Energy Manager
- Expand Green Revolving Fund
- Incentivize people with lower parking permits for getting permits for electric cars or hybrids
- Improve bike racks on Portland Campus
- Ask for reduced packaging from WB Mason
- Have a green "dorm" with renewable energy features to be a demonstration
- No freshman cars on campus
- Investigate carbon sequestration on campus
- Energy efficiency measures in "quad" buildings
- Security should use bicycles in the summer